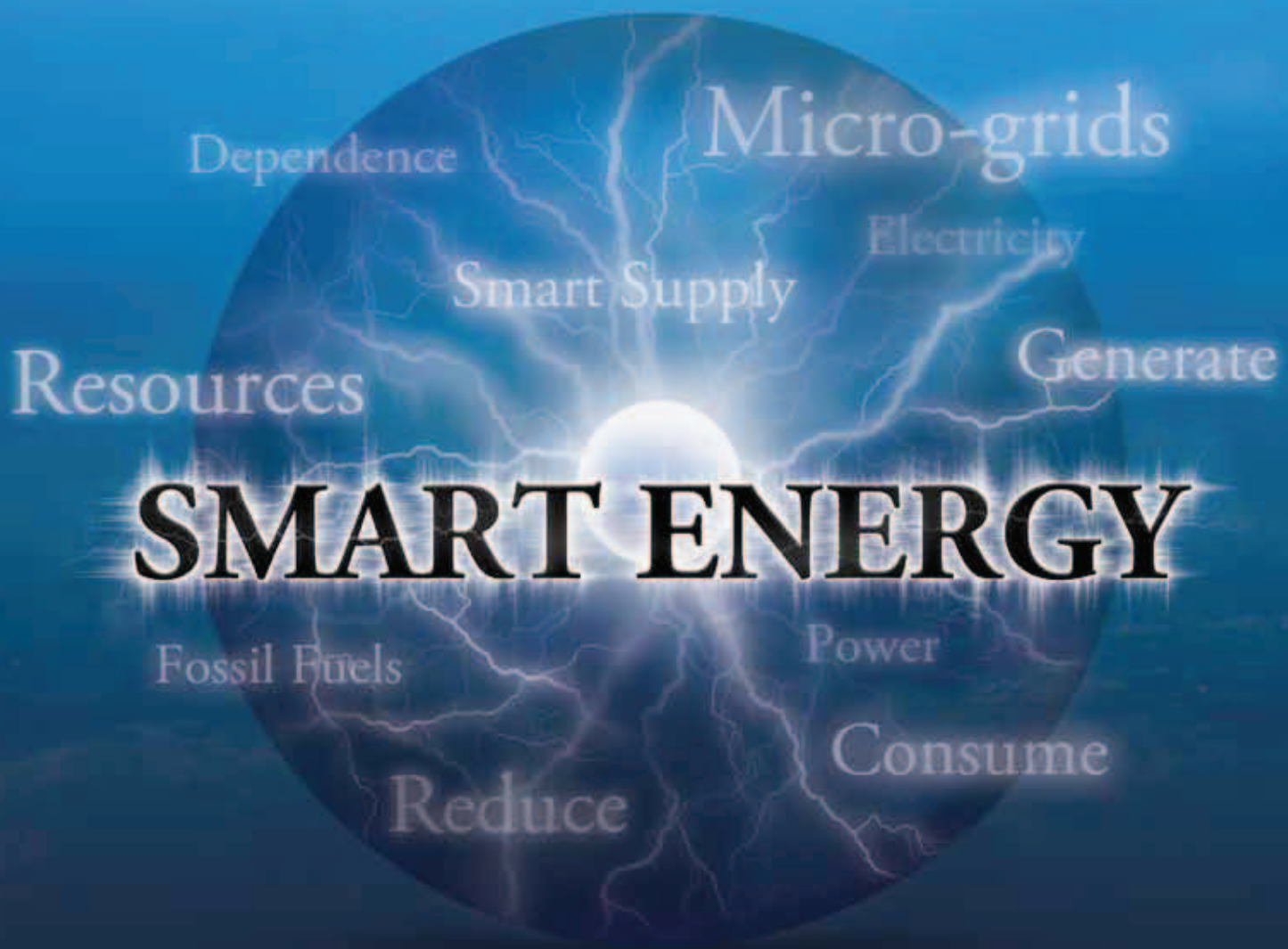


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APRIL-JUNE 2012



SOLDIER POWER

Energy solutions
reduce burden

EFFICIENCIES TEST BED

Putting technologies
in Soldiers' hands

CATALYST FOR CHANGE

Better Buying Power's
growing impact



From the Editor-in-Chief

TALK BACK

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CORRECTIONS

In the January-March 2012 issue of *Army AL&T* Magazine, the article "Eyes on the Enemy" should have noted that Throwbot is a registered trademark of ReconRobotics Inc. In the article "On the Move," LTC(P) Darrell J. Bennis' name was misspelled. Bennis was promoted to colonel March 1.

Originally I wanted to focus this issue of *Army AL&T* on Green Energy. Given that April 22 is Earth Day and the Army has made great strides in renewable energy resources and technologies, I thought covering "green" projects would be a great theme for the magazine. But it seems I was missing the bigger picture; that is why we have an Editorial Advisory Board led by the Army Acquisition Executive, Ms. Heidi Shyu, and representatives from around the Army (see full list on Page 2). When I pitched my concept for this issue, the board agreed that Green Energy was important, but said it was not inclusive enough.

The Army has many initiatives that are indeed green, conserve energy, and pollute less, such as the renewable technologies applied to installation energy needs in Net Zero efforts at Fort Carson, CO, and Fort Bliss, TX. However, that is not the sole focus of the Army's efforts. Ultimately, the goal is to provide Soldiers with the energy they need, when they need it, where they need it, in the most efficient manner possible to win the current fight while maintaining responsiveness for unforeseen contingencies. Quite simply, more than Green Energy, we need Smart Energy.

With that in mind, this issue highlights impressive examples of efforts to maximize efficiency by tweaking current systems, such as the Advanced Medium Mobile Power Sources generators, which are now 21 percent more fuel-efficient than generators currently in the field. Another case in point: the Base Camp Integration Laboratory, which is putting new concepts in resource-efficient technologies to the test in a

realistic environment. Our article on the Army's Operational Energy Office looks at new requirements to describe energy needs in terms of their operational benefits; and the commentary by Ms. Katherine Hammack, Assistant Secretary of the Army for Installations, Energy, and Environment, puts power and energy in a unifying, all-encompassing perspective.

But Smart Energy also includes what you *don't* have to do. Reducing corrosion through proper risk management is the topic of the article "Corrosion Control." If you don't have to replace it, you reduce the logistics footprint and thereby save energy. Smart!

Individually, the various stories in this issue offer a glimpse into efforts to lighten the Soldier's load, improve fuel efficiency, or refine procedures. However, step back, put everything together, and you soon realize that we are witness to a tipping point in Army acquisition as far as Smart Energy is concerned. The first energy-saving steps that were more curiosity than capability are now being combined by virtue of modern technology, necessity, and policy into Smart Energy concepts guiding how our Army fights, now and in the future.

As always, I hope this issue of *Army AL&T* provides you with inspiration and information you can use to meet the never-ending challenges facing the Army Acquisition Corps. Please share this magazine with other acquisition professionals. If you have any comment or suggestions, don't hesitate to contact me at usarmy.belvoir.usaac.list.usaascweb-army-alt-magaz-ltr@mail.mil (my apologies for the address). I look forward to hearing from you.

Nelson McCouch III
Editor-in-Chief

ARMY AL&T

APRIL-JUNE 2012



FEATURES



FROM THE AAE

- 4 SERVING THE SOLDIER WITH TANGIBLE RESULTS**
Cutting-edge technologies, world-class equipment, and operational energy innovations provide critical support to the Soldier



ACQUISITION

- 8 POWER PUSH**
Higher-efficiency solutions can meet operational needs with less fuel and fewer casualties
- 12 SOLDIER POWER**
Operational energy solutions focus on lightening the load and reducing the logistical burden, with encouraging results
- 18 THE ENERGY EDGE**
Mission success increasingly depends on more efficient operational consumption
- 22 DELIVERING THE NETWORK**
With the most critical Network Integration Evaluation on the horizon, the Army takes stock of progress toward an integrated Capability Set for Soldiers
- 28 KEEPING WATCH**
Integrated, multiagency C5ISR effort extends aerial layer for improved protection of operating bases in Afghanistan
- 34 A NEW GENERATION**
The next family of vertical lift aircraft begins to take shape in a unified effort of DoD, the military services, industry, and academia
- 40 ON THE WATER FRONT**
Army Watercraft Board of Directors forges united path forward for unique capability



LOGISTICS

- 44 LEARNING UNDER PRESSURE**
PM ODI builds on experiences in Iraq and Afghanistan to adapt and improve on numerous fronts
- 48 IRAQI HEALTH CARE 911**
Crafting a sustainable medical logistics infrastructure for the Ministry of Defense proves critical to rebuilding



SCIENCE & TECHNOLOGY

- 54 PUSHING THE EDGE OF POWER**
Army S&T, with industry and academia, focuses on developing modular, flexible energy solutions to meet rapidly growing needs
- 62 EFFICIENCIES TEST BED**
Base Camp Integration Laboratory provides realistic but controlled environment to test resource-efficient technologies for Soldier base camps
- 72 MICRO-GRID POWER**
Working intelligently and working together
- 76 SEEKING A LOWER PROFILE**
Soldier input guides development of next-generation body wearable antennas
- 80 CORROSION CONTROL**
Thorough knowledge and proper design of products and product support help reduce costly long-term risks



ON THE COVER

With a "Smart Energy" mind-set, the Acquisition, Logistics, and Technology Workforce is seeking and finding ways to reduce energy demand and use power efficiently to lessen the burden on Soldiers and increase mission success.

FEATURES

? CRITICAL THINKING

84 IDEAS AND INNOVATION

Avid inventor and successful entrepreneur Dean Kamen is passionate about generating young people's interest in science, technology, and engineering

/ CONTRACTING

88 ENGINEERING ADVANTAGE

Dispelling misconceptions and improving efficiencies, using MIL-STD-1916

93 WHAT THE CUSTOMER SEES

A capabilities approach to establishing a contingency contracting office

96 BETTER DATA, BETTER DECISIONS

U.S. Army Central deploys Theater Requirements, Contracting, and Execution Reconciliation Program to support fiscal stewardship

\$ EFFICIENCIES

100 CATALYST FOR CHANGE

Shrinking defense budget heightens meaning of better buying power and Army efficiencies

104 FOCUS ON SERVICES

ASAALT's Senior Services Manager takes steps to optimize acquisition practices and reduce costs

110 SECOND-GENERATION PARADIGM

By staying ahead of product growth, PEO STRI improves efficiencies

114 THE EFFICIENCIES CHALLENGE

How one PEO charted a path to working smarter, faster, and better—at less cost

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- 117 DOLLARS & SENSE**
Tracking ASAALT's efforts to identify and meet cost-saving and cost-avoidance goals

FIELD EXPEDIENT

- 118 DOWNRANGE DEVELOPMENT**
CERDEC forward-deployed team uses Soldier feedback to improve apps

COMMENTARY

- 122 FROM THE DIRECTOR, ACQUISITION CAREER MANAGEMENT**
Where we stand in changing the acquisition paradigm
- 125 CHANGING THE CULTURE**
'Making energy a consideration in everything we do'
- 128 KNOWLEDGE BUILDING**
Lessons learned from a contracting intern's developmental assignment to Kuwait and Italy

CONFERENCE CALL

- 133 ADAPTING THE ARMY**
Top leaders emphasize modernization, balance, and efficiencies at AUSA Winter Symposium
- 139 FUTURE FLEET**
Army prepares to adjust quantity, types of Tactical Wheeled Vehicles to meet the needs of a changing force
- 142 FROM STRATEGY TO SOLUTIONS**
Army S&T builds partnerships with private sector to identify and develop promising answers to high-priority problems
- 146 FLIGHT PATH**
AUSA Army Aviation Symposium highlights successes and challenges ahead
- 150 BUILDING A BETTER ROTORCRAFT**
Industry examines the state of the art, and the art of the possible
- 154 HOVER PATTERN**
Fiscal prospects cloud improvements in sustainment and reset

DEPARTMENTS

-  **158 CAREER CORNER**
-  **165 SPOTLIGHT**
-  **168 FOR THE RECORD**
-  **170 OFF THE SHELF**
-  **172 THEN & NOW**

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FROM THE AAE

FROM THE ARMY ACQUISITION EXECUTIVE
MS. HEIDI SHYU

SERVING THE SOLDIER with tangible results



FROM THE AAE

The upcoming Memorial Day holiday serves as a fitting occasion to remember that everything we do as an acquisition workforce is in service of the Soldier, whose courage and sacrifice are unparalleled.

I recently traveled to Afghanistan and received another valuable opportunity to see, firsthand, the remarkable support that our community provides to Soldiers. The work we do in developing cutting-edge technologies, acquiring and fielding world-class weapons and equipment, harnessing operational energy innovations, and providing critical contracting support to the Soldier yields tangible results.

In Afghanistan, I was struck by the successful performance of the Soldier Pelvic Protection gear, a key example of innovation that protects Soldiers. Working in tandem with the Joint IED Defeat Organization and the Rapid Equipping Force, ASAALT's PEO Soldier helped respond to a Joint Urgent Operational Needs Statement requesting increased Soldier protection from blast events for the

pelvis, femoral arteries, and lower abdominal organs.

The Pelvic Protection gear, which consists of items worn both over and under the Army Combat Uniform trousers, contains materials designed to protect against blast fragments and greatly reduces the penetration of dirt and fine debris into a wound. We have already made great progress with plans to deliver more than 400,000 individual items of Soldier Pelvic Protection gear and are working on plans to deliver more.

In Afghanistan, the feedback our program manager received on this system was inspiring. Army surgeons and wounded warriors confirmed that the Pelvic Protection gear is actually saving lives, and many expressed gratitude to the acquisition community for developing this technology.

Similarly, on a recent tour of Natick Soldier Systems Center, MA, I was impressed with the testing of state-of-the-art flame-resistant uniforms. This important family of gear, which is now provided to every deploying Soldier according

to his or her specialty, is specially engineered with flame-resistant fabrics able to safeguard our troops from flames, wind, and extreme temperatures. Each of these uniforms, manufactured with aviators, air and armored vehicle crews, and small, dismounted tactical ground units in mind, can provide individual Soldiers with four seconds of direct fire protection and prevent second- and third-degree burns in many instances, depending upon the length of exposure. Thus far, we have fielded more than 500,000 such uniforms to Soldiers in combat.

During my visit, I also received significant positive feedback regarding the performance of our Stryker Double-V Hull vehicle, a key, survivability-enhancing innovation to our Stryker vehicles that prioritizes Soldier safety. The Army expeditiously implemented this survivability enhancement from concept to delivery in less than a year and a half. Thus far, we have roughly 300 Stryker DVH vehicles in Afghanistan saving lives.

Finally, on a trip to Picatinny Arsenal, NJ, I gained a firsthand appreciation for the

SUPPORTING THE SOLDIER


The acquisition workforce supports Soldiers in many ways, including the fielding of world-class weapons and equipment to help reach the desired mission outcome. Here, SPC Robert Irwin, an infantryman assigned to Task Force Gold Geronimo, part of Spartan Brigade, conducts a security patrol in Afghanistan's Pakiya Province, Jan. 30. (U.S. Army photo by SSG Jason Epperson.)

engineering savvy and technical innovation that led to the M855A1 Enhanced Performance Round, a new, more capable, 5.56mm round with improved performance capabilities. Thus far, we have fielded more than 160 million EPRs to deployed Soldiers and plan to produce as many as 1.6 billion.

Like protective gear, the need for power and energy on the battlefield continues to expand, and current solutions alone are not sufficient to get in front of the rapidly growing need. The Army's science and technology community is working vigorously with its industrial

and academic partners to develop techniques to address energy challenges at the system and subsystem levels. For example, the Army has fielded the Rucksack Enhanced Portable Power System, a lightweight, portable, blanket-type solar-powered system that can recharge most common military battery types in five to six hours. Consisting of solar panels, chargers, and adaptors, the REPPS kit draws upon a fast-evolving technology known as flexible photovoltaics, solar panels that convert light energy into electricity. The REPPS kit provides Soldiers with mobile, deployable power and therefore removes

the need to haul large generators around the battlefield or theater of operations.

These are some examples of how the acquisition community collectively has made a significant contribution to the Soldier. I also know that numerous other examples take place on a daily basis. These serve as an important reminder of the significance of our work. As we take time to honor the contributions of Army Soldiers and their families this Memorial Day, I also recognize the valuable contributions of our acquisition workforce in service of our men and women in uniform. 

ADVANCES IN UNIFORMS

Heidi Shyu, Acting Assistant Secretary of the Army for Acquisition, Logistics, and Technology and Army Acquisition Executive, examines uniforms and the technology behind them during a Dec. 13, 2011, visit to the Natick Soldier Systems Center, MA. (U.S. Army photo.)





STRENGTH IN INNOVATION

Soldiers in Afghanistan benefit directly from the work of the Army acquisition community. Here, PV2 Anthony McCarthy, 172nd Infantry Brigade, keeps watch outside an Afghan Local Police checkpoint in Marzak village, Paktika Province, Afghanistan, Feb 26. (U.S. Army photo by SSG Charles Crail, Task Force Blackhawk Public Affairs, 172nd Infantry Brigade.)



POWER PUSH

Higher-efficiency solutions can meet operational needs
with less fuel and fewer casualties

by Paul Richard and LTC Michael E. Foster

Despite their power requirements, the networked mission command solutions within the command post have been a significant force multiplier for combat and combat service support units for years. However, the increase in the number of generators deployed to meet the operational needs of the past 10 to 15 years has also required more supply convoys delivering fuel across the battlefield—putting more troops in harm’s way.

Lowering fossil fuel consumption in theater will reduce the number of trips across dangerous convoy supply routes and reduce the risk to our Soldiers. According to an estimate provided by the Army G-4 office in October 2011, 18 percent of U.S. casualties in Afghanistan and Iraq were related to ground resupply, with more than 3,000 casualties occurring in resupply missions.

Project Manager Mobile Electric Power (PM MEP) has aligned itself with the Army’s and DoD’s push for efficiency and enhancements in power generation and consumption. Through innovative acquisition methods, PM MEP is delivering capabilities more rapidly to Soldiers, ranging from hybrid, solar-powered generator systems to DoD’s first operational micro-grid in Afghanistan. PM MEP is a DoD Project Manager chartered to the Army’s Program Executive Office Command, Control, and Communications – Tactical (PEO C3T).

ADVANCED MOBILE POWER

The first of a new family of tactical generators are expected to arrive in Afghanistan this spring. The Advanced Medium Mobile Power Sources (AMMPS) are the third generation of military standard generators since the Vietnam War era.

TACTICAL ENERGY

Tactical Quiet Generators (TQGs) are used in combination with solar panels and other energy storage options to create a hybrid solution to meeting power requirements. Here, SSG Christian Grasruck, with the 345th Combat Support Hospital, tightens the bolts of the 100 kW TQG for the 2011 *Warrior Exercise* at Fort McCoy, WI, which presents realistic and challenging scenario-based training for Soldiers and units preparing for deployment. (Photo by SGT Donna Hickman.)



Ranging in size from 5 to 60 kilowatts (kW), AMMPS are 21 percent more fuel-efficient on average than the Tactical Quiet Generators (TQGs) currently deployed to Afghanistan.

According to the AMMPS Business Case Analysis, the fuel savings associated with them will allow the Army to remove 1,000 fuel tankers from supply convoys per month in Afghanistan. Deploying the first 1,500-plus sets to Afghanistan will save \$40 million per year in fuel and \$16.8 million per year in operational and sustainment costs in the region. AMPPS are projected to save about 250,000 gallons of fuel each month.

AMMPS are also smaller, lighter, and significantly more reliable, saving 346,000 hours of maintenance manpower per year in Afghanistan. AMMPS upgrades also include a 40 percent commonality of parts between generators of separate sizes, making it more cost-effective and easier to keep them running.

In one sense, the success of the AMMPS program can be traced back to the development of requirements, a collaborative effort between the U.S. Army Training and Doctrine Command, Combined

Arms Support Command, and PM MEP. The improvements in generator technology between the development of TQGs in the late 1980s and the start of AMMPS in 2004 made it possible for the Army to acquire a smaller and lighter system while significantly increasing fuel savings and reliability. During the engineering, manufacturing, and developmental phase, the AMMPS generators met or exceeded each of these requirements.

Innovative acquisition methods also played a part. Following a 20-month delay due to contractual protests, PM MEP pursued an aggressive testing schedule to prove the reliability of the system and to get the program back on track. The generators were inundated with blowing sand and pouring rain, and were subjected to extreme temperatures (minus 50 degrees to 165 degrees Fahrenheit). Once developmental and operational testing were complete, with a successful limited user test held in March 2011, the PM pursued and earned a rare simultaneous full-rate production decision and full materiel release decision in July.

With support from Army and DoD leadership, PM MEP received additional funding to accelerate production and to field 1,500-plus AMMPS generators

to Soldiers in Afghanistan. PM MEP has been coordinating with the Army G-4 and U.S. Forces – Afghanistan (USFOR-A), with plans to field AMMPS generators in Afghanistan from April through July 2012.

We now must avoid becoming complacent. We have made it our priority to work with power-dependent project managers to ensure that the equipment continues to operate properly with other systems as it evolves, and that generators are sized correctly to power the systems they support.

MANAGING WITH MICRO-GRIDS

In 2011, with funding from the Office of the Assistant Secretary of Defense for Operational Energy Plans and Programs, PM MEP deployed DoD's first operational micro-grid at Bagram Airfield, Afghanistan. Micro-grids consist of "smart" generators that link with one another to intelligently manage the power supply and operate at peak efficiency.

The 1 megawatt (MW) micro-grid originally displaced 13 60 kW TQGs with just four larger sets, and an upgraded distribution grid later displaced an additional seven 60 kW TQGs. The system senses the amount of power required and

ACCORDING TO AN ESTIMATE PROVIDED BY THE ARMY G-4 OFFICE IN OCTOBER 2011, 18 PERCENT OF U.S. CASUALTIES IN AFGHANISTAN AND IRAQ WERE RELATED TO GROUND RESUPPLY, WITH MORE THAN 3,000 CASUALTIES OCCURRING IN RESUPPLY MISSIONS.



AMMPS IN AFGHANISTAN

Ranging in size from 5 to 60 kilowatts (kW), Advanced Medium Mobile Power Sources are 21 percent more fuel-efficient on average than the TQGs currently deployed to Afghanistan. Pictured is a 5 kW AMMPS generator. (U.S. Army photo.)

automatically powers or shuts off the generators based on that need.

From August to December 2011, the micro-grid operated 24/7 without any power disruptions. The same base operating on TQGs would have experienced power losses totaling approximately 900 hours as generators were pulled off-line for scheduled maintenance. In contrast, micro-grid generators are cycled for maintenance during periods of low power demand without incurring any disruptions. After operating the micro-grid successfully for four months, PM MEP transitioned it to USFOR-A personnel, who continue to operate the system at Bagram.

The final metrics on the 1 MW micro-grid's performance, measured by the U.S. Army Materiel Systems Analysis Activity, showed 18 percent fuel savings, 86 percent maintenance man-hour savings, and 100 percent power availability, compared with the 13 TQGs.

REMOTE REQUIREMENTS

By collecting reliable data on system performance and familiarizing Soldiers

with the equipment, this project is helping determine how the Army and DoD can institutionalize micro-grid technologies operationally. Using micro-grids will add discipline in how we power forward operating bases and other outposts, and will help reduce the number of supply convoys traveling to remote areas.

PM MEP recently deployed a new technology to Afghanistan aimed at smaller outposts away from forward operating bases, where the power requirement is too small for a grid with multiple generators. In partnership with the Rapid Equipping Force, PM MEP is supplying several of these locations with a hybrid solution consisting of a TQG, solar panels, and energy storage capability through a battery bank.

Essentially, the captured solar energy is used until the power supply is running too low, which triggers the generator to fire up and recharge the battery until the solar capability can resume. This provides continuous power, a quiet option for silent watch periods, and enough fuel savings to reduce resupply missions from once or twice per week to once every two weeks. We have deployed 28 of these systems and will factor the performance results and user feedback into the path ahead for tactical power.

The Network Integration Evaluation 12.2 in May will test-drive a standardized solution to power a company command post, which is a key Army effort to bring increased network connectivity and mission command systems down to the company level. The PM MEP system under evaluation includes a 10 kW power plant (two 10 kW generators on a Light Tactical Trailer), a 15 kW AMMPS generator, and an Improved Environmental Control Unit.

We will continue to refine this combination after obtaining Soldier feedback on its performance in a realistic operational environment.

CONCLUSION

The requirement for power will never cease in all theaters of operations, as our sophisticated communications technology cannot function without it.

As it develops the solutions to power the next generation of networked mission command solutions, PM MEP will continue to blend its generator fleet with capabilities that will lessen requirements for fuel and simplify operations for the user.

PM MEP will hold its fifth annual user conference for power professionals from across the services May 8-10 in Orlando, FL. The theme is "Operational Energy to the Warfighter." Go to <http://peoc3t.army.mil/mep> for details.

PAUL RICHARD is DoD's Deputy Project Manager Mobile Electric Power. He holds a B.S. in mechanical engineering from West Virginia University, an M.S. in engineering management from the George Washington University, and an M.S. in national resource strategy from the Industrial College of the Armed Forces. He is Level III certified in program management and in systems planning, research, development, and engineering.

LTC MICHAEL E. FOSTER is DoD's Product Manager Medium Power Sources. He holds a B.S. in criminal justice from Western Carolina University, an M.S. in human relations from the University of Oklahoma, and an M.A. in procurement and acquisition management from Webster University. He is Level III certified in program management and in test and evaluation.



ONE SOURCE, MULTIPLE DEVICES

The Soldier Worn Integrated Power Equipment System can provide power for up to four devices, including but not limited to a Defense Advanced GPS Receiver (DAGR), a radio via a smart charging pouch, a USB hub to power any USB device, and an end-user device such as Nett Warrior, the Soldier-borne situational awareness tool. Here, SSG Eric Cook (left) and SSG Sean Im of 3rd Squadron, 4th Cavalry Regiment, 3rd Brigade Combat Team, 25th Infantry Division, input grid coordinates on DAGRs for an upcoming mission objective during *Operation Jolo II*, Jan. 26 in Nangarhar Province, Afghanistan. (Photo by SGT Trey Harvey.)

SOLDIER POWER

Operational energy solutions focus on lightening the load and reducing the logistical burden, with encouraging results

by Steven Mapes

The growth of technology in Soldier equipment brings greater power needs, thus increasing the load that a Soldier takes into the fight. Most devices run on commercial or military standard lithium ion-batteries. Units operating in the most austere environments traditionally have had to carry enough batteries to sustain all of their devices for up to 72 hours before having to resupply at a forward operating base (FOB).

Individual power requirements have long been an afterthought to materiel developers as they continually strive to create high-tech, Soldier-borne solutions. Breakthrough operational energy solutions at the individual Soldier level help to lighten the load and reduce the logistical burden. (See related article on Page 54.)

Soldier Power encompasses expeditionary solutions intended for the most austere operating environments. These solutions include power generation systems, power scavenging, renewable energy, power distribution, management, and storage that are lightweight and can be worn or carried by Soldiers. Soldier power systems will be distributed to select units in FY13, and

Program Executive Office (PEO) Soldier is scheduled to begin fielding the systems to 10 brigades per year, beginning in FY14.

In the past, the types of gear that Soldiers carried into battle had a low power requirement that a small amount of conventional batteries could address. As technologies mature and new power-consuming systems are added to the Soldier's load, we need to address how to reduce that load and eliminate the logistical footprint associated with battery resupply. The Army's logisticians are very effective at pushing supplies, such as batteries, as far into the fight as the Soldiers need them. However, there is a great cost, both in dollars and in human lives, associated with getting these supplies onto the battlefield.

In a June 7, 2011, memorandum, *Supporting the Mission with Operational Energy* (<http://energy.defense.gov/OperationalEnergy-SpttoMission.pdf>), GEN David H. Petraeus (USA Ret.), then Commander, International Security Assistance Force – Afghanistan and U.S. Forces – Afghanistan, said, “Changing the way we use operational energy will lighten the logistics

burden, minimize tactical distractions to the mission, and deny easy targets to the adversary.”

The Assistant Product Manager (APM) Soldier Power falls under PEO Soldier’s Project Manager Soldier Warrior (PM SWAR), whose mission is to provide power solutions to Soldiers operating in the most austere environments, known as Tier 1 environments.

Tier 1 environments have no power infrastructure. Soldiers perform dismounted operations in complex, restrictive terrain. Everything that Soldiers have available to them is located in their rucksacks or on their bodies. These Soldiers are at the heart of Soldier Power developmental efforts.

SOLDIER FEEDBACK

In November 2011, the 1st Battalion, 16th Infantry Regiment (1/16) received a no-notice deployment order. PEO Soldier provided this unit with a suite of expeditionary power systems. The deployment was in support of Village Stability Platform (VSP) operations in Afghanistan. VSPs are largely cut off from the supply chain, compared with FOBs or patrol bases.

These power items were intended to sustain units that did not have access to a preexisting power grid, vehicles, or items such as generators. The items sent included the Soldier Power Manager, a state-of-the-art, lightweight, portable power management system; the Rucksack Enhanced Portable Power System (REPPS), a solar power system; 300 watt fuel cells; and 1 kilowatt (kW) generators.

Soldiers of the 1/16 recognized the utility of the generators and fuel cells but indicated that the unique fuel requirements, combined with the weight of the systems, made them better suited to a more

enduring operating environment such as a FOB or a combat outpost. This feedback prompted the APM Soldier Power office to move research and development dollars toward items that are more portable, with fewer logistical requirements. The generators and fuel cells fit into rucksacks, but feedback from the 1/16 helped demonstrate that many other mission-specific items besides power needs are carried in the rucksack.

The Soldier feedback, both positive and negative, catapulted Soldier Power to the forefront of the strategic conversation. Comments on the Soldier Power Manager and the REPPS kit were resoundingly positive and underscored the value of being able to scavenge fuel and renewable energy on the battlefield. Soldier feedback also renewed focus on the developments in improved battery chemistry to help equipment run longer.

The Soldier Power office was able to work closely with industry to identify and develop improved solar technology that performs more efficiently than its current rate of about 8 percent. Research is also being conducted to develop multi-fuel generators that can be used for scavenging any type of fuel on the battlefield to power man-portable generators.

NETWORK INTEGRATION

An expeditionary power suite will be sent to the Army’s Network Integration Evaluation (NIE) 12.2 in May as a system under evaluation (SUE). This includes a kinetic energy device, the Soldier Power Manager, a 1 kW JP-8 generator, and a solar blanket. These items are intended to serve as one package per platoon.

This tailored package meets the power needs of what is becoming known as the networked formation, which has a much greater power requirement

than traditional units using FM radios because the Soldiers’ radios are always on, sending and receiving information and draining power. Evaluation of the Expeditionary Soldier Power Suite will help determine the sustainability of the networked formation.

A second SUE at NIE 12.2 is the Soldier Worn Integrated Power Equipment System (SWIPES). It provides a central power source for extended missions when used with the ergonomic, Soldier-worn conformal battery, while reducing the numbers and varieties of batteries the Soldier must carry. SWIPES can provide power for up to four devices, including but not limited to a radio via a smart charging pouch, a USB hub to power any USB device, a Defense Advanced GPS Receiver, and an end-user device such as Nett Warrior, the Soldier-borne situational awareness tool.

The Universal Battery Charger (UBC) with a 120 watt solar blanket will also be evaluated at NIE 12.2. This system weighs approximately 6 pounds and brings recharging forward for the entire networked squad in a Tier 1 environment. This charger will reduce, and potentially eliminate, the need to return to the FOB for recharging. The UBC will allow Soldiers to extend mission duration without being tethered to a logistics battery resupply.

The Army’s Rapid Equipping Force (REF) recently approached the APM Soldier Power office to request support for an operational energy fielding to the 173rd Airborne Brigade Combat Team and the 1st Brigade, 82nd Airborne Division (1/82). These units will receive much larger Soldier power packages tailored to specific unit requirements and informed by the feedback received from the 1/16. The 173rd and 1/82 will



SMART USAGE

The Soldier Power Manager calculates available and required power and allocates power to loads according to availability and priority. It also allows multiple power generation sources to be hooked up simultaneously, using energy based on a predetermined set of energy costs. (Photo courtesy of Communications-Electronics Research, Development and Engineering Center.)

receive the Soldier Power Manager, the REPPS kit, and the SWIPES with a conformal battery.

MAJ Mark Owens, APM Soldier Power, just provided the 1st Battalion, 503rd Infantry Regiment with new equipment training on this Soldier Power gear. The training was well received by the unit, which immediately understood the utility of this equipment. Some of the Soldiers took it a step further, envisioning scenarios on the battlefield in which the equipment would be a combat multiplier. Owens' next stop is Fort Bragg, NC, to train elements of the 1/82.

CONCLUSION

Soldier Power spans the entire acquisition community. It is a challenge to ensure that

solutions and developmental efforts are not duplicated. The APM Soldier Power office intends to look at the capability sets in years to come and determine what the Army is planning to field, in an attempt to ensure that future systems' support strategies are consistent with the Army's Operational Energy Campaign Plan.

Efforts are also underway to ensure that each PEO is informed of the entire Soldier Power portfolio. The challenge is to identify the programs that could benefit from these capabilities before individual program managers establish their own solutions. The APM Soldier Power office is providing Soldier Power capability to the REF, to the Joint Tactical Radio System team, to PEO Soldier's Product

Manager Ground Soldier team in support of the Nett Warrior program, and to PEO Soldier's Product Manager Air Warrior team in support of the Air Soldier System program.

The future of Soldier Power will be dynamic. Ultimately it will reduce Soldier load, increase mission duration, and reduce logistics.

Gen John R. Allen, Commander of the International Security Assistance Force – Afghanistan and U.S. Forces – Afghanistan, recently wrote, "Operational Energy in the battlespace is about improving combat effectiveness. It's about increasing our forces' endurance, being more lethal, and reducing the number of men and women risking their lives moving fuel."

The APM Soldier Power office will continue to work with industry and the Army laboratories to identify technologies that are lighter and more efficient. The Army is directing resources to provide and improve Soldier Power to achieve its short- and long-term goals.

For more information, go to <https://www.peosoldier.army.mil>.

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DoD Outlines Strategy to Reduce Energy Demand

DoD has allocated \$18 million to fund six military programs designed to reduce energy demand, with the primary goal of increasing military effectiveness, a senior Pentagon official said.

“The real reason to do this is for military effectiveness to give our forces better tools, better capability, and less risk,” said Sharon E. Burke, Assistant Secretary of Defense for Operational Energy Plans and Programs, Jan. 31 at the Pentagon.

Although saving money will be one of the outcomes for DoD, she added, “This is ultimately about giving our forces a better capability, taking risk out of the system, [and] putting fewer lives at risk moving fuel around.”

DoD teams representing the military services will lead the initiatives in the Operational Energy Capabilities Improvement Fund Program, Burke said. “What these six programs focus on is reducing the demand for energy on the battlefield,” she explained. “How do you actually get the job done with less energy—with less fuel, more to the point?”

Burke’s office provided details on the six initiatives:

- The Innovative Cooling Equipment Development/Demonstration Program, slated to receive \$2.5 million in FY12, seeks to reduce fuel consumption for heating and cooling by 10 to 30 percent, translating to fewer fuel convoys on the battlefield and reduced risk.
- The Navy Expeditionary Technology Transition Program is slated to receive \$3.2 million for research aimed at making significant advances in heating and cooling technologies, to reduce fuel consumption for heating and cooling by 20 to 50 percent.
- The Advanced, Energy Efficient Shelter Systems for Contingency Basing and Other Applications program will receive \$6 million to demonstrate and transition shelter systems that will reduce the heating and cooling required by 50 percent

LIVING EFFICIENTLY

Funds for the Super Energy Efficient Containerized Living Unit (CLU) Design and Development program will allow for the redesign of existing CLUs and the development of a new, highly efficient unit. The team will focus initially on Camp Lemonnier, Djibouti, pictured here. (Photo by SGT Brandon McCarty.)



while improving capabilities and quality of life.

- The Super Energy Efficient Containerized Living Unit (CLU) Design and Development program will receive \$1 million to redesign existing CLUs and to develop a new, highly efficient unit. The team will focus initially on Camp Lemonnier, Djibouti, seeking to reduce energy use in renovated CLUs by 54 percent and by 82 percent for the Super CLU.
- The Transformative Reductions in Operational Energy Consumption program will receive \$3.9 million to identify and assess new and existing technologies that would reduce the energy demand of expeditionary outposts in tropical environments. Its goal will be to reduce the total energy use of forward operating bases in these environments by 50 percent in 2016.
- The *Operation Enduring Freedom* Energy Initiative Proving Ground program will receive \$1.4 million to establish a baseline for energy and fuel use in expeditionary operations in Afghanistan, by systematically evaluating the quantitative operational benefits of a broad spectrum of energy-related technologies, such as more efficient heating and air-conditioning units, insulating tent liners, solar tent shades, and hybrid solar-electrical power. The program will help determine which technologies provide the highest operational impact and the best return on investment for deployment.

“So all of these programs are looking at how to lighten the fuel sustainment, lighten the footprint, for our deployed forces,” Burke said.

“The reason that we chose this is there have been a number of really important studies, including one done by the Marine Corps and one done by the [Army] Corps of Engineers for me,” she explained. These studies “identified that



REDUCING RISK

Technological advances to help reduce fuel consumption will also lead to fewer convoys on the battlefield and reduced risk. Here, Mine Resistant Ambush Protected vehicles line up at Forward Operating Base Shank, Afghanistan, before conveying to Bagram Airfield to provide supplies to various units on Dec. 2, 2011. (Photo by PFC Zackary Root.)

we’re wasting a huge amount of fuel on the battlefield, and that a lot of it goes to generators and to heating, ventilation, and air-conditioning systems.”

Burke noted one study finding that 75 percent of generator power goes to air-conditioning and heating. Another study demonstrated that “anywhere from 20 percent to upwards of 50 percent of the fuel used at any given location in places like Afghanistan may be going to generators and heating and cooling,” she said.

She also cited a 2011 Marine Corps study stating that heating and air-conditioning accounted for 13 percent of the Corps’ total fuel demand in Afghanistan and 46 percent of its electrical demands.

“So a lot of it’s wasting, and it’s a huge target area,” Burke said. “But it’s not an area that the department has focused a lot of research, development, testing, and evaluation in. That was why we wanted to target these specific areas.”

Burke noted that funding these programs is just one part of DoD’s efforts to

improve energy use for a more effective and capable force.

“This is a research, development, test, and evaluation effort,” she said. “But we’re also seeing this in the requirements process, the acquisition process, in contracting, [and] in rapid fielding to forces in the fight.

“We’re doing all this because we really think this will help us meet the defense mission,” she continued, “particularly the changing defense mission as we go forward.”

For more information on the Assistant Secretary of Defense for Operational Energy Plans and Programs, go to <http://energy.defense.gov>. For more on the Operational Energy Capabilities Improvement Fund Program, including lead agencies for the initiatives outlined above, go to http://energy.defense.gov/Operational_Energy_Capabilities_Improvement_Fund_Program_Highlights.pdf.

—SFC Tyrone C. Marshall Jr.,
American Forces Press Service



REDUCING RESUPPLY

The Army is looking at energy advances to reduce the force's dependence on fuel. Here, Soldiers from Task Force Currahee, 4th Brigade, 101st Airborne Division recover bundles of fuel that were air-delivered to Forward Operating Base Waza K'wah in Paktika Province, Afghanistan, in January 2011 on a C-17 Globemaster III. The fuel was delivered to help sustain members of Task Force Currahee whose only means of resupply was through air delivery. (U.S. Air Force photo by MSgt Adrian Cadiz.)



the ENERGY EDGE

Mission success increasingly depends
on more efficient operational consumption

by COL Paul E. Roeger

The U.S. Army is the most powerful ground force on the planet because of our dedicated Soldiers and the capabilities we provide them. Night vision devices enable small units to maneuver in difficult terrain under total darkness; unmanned vehicles transmit real-time

video to provide persistent surveillance; and base camps protect and sustain Soldiers so they are mentally and physically ready to perform their missions. Since World War II, the common denominator among many of our most compelling capabilities, from air power to armored vehicles and radar, has been energy.



Despite this long-standing, critical role in military might, energy has only recently gained broad attention, leading to systematic management approaches. A September 2009 study by the Army Environmental Policy Institute, *Sustain the Mission Project: Casualty Factors for Fuel and Water Resupply Convoys* (online at http://www.aepi.army.mil/docs/whatsnew/SMP_Casualty_Cost_Factors_Final1-09.pdf), highlighted the risks to our Soldiers from the extraordinary effort required to deliver fuel to expeditionary forces on the ground, and the vulnerabilities created by our singular dependence on liquid fuel logistics.

In response to these concerns, the Army and Marine Corps each focused efforts to mitigate these issues by fielding more energy-efficient technologies and alternative energy solutions.

PROVEN EFFICIENCIES

These efforts have already achieved reductions in field energy consumption, in turn helping to mitigate both the effects of spiraling energy costs and the need to dedicate military forces to conduct fuel delivery convoys in hazardous areas of Southwest Asia. For example, the Army has replaced stand-alone power generation with more than 22 “mini-grids” in Afghanistan, saving an estimated 33 million gallons of fuel per year—an efficiency improvement of approximately 20 percent.

However, energy savings are not the ultimate goal. The military exists to protect national security and to project power, and energy contributes significantly to those purposes. With that in mind, it is important to maintain an operational focus and to define success in terms that reflect mission success.

For example, more efficient electrical power generation can reduce fuel delivery

WELCOME TO THE ARMY'S OPERATIONAL ENERGY OFFICE

In November 2011, the Deputy Chief of Staff, G-4 (Logistics) established an Operational Energy (OE) Office to support the Assistant Secretary of the Army for Installations, Energy, and Environment, who sets Army energy policies and programs and coordinates them with the Office of the Secretary of Defense and the other military departments. This new office synchronizes Army OE and contingency basing initiatives, and planning and business processes among Army staff elements and commands.

The office supports current operations and is now expanding its efforts to integrate OE into the Army budget process, the Army Campaign Plan, and other enterprise systems. This work will link overall Army goals of operational readiness and performance with the specific actions needed to achieve those results. For more information about the Operational Energy Office, contact COL Paul Roege at 571-256-4570 or paul.e.roege.mil@mail.mil; or Amy Burrison at 703-614-0937 or amy.b.burrison.civ@mail.mil.

requirements, making more Soldiers available to conduct assigned missions—a force multiplier. Saving 5,000 gallons

can take a fuel tanker and crew off the road. Alternative energy sources, such as photovoltaic (solar) panels, can reduce generator operating time, meaning less maintenance effort and a reduced acoustic signature, and reduce the unit's vulnerability to disruptions in fuel supply.

OPERATIONAL BENEFITS

For the first time, the Army is about to issue a document that describes energy requirements in terms of their operational benefits. A draft of this Initial Capabilities Document [ICD] for Operational Energy, prepared in October 2011 by the U.S. Army Training and Doctrine Command, characterizes energy as “critical to the Joint Force's ability to conduct and support operations, enabling maneuver and freedom of action and providing operational reach and endurance.”

In other words, energy-enabled attributes of vehicle speed, onboard power, and endurance provide important operational energy benefit. The ICD also recognizes the dynamic nature of modern operations, noting that “providing energy alternative capabilities and interoperability builds flexibility and resilience through increased ability to respond to changes in operational demands, and greater ability to adapt to changes in the operational environment.”

The most important concept presented in the ICD is the need to understand how energy relates to operational capabilities and to manage energy in ways that best support mission success. This concept, termed “energy-informed operations,” requires a substantial increase in awareness about energy use and availability, and an attendant ability to make effective choices that maximize the operational benefit of the energy available.



FEWER DELIVERIES

Efficient electrical power generation reduces fuel needs and delivery requirements. Here, a CH-47F Chinook helicopter from Task Force Attack, 1st Air Cavalry Brigade, attached to 10th Combat Aviation Brigade, 10th Mountain Division, begins to hover near a coalition convoy in southeastern Afghanistan. The Chinook was sling-loading two fuel blivets to resupply the convoy July 17, 2011. (Photo by SGT Richard Wrigley.)



To illustrate the concept, imagine supplementing a tactical convoy commander's situational awareness, such as details of time and location, with energy-related information that many of us enjoy in our own cars: remaining fuel, consumption rate (mpg meter), and refueling locations. Presented in a useful way, this information could enable the commander to make more informed decisions on march speed, routes, and rest stops, taking into account the threat, mission time constraints, and alternate routes.

The approved ICD will provide the basis for Army investment in doctrine, organization, training, materiel, leadership, personnel, and facilities solutions

that will strengthen operational energy performance. Meanwhile, resources are available that can help identify how energy contributes to our responsibilities:

- The *Power and Energy Strategy White Paper* (online at <http://www.arcic.army.mil/Docs/PE%20Strategy%20Apr%202010.pdf?bctid=656414847001>), prepared in April 2010 by the U.S. Army Capabilities Integration Center, Research, Development, and Engineering Command, and the Deputy Chief of Staff, G-4, explains how energy contributes to Army operational capabilities.
- A short introductory operational energy video is on the Army's website

(<http://www.army.mil/media/amp/?bctid=656414847001>).

- The Assistant Secretary of the Army for Installations, Energy, and Environment and the Army G-4 sponsored an Army Operational Energy Roundtable at the U.S. Army War College in November 2011 to address the Army's challenges in ensuring a sustainable energy future. The conference leaders concluded with a commitment to infuse change and make operational energy into a force multiplier.

Senior Army leaders have committed to improving operational energy performance. In order to succeed, we all must become part of the new Army energy culture.

THE MILITARY EXISTS TO PROTECT
NATIONAL SECURITY AND TO
PROJECT POWER, AND ENERGY
CONTRIBUTES SIGNIFICANTLY
TO THOSE PURPOSES.

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DELIVERING THE NETWORK

With the most critical Network Integration Evaluation on the horizon, the Army takes stock of progress toward an integrated Capability Set for Soldiers

by MG N. Lee S. Price, MG Michael E. Williamson, and COL(P) Daniel P. Hughes

When the Army launched the Network Integration Evaluations (NIEs) a year ago, the concept was met with some skepticism. The series of evaluations was designed to integrate and mature the Army's tactical communications network, our number one modernization priority. But how did we intend to evaluate dozens of networked systems at the same time, with the same brigade? Would the acquisition, doctrine, and test communities, along with our industry partners, embrace this radically new approach?

Was it going to save the Army money? Most important, what would be the operational benefit for Soldiers downrange?

These are all valid and significant questions, and during the past year, we have seen encouraging answers. The NIEs have evaluated more than 70 industry and government systems and have led to almost \$1 billion in test and programmatic cost avoidance and savings. They have provided a realistic operational environment for the Army to establish its Integrated Network

ADVANCING WARFIGHTER INFORMATION NETWORK-TACTICAL

A Soldier from 2nd Brigade, 1st Armored Division (2/1 AD) demonstrates Warfighter Information Network – Tactical (WIN-T) Increment 2 and mission command on-the-move applications during Network Integration Evaluation (NIE) 12.1 in November 2011 at White Sands Missile Range, NM. WIN-T Increment 2 is a major upgrade to the tactical network backbone that extends satellite communications to the company level, allowing Soldiers to communicate seamlessly through voice, data, images, and video, even in complex terrain that can break line-of-sight radio connections. (U.S. Army photos.)





AERIAL TIER

A 2/1 AD Soldier flies a MAKO Intelligence, Surveillance and Reconnaissance (ISR) flight system during NIE 12.1, the Army's second NIE, in November 2011. The MAKO, a system under evaluation, provides Soldiers an ISR system that is portable and man-packable while wearing standard current combat equipment; a high-resolution image and full-motion surveillance camera during day and night operations; and a communications repeater capability to increase dismounted patrol range and situational awareness.

Baseline, which allows for insertion of new technologies through the Agile Process, the new quick-reaction acquisition methodology to address defined capability gaps and insert new technologies into the overall network. The NIEs have allowed the Army to test capability and establish doctrinal insight on how to extend the network to the edge and enhance mission command on the move.

As we undertake NIE 12.2 in May, the third and most critical of the events thus far, it is valuable to review this progress and chart the path ahead. From the beginning, the aim of these exercises was to deliver an integrated Capability Set (CS) of networked equipment to brigade combat teams beginning early in FY13, and we intend to hit that target.

THE AGILE PROCESS

The NIEs are led by a triad consisting of the Brigade Modernization Command, the U.S. Army Test and Evaluation Command, and the System of Systems Integration Directorate under the Assistant Secretary of the Army for Acquisition, Logistics, and Technology.

Held twice a year at White Sands Missile Range, NM, the events assess new network capabilities in a robust operational environment to determine whether they perform as needed, conform to the network architecture, and are interoperable with existing systems. The NIEs aim to ensure that the network satisfies the functional requirements of the force, relieves the end users of the technology integration burden, and produces valuable Soldier feedback on new capabilities.

The first two events, NIE 11.2 in June-July 2011 and NIE 12.1 in October-November 2011, were the largest network field exercises the Army has ever held. It was an enormous challenge to train thousands of 2nd Brigade, 1st Armored Division (2/1 AD) Soldiers to operate dozens of systems while integrating all of the pieces into a newly established network architecture unique to the exercise.

While the brigade, system, and integration engineers, field support representatives, and other personnel involved did an outstanding job completing these tasks on a tight timeline, we have incorporated changes from lessons learned to make the process more efficient and effective as we move forward.

Specifically, we have formalized the Agile Process cycle to ensure that system candidate assessments, network integration, and configuration are completed at Army laboratories before the equipment arrives at Fort Bliss, TX, for integration into tactical

formations and training with the 2/1 AD. At Aberdeen Proving Ground, MD, the new command, control, communications, computers, intelligence, surveillance, and reconnaissance laboratories are linked through direct fiber-optic connectivity, creating an integrated environment for government and industry to measure system performance and interoperability. Any necessary upgrades can be made before systems are tested in true operational settings, when it is more difficult to adjust them.

We are grateful to our industry partners for their enthusiastic participation in the Agile Process. As the process continues to mature, companies of all sizes will see regular opportunities to demonstrate their network solutions to the Army. Compared with traditional acquisition methods, the Agile Process will allow us to move much faster in procuring and deploying commercial-off-the-shelf products that demonstrate operational value.

The Army is already using this strategy as it prepares to procure a single-channel, vehicle-mounted radio running the Joint Tactical Radio System (JTRS) Soldier Radio Waveform (SRW). Recently conducted NIEs confirmed an operational need for these single-channel radios.

The Agile Process will also be employed with the upcoming Mid-Tier Networking Vehicular Radio (MNVR) initiative, which seeks to procure a lower-cost replacement for the recently terminated JTRS Ground Mobile Radio (GMR). Designed to harness years of investment and technological progress associated with JTRS GMR development, this non-developmental item effort aims to procure available radios that can transmit information using high-bandwidth, nonproprietary waveforms such as SRW and Wideband

Networking Waveform (WNW), moving voice, video, data, and images across the force in real time.

The Army will leverage NIE 13.1 in the fall to test potential MNVR solutions and determine which will be fielded for CS 14.

ASSESSING INTEGRATION

Aside from forcing positive changes to our business practices, the NIEs have yielded numerous integration “firsts” and innovative risk reduction before formal operational testing. At NIE 12.1, this included the integration of Warfighter Information Network – Tactical (WIN-T) Increment 2 and mission command on-the-move applications onto combat vehicles. WIN-T Increment 2 is a major upgrade to the tactical network backbone that will extend satellite communications to the company level and enable on-the-move network connectivity.

This first field assessment gave us an opportunity to see how commanders would operate and use the applications while moving across the battlefield, the type of data they require, and how to prioritize their needs on the network. Human factors came into play as well, influencing the layout of the equipment inside the vehicles. On the point-of-presence and Soldier Network Extension vehicles, 2/1 AD Soldiers found that they needed an auxiliary power source so that they could keep the communications equipment operating without running the vehicle continuously.

Thanks to this early user feedback, we have addressed several issues before the WIN-T Increment 2 initial operational test and evaluation (IOT&E) that will occur during NIE 12.2.

The NIE 12.1 also allowed the Army to effectively reduce risk for the NIE 12.2 IOT&E for the JTRS Handheld,

Manpack, Small Form Fit (HMS) systems. The Manpack component used during the formal test for the Rifleman Radio received positive Soldier feedback in its U.S. Army Training and Doctrine Command operational assessment report, including for voice quality, dismounted battery life, and a lack of temperature issues.

While there were some limitations involving tactics, techniques, and procedures that can be addressed going forward, the SRW platoon network of

Manpack and Rifleman radios provided reliable voice and data communications down to the team leader level, increasing situational awareness for previously disadvantaged users.

Capability observations during NIE 12.1 also revealed that the use of a networked aerial tier with line-of-sight systems vastly improved mission command on-the-move and simplified connectivity to remote company outposts by removing the need for vulnerable ground retransmission locations.

EXTENDING COMMUNICATIONS

SSG Heath Demuth, 2/1 AD, demonstrates a Joint Battle Command-Platform (JBC-P) Handheld, which is used with the Joint Tactical Radio System Rifleman Radio. The handhelds and radios, which were evaluated as part of NIE 12.1 in November 2011, enable lower-echelon Soldiers to communicate better with one another and higher headquarters. An important step at NIE 12.2 will be the involvement of the platform version of JBC-P, the next-generation upgrade to Force XXI Battle Command Brigade and Below/Blue Force Tracking. The Army will be able to see, on a large scale, how Soldiers take advantage of the totally redesigned user interface, faster situational awareness updates, and availability of Tactical Ground Reporting data to accomplish their missions.



COMPARED WITH TRADITIONAL ACQUISITION METHODS, THE AGILE PROCESS WILL ALLOW US TO MOVE MUCH FASTER IN PROCURING AND DEPLOYING COMMERCIAL-OFF-THE-SHELF PRODUCTS THAT DEMONSTRATE OPERATIONAL VALUE.

Additionally, Nett Warrior handheld devices at the fire team leader level and above demonstrated tremendous potential for dismounted operations, especially for transmitting position location information and spot reports. The NIE process helped align various Army efforts aimed at harnessing smartphone technology for tactical use, resulting in a single handheld solution that the Army will field in FY13 and continuously upgrade with new applications.

These devices were connected to the network through the JTRS Rifleman Radio. This, and its SRW Network Manager component, were the only systems under a formal program-of-record test at NIE 12.1. The two-pound radio, which is carried by platoon, squad, and team-level Soldiers for voice communications, can link with handheld devices to transmit text messages, GPS locations, and other data. Soldiers said the radios allowed them to cover a larger area with enhanced communications, particularly during dismounted raids.

Another key element that we were able to advance at NIE 12.1 is network operations, or NETOPS. Today, each component of

the network is managed separately with its own software, hardware, and human resources. Going forward, however, just as we will field the tactical network as an integrated capability, we must manage it as an integrated system within the brigade combat team.

At NIE 12.1, the Army brought together dozens of different network management tools that are currently fielded, and made progress toward integrating and streamlining network management capabilities into common standards. The idea is to shift from multiple tools, each displaying data on a certain piece of the network, to a broad NETOPS framework that will aggregate that data into actionable information for the commander. Integrated NETOPS will enable us to view the holistic Integrated Network Baseline, so that if the need arises to apply fixes in the field, we can respond knowing how a specific fix may affect other capabilities within the brigade.

At NIE 12.2, our goals are to increase Soldier involvement in network management, evaluate industry solutions that could accelerate NETOPS convergence, and begin to establish common standards for CS 13.

NIE MOVING FORWARD

NIE 12.2 will differ significantly from past events. Most significantly, it will operate in a classified environment with secure data connections and will connect to higher-division headquarters, represented by the 101st Airborne Division operating out of Fort Campbell, KY.

The operations of 2/1 AD at White Sands will require the brigade, battalion, and company command posts to “jump,” or move in uncooperative and unpredictable environments, and then quickly reestablish network connectivity. A battalion-size opposition force will operate in dynamic scenarios with hybrid threats, including conventional forces, insurgents, and members of the local population.

This exercise will be the critical event for validating the connectivity, architecture, and components of CS 13, which will be fielded in a synchronized manner to as many as eight brigade combat teams starting in 2013. NIE 12.2 will focus on solidifying the network baseline with the formal IOT&Es of WIN-T Increment 2 and JTRS HMS, as well as finalizing the CS 13 configurations for company command posts, mission command

on-the-move applications, and Soldier connectivity through handheld devices.

The network used by 2/1 AD at NIE 12.2 will be based on the CS 13 bridge network architecture, with the exception of the 1st Battalion, 35th Armor Regiment, which will be configured with the CS 13 objective architecture. The main difference is the use of the AN/PRC-117G Wideband Tactical Radio and its Adaptive Networking Wideband-2 waveform as a mid-tier radio in the bridge architecture vs. the JTRS WNW waveform in the objective configuration.

Another important step at NIE 12.2 will be the involvement of the platform version of Joint Battle Command-Platform, the next-generation upgrade to Force XXI Battle Command Brigade and Below/Blue Force Tracking. The Army will be able to see, on a large scale, how Soldiers take advantage of the totally redesigned user interface, faster situational awareness updates, and availability of Tactical Ground Reporting data to accomplish their missions.

NIE 12.2 also will mark the operational debut of Mission Command Collapse, a CS 13 baseline system that combines the Army's fires, sustainment, air defense, and airspace product lines onto a common workstation.

Taking a step beyond "collapse," or what can be considered a version of a Common Operating Environment, to operations and intelligence (ops/intel) "convergence," the Army will leverage NIE 12.2 to measure its progress in this area. We will do this through server consolidation within the 2/1 AD brigade tactical operations center (TOC), as well as by providing an initial set of common Web-based capabilities and widgets to enhance data sharing and communications across the

ops/intel domains. The Web-based environment will help facilitate integration of command and control and intelligence, surveillance, and reconnaissance functions at battalion level and below.

Smarter consumption of operational energy is another major focus area for DoD, and the Army is using the NIEs to test-drive power solutions for network systems. These range from battery chargers and other energy sources used by dismounted Soldiers to a new combination of fuel-efficient standard generators to power a company command post.

CONCLUSION

It is the Army's vision that the capability sets that emerge from the NIEs will be integrated from the TOC to the Soldier. Beginning in FY13, we will field these comprehensive capability sets in two-year increments closely linked to how deploying brigades train, equip, and deploy.

This model is a fundamental change from the past, when the Army fielded network systems independently on individual program-of-record acquisition timelines. We are currently preparing our production, integration, training, and other plans to support the synchronized fielding of CS 13.

A year into this process, we have not answered every question about the network. What we do know is that the Army has found a way to buy, test, and deliver a network that is faster and more cost-effective and significantly boosts industry involvement.

By expanding the network to lower echelons, we will empower the company commander and enable information sharing from the farthest edges of the battlefield to the battalion command post. Soldiers on the ground will gather

intelligence and pass it to their leaders in real time, supporting decisive action. Whatever the mission or theater of operations, this robust tactical communications network will be essential to the Army's success. The NIE will get us there.

For more information on the NIEs and the Agile Process, including opportunities for industry to participate, visit <http://www.bctmod.army.mil>.

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UPGRADING COMMUNICATIONS

Increased bandwidth to battalions is part of Phase 1 capabilities fielded for the C5ISR Operational Needs Statement (ONS), to upgrade satellite communications to tactical users. Here, members of 1st Battalion, 26th Infantry Regiment, 3rd Brigade Combat Team, 1st Infantry Division, Task Force Duke set up a tactical satellite antenna to facilitate long-range communications in support of *Operation Steel Rain* near a village in Tirzaye District, Afghanistan, Sept. 24, 2011. (U.S. Army photo by 2LT James Hodges.)

KEEPING WATCH

Integrated, multiagency C5ISR effort extends aerial layer for improved protection of operating bases in Afghanistan

by COL Matthew Schnaidt, Terry Claussen, and Keith Konop

During spring 2010, Coalition Forces encountered a high level of insurgent activity. Commanders on the ground were faced with the challenge of providing persistent situational coverage of critical U.S., Coalition, and host nation areas throughout Afghanistan. In developing a solution, the Army sought to apply valuable lessons learned during *Operations Iraqi Freedom* and *New Dawn* in force protection and intelligence, surveillance, and reconnaissance (ISR).

In Iraq, the Army introduced a class of capabilities that put sensors onto various towers and aerostats. These systems provided a situational understanding for ground commanders by using a persistent stare capability. In light of the operational success of these systems in Iraq, similar investments were made in *Operation*

Enduring Freedom (OEF). Today, almost every operating base of significant size has one or more of these ISR and force protection platforms providing overlapping, persistent, day-and-night overwatch of our bases, forces, allies, and the Afghan people.

To further leverage fielded ISR systems, the Army decided in May 2011 to add capabilities. The newest of these is part of the Coalition Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C5ISR) Quick Reaction Capability, which provides an Aerial Layer Network Extension initial operational capability (IOC), among several other capabilities.

The Aerial Layer Network Extension provides improved sensor and communications networking among forward operating bases and combat outposts in

Afghanistan so that our forces can communicate and access network resources across widely dispersed areas and challenging terrains.

This Operational Needs Statement (ONS) is being met by reconfiguring Program Executive Office Intelligence, Electronic Warfare, and Sensors (PEO IEW&S) host platforms, primarily the Rapid Aerostat Initial Deployment towers and Persistent Threat Detection aerostats. The primary mission for these assets will remain ISR collection and force protection; however, once the C5ISR radios and network solution sets are deployed on elevated platforms, they instantly extend communication links. Thus, the Army will be able to distribute critical data, including biometrics and full-motion video, to lower operational levels in real time, across the country.

A SYNCHRONIZED RESPONSE

The C5ISR ONS was developed in summer 2010. U.S. Forces – Afghanistan (USFOR-A), Task Force 236 from U.S. Central Command (CENTCOM), and the Army's G-3/5/7 LandWarNet Directorate were flooded with ONSs from across Afghanistan's regional commands. Some of the ONSs requested specific vendor solutions to various command and control (C2) and terrain-related challenges; others asked for broader or more general capabilities. These teams realized that fulfilling these requirements in a piecemeal fashion was likely to result in an expensive, suboptimal, and fractured architecture. Instead, the team developed the C5ISR ONS, which grouped related capabilities under a single, phased requirements document.

Initially, the acquisition approach for satisfying these requirements was business as usual. Once validated, each of the sub-capabilities in the C5ISR ONS was executed by the Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASAALT) project manager most capable of fulfilling that requirement.

This approach was beneficial in providing a well-scoped, focused requirement to the team with the appropriate expertise in that area. However, this became a disadvantage because the requirements team had produced an integrated, mutually supportive requirements document, while the acquisition team was pursuing an uncoordinated, material solution approach. The Aerial Layer Network

Extension capability required extensive integration of products across several project managers, but the acquisition team did not have a framework from which to achieve this.

The challenge was resolved in April 2011, when ASAALT issued a directive assigning the acquisition lead for C5ISR ONS execution to PEO IEW&S, with PEO Command, Control, and Communications – Tactical (PEO C3T) as the principal supporting PEO.

“Soldiers at the tactical edge of the battlefield are a deciding factor in defeating our adversaries. This synchronized response to the C5ISR Operational Needs Statement will empower them through the

AEROSTAT DETECTORS

Program Executive Office Intelligence, Electronic Warfare, and Sensors is reconfiguring host platforms to meet a C5ISR ONS. These include Persistent Threat Detection aerostats, with C5ISR radios and network solution sets. Here, a Persistent Threat Detection System (PTDS) is docked for general maintenance at Kandahar, Afghanistan, June 15, 2011. The PTDS provides force protection, counter-improvised explosive device detection, and intelligence, surveillance, and reconnaissance (ISR) capabilities. (Photo by SGT Ruth Pagan.)



timely exchange of voice, video, and data, so they can effectively meet their commander's intent," said Bill Sverapa, Deputy PEO C3T.

THE CHALLENGE: INTEGRATION

The desired level of integration was the most significant of several unique challenges posed by the C5ISR ONS. The integration requirement existed at two levels, the first involving the five capabilities being fielded in Phase 1 of the execution, listed here with the project managers (PMs) responsible for them:

- *Secure compartmented information to battalion*, which allows for the dissemination of highly classified information to a much lower tactical echelon than previously possible; thus time-critical information can reach the tactical operator (PM Warfighter Information Network – Tactical (WIN-T) Increment 1).
- *Increased bandwidth to battalion*, a significant upgrade to existing satellite communication capabilities fielded to tactical users, with the ability to more than double the available data throughput without requiring new hardware or additional spectrum, thus greatly improving the connectivity of tactically disadvantaged operating bases (PM WIN-T Increment 1).
- *Regional broadcast capability*, which allows one-way broadcast of large data files, full-motion video, or other bandwidth-intensive applications; frees up the C2 network from congestion caused by these pushes; and avoids the need to ferry disks around the battlefield (PM WIN-T Increment 1).
- *Full-motion video*, a two-part capability that takes the stovepiped analog video from ISR and force protection video sources and encodes it so that it is routable on the C2 network, along with the line-of-sight network capacity



TOWERING OVERWATCH

In Iraq, the Army introduced sensors on towers and aerostats to improve force protection and ISR, providing better situational understanding for ground commanders. In light of the operational success of these systems in Iraq, similar investments were made in *Operation Enduring Freedom*. Here, a Rapid Aerostat Initial Deployment tower, which is part of the Base Expeditionary Targeting System of Systems – Combined, is raised on a base in Afghanistan to provide fully integrated views of multiple points. (U.S. Army photo.)

to carry this and other traffic. The capability allows the commander to view video from supporting ISR and force protection assets (PM Night Vision/Reconnaissance, Surveillance, and Target Acquisition (NV/RSTA)).

- *Aerial Layer Network Extension IOC*, installation and integration of tactical and high-bandwidth networking radios onto existing elevated, persistent ISR and force protection platforms, improving the range of tactical radios and connecting otherwise disadvantaged operating bases with high-bandwidth tactical networking capabilities (PEOs IEW&S and C3T).

COORDINATED PLANNING

The integration, fielding, and logistical coordination of multiple material solution sets, managed by multiple PEOs, seemed to be a daunting task. The first step was to use a simple yet effective tool for achieving integration and clarity of purpose—weekly secure teleconferences initiated by Team C5ISR.

This venue brought together numerous representatives from the C5ISR core team, as well as PM WIN-T, PM NV/RSTA, Army Staff, ASAALT, Army G-3/5/7 LandWarNet, CENTCOM Task Force 236, International Security Assistance

Force Joint Command CJ6, USFOR-A CJ6 and ASAALT (Forward), and *OEF* Regional Commands South and East. This collaborative environment allowed for the frank discussion of requirements, logistics, installation plans, and capabilities, and greatly improved both understanding and support of the C5ISR execution while enabling the rapid resolution of integration issues.

The second major integration challenge existed within the Aerial Layer Network Extension. Executing this capability required testing, design, manufacture, and deployment coordination, along with support of three different platform PMs, including one external to the Army, and five different radio providers. After several weeklong sessions with CENTCOM, G-3/5/7, platform PMs, and theater representatives, the team developed a baseline, high-level aerial layer architecture, which dictated the radio capability and platform to be provided and where they would be fielded. Additionally, the team performed in-depth technical and design reviews, with each platform owner ultimately producing a site-specific bill-of-materials-level design for each site.

These marathon sessions with all key stakeholders were paramount to the initial planning phase. They resulted in not only a detailed design for test, but also a bill of materials for ordering and the input to provide a detailed cost estimate, which gained quick buy-in from DA staff. In parallel, the U.S. Army Communications-Electronics Research, Development, and Engineering Center (CERDEC) Space and Terrestrial Communications Directorate team led multiple iterations of testing at Yuma Proving Ground (YPG), AZ, and produced an Aerial Layer Assessment documenting the safety, performance, and recommended path forward for the integrated material solutions.

“The YPG Aerial Layer Assessment laid the foundation for the material solutions. ... We learned a lot about how to integrate communication payloads on what were traditionally ISR platforms,” noted Henry Muller Jr., Director, CERDEC Intelligence and Information Warfare Directorate. “The success of these integration efforts added the much-needed technical credibility this newly formed team leveraged to garner Army Requirements and Resourcing Board [AR2B] approval and funding to execute the IOC phase of the Aerial Layer Network Extension effort.”

FIELDING PREPARATIONS

Preparation for fielding the C5ISR solution took place in multiple steps. First, the product director teamed early with the Training Support Division (TSD) of the U.S. Army Communications-Electronics Command to build a deployment and training approach. The approach included three distinct deployment teams operating independently, with the requisite skill sets, to facilitate installation and training at the sites identified in the IOC list.

The TSD staffed these teams in time for their participation in several of the testing events at YPG; the results were then integrated with the team’s training in preparation for deployment. This rehearsal, known as the Yuma Proving Ground Training Culmination Event, provided the team members with the hands-on experience of integrating the radios onto the platforms and into the network at the one place outside of *OEF* where this was possible.

Next, a team went to *OEF* several months before the aerial layer deployment, to pave the way with the staffs for the deployment as well as to facilitate the ongoing fielding ahead of the other four C5ISR capabilities. “This ONS was too important to us not to have a strong leadership

presence downrange, before and during the fielding cycle,” noted BG(P) Harold J. Greene, Program Executive Officer IEW&S. “The forward C5ISR team that we deployed is still paying dividends, as the rotating forces and theater leadership depend on them to educate and reinforce the benefits that the C5ISR gear brings to the fight.”

CONCLUSION

Team C5ISR is currently fielding all five capabilities across each of the regional commands. Fielding of the Aerial Layer Network Extension began in November 2011, just six months after Army Staff approval and receipt of AR2B funding. We are well-positioned to take on several post-IOC efforts once the initial fieldings have been completed this summer.

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PEO GCS is working to:**

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- 2 Replace** the M113 FoV to increase force protection, mobility and network capabilities
- 3 Improve** the Abrams tank, Stryker FoV, and Bradley FoV to increase space, weight and power, and enable integration of the emerging network

A NEW GENERATION

The next family of vertical lift aircraft begins to take shape in a unified effort of DoD, the military services, industry, and academia

by David J. Weller



MODERN ROTORCRAFT

An AH-64D Apache Block III, the Army's newest version of its premier attack helicopter, sits on the tarmac at dawn just before a traditional Apache sacred blessing on Nov. 2, 2011, at the Boeing Apache production facility in Mesa, AZ. (Photo by Sofia Bledsoe, Program Executive Office (PEO) Aviation.)

The DoD aviation force is unbalanced and becoming more so. Our fighter aircraft, the best in the world, are being replaced by sixth-generation capabilities. However, we are still flying third-generation vertical lift platforms designed nearly 50 years ago during the Vietnam War era.

The heavy demand on vertical lift assets in the current military engagements, compounded at times of extensive humanitarian assistance or disaster relief, leads to the question: Is it time to invest in improving our vertical lift technology? This question has been raised several times within DoD. Now Congress has asked the question and has expressed concern about the state of rotorcraft technology.

DoD has undertaken a major Joint effort to define a new fleet of vertical lift aircraft for 2025 and beyond. This is not the first time the department has undertaken such a task, but this effort, in particular,

represents an opportunity for success. The need for vertical lift has been solidly demonstrated in both peacetime and wartime activities. However, the aircraft of today were designed for a much different environment than we can expect to face, and their capabilities are not entirely up to all of the tasks they are called upon to do.

VERTICAL LIFT IMPROVEMENT

In early 2008, the Congressional Rotorcraft Caucus wrote a letter to the Secretary of Defense (SecDef) voicing concern about the lack of a strategic plan for improving the state of vertical lift aircraft and the related U.S. industrial base. On May 21 of that year, the SecDef directed the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics and the Joint Staff to begin supporting analysis efforts, specifically by leading development of a capabilities-based assessment (CBA) that would outline a Joint approach to the

future development of vertical lift aircraft for all the military services.

This effort was subsequently called for in Section 255 of the *Duncan Hunter National Defense Authorization Act for Fiscal Year 2009* (online at http://www.dod.gov/dodgc/olc/docs/2009NDAA_PL110-417.pdf). The SecDef and the Chairman of the Joint Chiefs of Staff were directed to submit a report to the congressional defense committees that would:

1. identify critical technologies and a technology road map.
2. include a detailed science and technology (S&T) plan and identify the resources required to implement the plan.
3. include a strategic plan.
4. detail a plan to establish a Joint Vertical Lift Aircraft/Rotorcraft Office based on lessons learned from the Joint Advanced Strike Technology Office.

IDENTIFYING GAPS

To conduct the CBA, a Future Vertical Lift (FVL) Capabilities Working Group, S&T Working Group, and a Strategic Plan Working Group were tasked. The FVL working groups were Joint, including representatives from all the military services, the Joint Staff, the U.S. Transportation Command, U.S. Special Operations Command, U.S. Coast Guard, and NASA. The working groups developed the three major parts of the DoD Strategic Plan for Future Vertical Lift Aircraft in parallel.

The CBA identified 55 capability gaps in documented service missions. A set of required platform attributes emerged during the solutions analysis of those gaps, which led to the conclusion that materiel solutions were required to mitigate most of them.

Modified JMR Performance Ranges

Figure 1

Modified JMR Performance Ranges (Aug 11 JMR WG)					
	Light	Med-I	Med-II	Heavy	Ultra
Speed	>170-300+ kts	>170-300+ kts		170-300+ kts	300+ kts
Combat Radius	424 km	424 km		462 km	~462 km
Payload (Int)	2.5k+ lbs	5k lbs	Up to 20k lbs	20-30k lbs	~40-72k lbs
Payload (Ext)	2.5k+ lbs	Up to 12.5k lbs	Up to 23k lbs	30k lbs	~40-72k lbs
Passengers	6	13	18-24	33-52	~100-120

DESIRED PERFORMANCE ATTRIBUTES

One platform cannot address all of the identified capability gaps in the Joint Force's ability to perform current and projected vertical lift tasks, from heavy cargo transport to light reconnaissance and attack missions. Figure 1 shows desired attributes for each of four weight classes of vertical lift platforms, grouped by payload capability—light, medium, and heavy lift variants, plus an ultra-class category designed for a new fleet of super-heavy lift aircraft. (SOURCE: PEO Aviation.)

In addition, the analysis supported the conclusion that one platform could not address all of the identified capability gaps in the Joint Force's ability to perform current and projected vertical lift tasks, from heavy cargo transport to light reconnaissance and attack missions. The need for four classes of vertical lift platforms, grouped by payload capability, was evident in order to deal with the variety of missions. Figure 1 (see Page 35) shows the top-level attributes for each weight class that were identified from the CBA effort.

The classes do not imply that there will be only four future platforms. Service-unique needs could be met by tailored variants within each class. While the Joint Multi-Role program initially will focus on medium-lift options, the overarching efforts span four classes of future aircraft, including light, medium, and heavy lift variants, and an ultra-class

category designed for a new fleet of super-heavy lift aircraft. The ultra-class aircraft, described as a C-130 type of transport aircraft, will lift, transport, and maneuver large vehicles around the battlefield, such as Strykers and Mine Resistant Ambush Protected vehicles. It is part of an Army-Air Force collaborative planning effort, led by the Air Force, called Joint Future Theater Lift.

SUPPORTING STUDIES

The CBA, supplemented with details of a strategic plan, an S&T plan, and a plan for Joint management, was packaged in the *FVL Report to Congress*, forwarded on Aug. 26, 2010.

Another key document provided to Congress was the *Study on Rotorcraft Survivability*, forwarded on Oct. 5, 2009. That document and the associated study address congressional concerns about rotorcraft accidents and the

loss of aircraft and lives. Including all causes, the Nation has lost more than 580 Americans and more than 400 rotorcraft since the start of combat operations in Afghanistan in October 2001.

Somewhat surprisingly, the study showed that most of the accidents were due not to hostile fire but to nonhostile factors such as the loss of situational awareness, visual environments degraded by sand, dust, or other obscuring conditions, and controlled flight into terrain. The continuing loss of critical assets for these causes could be mitigated by a new focus on and investment in advanced technologies.

UNITED EFFORT

As a result of these activities and in concert with the FVL strategy development, DoD established an initiative to improve the long-term state of military vertical lift aircraft and the U.S. vertical lift industrial sector. More than 80 representatives of industry and academia assembled in a Vertical Lift Consortium (VLC) to partner with DoD. The VLC provides a needed opportunity to accelerate and leverage the development of contributing technology and its transition into practical applications more quickly and at a lower cost.

Development and fielding of the next-generation family of aircraft depend on the capabilities of the U.S. technology base to design, mature, deliver, and sustain these aircraft. U.S. vertical lift industry members, using independent research and development funding, can aid technology development in this sector. This initiative provides uncommon unity of effort and focus of both DoD and industry, reducing redundancy and collaborating on identified areas of greatest need. The anticipated publication of the DoD Strategic Plan for Future

ESTABLISHING THE NEXT GENERATION

The Army is working on the next generation of vertical lift aircraft to replace third-generation platforms that have been flying since the Vietnam War. Pictured is the CH-47A model, the first Chinook helicopter, manufactured in 1961. The Chinook took flight for the first time on Sept. 21 of that year, and the U.S. Army took delivery of the aircraft in August 1962. The aircraft has been used heavily since the Vietnam War for military and humanitarian missions as a cargo and personnel transporter. (U.S. Army photo.)



Joint Future Vertical Lift Configuration Selection Candidates



DESIGN OPTIONS

These conceptual renderings show potential future configurations of Joint Multi-Role aircraft. A main focus of the ongoing science and technology effort is to look at ways of increasing speed without sacrificing the ability to hover. (SOURCE: PEO Aviation.)

Vertical Lift Aircraft will focus resources on high-priority areas.

Since the delivery of the *FVL Report to Congress*, significant and concrete activity continues to ramp up. The Army, as the lead service for this Joint effort, is heading the development of a Joint Initial Capabilities Document with a target date of spring 2012 for staffing. This effort is informed by a design tradeoff analysis being conducted by a Joint team of DoD aircraft preliminary designers.

To complement the DoD concept design effort, the Army has awarded four configuration trades and analysis (CT&A) contracts to Boeing, Sikorsky Aircraft Corp., the Bell-Boeing Team, and the AVX Aircraft Co. These four efforts will perform design trades using the same set of attributes as those used by the DoD team, to ensure that both industry and the government understand the potential solution space to address the capability gaps identified in the CBA process.

In addition, the Army has focused its aviation S&T effort toward a Joint Multi-Role Technology Demonstrator program, with plans to develop two flying demonstrators for first flights in the 2017 timeframe. This involves a major funding commitment for aviation S&T. At the end of the CT&A phase, contracts will be awarded to build actual flying demonstrator platforms to mature the critical technology enablers defined during the CT&A effort.

These will be the first DoD vertical lift demonstrators developed since the Army/NASA XV-15 in 1977.

A similar effort, focused on the mission systems for the next-generation vertical lift platforms, is being defined for initiation in FY12. Mission equipment demonstrators will be integrated into the platform demonstrators, with a targeted first flight of the complete demonstrator air vehicle in the FY19 timeframe.

Finally, the Army's Program Executive Office (PEO) Aviation and the Navy's PEO Air Anti-Submarine Warfare, Assault, and Special Mission Programs are collaborating to develop an acquisition strategy for a potential new Joint program to develop and field the next

generation of vertical lift aviation in the 2030 timeframe.

CONCLUSION

Current helicopters, derived from a previous generation of design and technology, have been critical to the success of our Soldiers and our Nation in ongoing operations. However, they were designed for a different type of warfare than we expect to face in the next 50 years.

Analysis of the growing contribution of vertical lift aircraft to the combat environment establishes the need for a new generation of aircraft. The community of government and industry vertical lift leaders is ready to support and execute a strategic plan focused on that goal.

Delivering the next generation of vertical lift capability is a moral obligation to our Soldiers and the Nation. The time is right.

For more information, go to <http://www.army.mil/article/70641> and <http://live.usaasc.info/access-pentagon-army-developing-next-generation-helicopter-fleet>.

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**SUPPORTING OUR JOINT WARFIGHTER,
FIRST TO THE FIELD... LAST TO LEAVE**

ON THE WATER FRONT

Army Watercraft Board of Directors forges
united path forward for unique capability

by Shannon Tighe, Bill Good, and Ashley Givens



TRANSPORTATION WORKHORSE

The Logistics Support Vessel (LSV) has both bow and stern ramps, which allow for expedited loading and off-loading. The LSV can transport up to 24 M1 Abrams battle tanks. (U.S. Army photo.)

The second quarterly Army Watercraft Systems (AWS) Board of Directors (BOD) meeting was held Jan. 18 in Warren, MI, to chart the course of AWS, a capability like no other in the Army.

“The forum served and will continue to provide us with a path forward for key leaders to help shape common objectives for the Army watercraft fleet. It will enable us to share real-time information on critical issues and challenges, as well as to make key decisions to ensure timely and efficient life-cycle management of the AWS fleet,” said Kevin Fahey, Program Executive Officer Combat Support and Combat Service Support (PEO CS&CSS).

The AWS BOD consists of seven core members and nine supporting member organizations, representing Army leadership, integrators, program managers, and developers. In December 2010, DoD Directive 5100.1, *Functions of the*

Department of Defense and Its Major Components, revalidated the specific mission and functions of Army watercraft systems. Building on that foundation, an Army Watercraft Systems Life Cycle Management Strategy was developed and signed by the BOD co-chairs, Fahey and COL(P) Stephen Farmen, Army Chief of Transportation, in July 2011.

“It is vital for all of the stakeholders to be on the same page ... to ensure that Army watercraft receives the proper attention and funding [and that] the fleet remains healthy across the board. This is what makes the BOD so important,” Fahey said.

Product Director Army Watercraft Systems (PD AWS), reporting to PEO CS&CSS’ Project Manager Force Projection, shared critical fleet portfolio information with PEO CS&CSS and the Chief of Transportation, highlighting that many of the vessels were well beyond their estimated useful service life and were growing more costly to sustain.

PD AWS recommended several courses of action to reverse this trend.

Additionally, the Army watercraft community provided information on lessons learned from current operations, future force requirements, Army Force Generation equipping strategies, and impacts based on the Army’s strategic priorities. Also discussed were maintenance and sustainment opportunities, emerging and future requirements, and the prioritizing and execution of critical tasks ahead.

UNIQUE CAPABILITY

“Every top-level Army strategic document calls for an expeditionary capability, austere access capability, and the ability for the joint ground force commander to overcome or bypass degraded infrastructure in an AOR [area of responsibility]. This is no surprise to Army Mariners; these capabilities are what Army watercraft have always brought to the table and will continue to bring to the future Army,” said CW5 Michael Wichterman, Chief

“EVERY TOP-LEVEL ARMY STRATEGIC DOCUMENT CALLS FOR AN EXPEDITIONARY CAPABILITY, AUSTERE ACCESS CAPABILITY, AND THE ABILITY FOR THE JOINT GROUND FORCE COMMANDER TO OVERCOME OR BYPASS DEGRADED INFRASTRUCTURE IN AN AOR [AREA OF RESPONSIBILITY].”

Warrant Officer for Combined Arms Support Command.

The Logistics Support Vessel (LSV) class is the largest watercraft in the Army fleet. It is designed to provide the Army with heavy sustainment lift capability, delivering combat vehicles and military cargo within a theater of operations and performing tactical resupply missions to remote underdeveloped coastlines and inland waterways. The vessels are equipped with both bow and stern ramps, allowing for expedited loading and off-loading.

The LSV's cargo deck, with a payload capacity of 2,000 tons, can

accommodate any vehicle in the Army's inventory and has the capability to transport up to 24 M1 Abrams main battle tanks, or up to 50 double-stacked 20-foot ISO containers.

CONSOLIDATING UPGRADES

When the LSV class was first fielded by the Army in 1988, it had an expected service life of 26 years, or until FY14. In 2007, PD AWS began to modernize six LSV-1 class vessels of the eight-ship LSV fleet, extending their service life to FY24. The two remaining LSV-7 class vessels required no Service Life Extension Program (SLEP), having been fielded more recently.

MOVING VEHICLES

The LSV cargo deck can accommodate any vehicle in the Army's inventory. Here, SSG Eric Lehman, a boatswain assigned to the 163rd Transportation Detachment, loads a Heavy Expanded Mobility Tactical Truck onto an LSV at Waipio Port, HI, Jan. 26, 2011. (Photo by SGT Karl Williams, 25th Combat Aviation Brigade Public Affairs.)



The 10-year SLEP allows the LSV platform to remain relevant, and to remain the Army's in-theater workhorse when it comes to moving large amounts of cargo and equipment.

Given the importance of the LSV's mission and the high operations tempo in theater, removing just one of the eight LSVs from the battlefield has a huge impact.

"Army watercraft is unique; you can't pull them out of the fight and reset them like you would a tactical wheeled vehicle," Fahey said. "The Army has tens of thousands of HMMWVs, so we can modify a certain amount without impacting the mission. Since the Army's fleet of watercraft has such a low density, losing just one vessel to a SLEP effort can cause the entire fleet to become overtaxed."

When we develop our SLEP acquisitions, we develop a strategy and execution plan to maximize the improvements made in the shortest amount of time possible, all within an affordable solution.

To accomplish this, PD AWS worked with partners from the TACOM Life Cycle Management Command's Integrated Logistics Support Center to combine on-condition cyclic maintenance (OCCM) with the SLEP modernization effort. LSV4 LTG William B. Bunker, for example, recently completed an extensive nine-month combined OCCM and SLEP. This approach reduced the overall impact to the operational schedule and minimized the costs of the combined OCCM and SLEP program. During the SLEP, PD AWS conducted major engine overhauls, hull and structural metal replacements, and other modifications while the LSV4 was in dry dock.

Other LSV SLEP improvements included major vessel modifications such as the addition of robust navigation and communication hardware and software upgrades, and installation of a new common operating picture system and Secret Internet Protocol Router Network. A man-overboard detection system was also added, as well as force protection upgrades including new MK93 gun mounts, ballistic shielding, and body armor stowage.

Engineering system improvements in the SLEP included overhauling the main propulsion, generator, and bow thruster engines, along with refurbished propellers and shafts. Additional installations incorporated a new dual 50-ton air-conditioning system and a new shipboard electrical power management system. Topside and quality-of-life improvements also were made, such as galley and mess refurbishment, additional berthing, laundry facility upgrades, and the relocation of sick bay and the machine shop.

LONG-TERM IMPACTS

“Army watercraft systems are complex, and they require both immediate and long-term investment to be fully capable of meeting today’s and tomorrow’s mission requirements. From a strategic perspective, the Army must invest in long-term capabilities to provide the combatant commanders with the equipment they need to move, reposition, and sustain the force,” Farman said.

Army watercraft life-cycle management requires more than just selected SLEP programs to be healthy. It requires a strategic investment in select craft to modernize the existing fleet throughout its life cycle. In the long term, the Army must procure replacements for current platforms that have reached the end of their useful lives.



9 MONTHS OF WORK = 10 MORE USEFUL YEARS

LSV4 ITG William B. Bunker returned to the Army watercraft fleet in November 2011 after successfully completing its six-month on-condition cyclic maintenance and three-month Service Life Extension Program (SLEP), which added 10 years of useful life to the vessel. During the SLEP, Product Director Army Watercraft Systems conducted major engine overhauls, hull and structural metal replacements, and other modifications in parallel while the LSV4 was in dry dock. (U.S. Army photo.)

At the next BOD meeting, scheduled for April, the group plans to use an Army Campaign Plan approach to ensure that desired end states and lines of effort for Army watercraft are synchronized and aligned to achieve desired goals. The Watercraft Campaign Plan is being developed with input from BOD members to help ensure that it is relevant and that actions are accomplished in a timely manner.

CONCLUSION

Army watercraft systems provide unique and critical capabilities that support full-spectrum land operations by extending ground commanders’ maneuver battle space. By employing an organic watercraft fleet, commanders can use multiple entry points, allowing them to achieve momentum while reducing their predictability and vulnerability.

With the oversight of the BOD, Army watercraft will continue to be a significant asset on the modern battlefield.

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LEARNING UNDER PRESSURE

PM ODI builds on experiences in Iraq and Afghanistan
to adapt and improve on numerous fronts

by LTC(P) Moises M. Gutierrez

MISSION FOR MARSS

Several variations of the Medium Altitude Reconnaissance Surveillance System (MARSS), such as this one at Kandahar Airfield, Afghanistan in May 2011, have provided thousands of hours of reconnaissance and surveillance to U.S. and Coalition Forces. MARSS, which combines multiple intelligence capabilities, including imagery intelligence, measurement and signature intelligence, and geospatial intelligence, has been deployed for eight consecutive years. MARSS is the most prolific of the systems supporting TF ODIN. (Photo courtesy of Program Executive Office Intelligence, Electronic Warfare, and Sensors (PEO IEW&S).)





As the Army's leading provider of Quick Reaction Capability (QRC) Aerial Intelligence, Surveillance, and Reconnaissance (AISR), Product Manager Observe, Detect, and Identify (PM ODI) has met remarkable logistical and operational challenges in deploying, fielding, and operating its systems. The challenges included condensed timelines, widely dispersed remote locations, personnel instability, unrefined operational requirements, multiple contracts, and limited resources.

To address or mitigate some of these unique challenges, PM ODI—assigned to Project Manager Airborne Reconnaissance and Exploitation Systems (PM ARES) under the Program Executive Office Intelligence, Electronic Warfare, and Sensors—focused on five areas of improvement:

1. Organizational design—To function at a very fast pace in an acquisition environment requiring a uniquely agile, expeditionary, and intensive hands-on approach, PM ODI migrated from the traditional functional/matrix staffing design to a demand-driven combination of military and Army civilian staff, in addition to an agile set of systems engineering and technical assistance (SETA) contractors, external subject-matter experts (SMEs), and provisional hires.
2. Cross-PM supply chain management—We surveyed the battlefield for other agencies in the same line of business. This summer, PM ODI will take on cost-sharing agreements with other product management offices on common payloads, communications equipment, and similar logistical requirements.
3. An umbrella sustainment contract—The current multiple platform sustainment and operations contracts are inefficient and costly to manage.



A GROWING ROLE

TF ODIN, to which Product Manager Observe, Detect, and Identify (PM ODI) has provided Quick Reaction Capability Aerial Intelligence, Surveillance, and Reconnaissance (AISR) support over the past nine years, has seen its role grow as the preeminent AISR unit in theater, with a significant increase in operations tempo. PM ODI learned that increased numbers of spare parts are necessary to maintain TF ODIN's current 96 percent mission-capable rating. Here, a maintenance contractor provides flight operations support to TF ODIN in Kandahar, Afghanistan, in 2011. (Photo courtesy of PEO IEW&S.)

4. Transition from *Operation New Dawn* (OND) to *Operation Enduring Freedom* (OEF)—The transition was a logistical mountain to climb. There were no contractual vehicles or means to deactivate or redeploy systems. We learned that technical refreshes or equipment retrofits are almost impossible as a theater of operation is closing out.
5. Operational readiness—All of the PM ODI AISR platforms are commercial derivatives that require precise scheduled and unscheduled maintenance and have high operations readiness rates in a time of high operations tempo (OPTEMPO). In this environment, we learned that we had to carry an abundance of parts and hire additional maintainers.

These five lessons are the tip of the iceberg. PM ODI could share many more across the Army, some unique and some very common.

SUPPORTING INTELLIGENCE GATHERING

Over the past nine years, PM ODI has provided QRC AISR support directly to Task Force Observe, Detect, Identify, and Neutralize (TF ODIN), an aerial exploitation battalion that conducts intelligence-gathering missions to detect and combat insurgents, and to provide wide-area persistent surveillance and pattern-of-life analysis to battlefield commanders. The systems supported by PM ODI have been deployed in support of OEF and OND as well as in missions for U.S. Special Forces and the U.S. Department of Homeland Security.

PM ODI provides full life-cycle support for each system by acquiring and developing and/or integrating new capabilities; training operators; and providing deployed operations, sustainment, and maintenance services, to include contractor pilots,

sensor operators, maintainers, and augmented SETA logistics personnel.

Previous major acquisition and deployment initiatives include the Airborne Reconnaissance Multi-Sensor System, an intelligence-gathering aircraft; Highlighter, a high-resolution detection platform; Constant Hawk, a wide-area persistent surveillance system; and the Medium Altitude Reconnaissance Surveillance System, the most prolific of the TF ODIN systems, which combines multiple-intelligence capabilities in addition to processing, exploitation, and dissemination capabilities.

STREAMLINING THE ORGANIZATION

As ongoing operations in *OEF* and *OND* evolved, the requirement for manned aerial intelligence-gathering capabilities grew rapidly. TF ODIN's role as the pre-eminent AISR unit in theater has grown as well with a significant increase in OPTEMPO; PM ODI is charged with supporting the capability surge.

To meet this challenge, first we had to organize properly for combat. PM ODI staffed not by the traditional matrix/functional method but by a demand-driven SME cadre, agile SETA support, and provisional hires to support the asymmetric demands of fielding and sustaining operations in wartime. We organized according to the demands of the contract. For example, the sensor operator workstations had to be developed from scratch, and we had no one in the government to lead this development. So we went to industry and hired the right engineers and integrators to provide this support.

In addition to our robust SETA support structure, PM ODI partnered with various Federally Funded Research and



MAINTAINING MISSION CAPABILITY

PM ODI has provided Quick Reaction Capability AISR support directly to TF ODIN, which conducts intelligence-gathering missions to detect and combat insurgents, and to provide wide-area persistent surveillance and pattern-of-life analysis to the battlefield. Here, SFC Shawn Perkins, Operations NCO and Aerial Sensor Operator with the 306th Aerial Exploitation Battalion, TF ODIN – Afghanistan, checks components of the collection equipment before boarding the mission aircraft on Oct. 8, 2011, at Bagram Airfield, Afghanistan. (U.S. Army photo by SSG Jack W. Carlson III.)

Development Centers, the U.S. Army Research, Development, and Engineering Command, and industry partners to leverage their technical expertise and systems engineering. This employment approach has succeeded in supporting the asymmetric demands of technical insertions, fielding, and sustaining a mix of contractor-owned and -operated systems along with government-owned and -operated QRC capabilities.

Another streamlining initiative adopted by PM ODI is a cross-PM supply chain management approach to primary mission equipment support. PM ODI, in conjunction with other PM offices, has identified common major subsystems and has conducted reliability and affordability analyses. These have helped define the optimum sparing level based on mission requirements and subsystem maintainability.

The overall goal is to have a forward-deployed maintenance facility that

supports multiple PM offices and resolves 60 to 70 percent of issues on-site. The intention is to share facilities, maintenance labor, and material spare and sustainment parts across the various programs, reducing cost and the maximum time to recovery and providing a higher return on investment as well as higher-quality performance.

The final major strategy is an umbrella contract that encompasses all of the PM ODI programs under a single effort, managed and administered by the PM office. The current multiplicity of contracts, prime contractors, and contracting agencies has resulted in several burdens, including increased administrative oversight to manage the various efforts, increased cost to maintain the programs (because of multiple prime contractors and the need to duplicate material and labor efforts), and administrative inconsistencies across the programs. Working with multiple contracting offices leads to disparate reporting requirements



and performance measurements. By consolidating these programs, the PM office intends to increase efficiency, both administratively and operationally, reduce cost, and ensure consistency.

TRANSITIONING FROM *OND* TO *OEF*

Delivering QRC to theater presents immense logical challenges, as timelines are condensed and resources stretched. As *OND* drew down and efforts focused on *OEF*, PM ODI had even more responsibilities, including deactivating some TF ODIN programs and repositioning others, while maintaining a high OPTEMPO in both theaters of operation.

To meet these challenges, PM ODI conducted a number of relocation initiatives specifically focused on the transition, including refreshing, reconsolidating, resetting, and transitioning equipment, and on managing contractual issues. Deactivation activities entailed demilitarizing equipment, demobilizing material and personnel assets, and contract close-out. Some of the equipment in theater was deemed beyond economical repair or was not worth the cost of transportation; this equipment was turned in to the theater through various programs. Other high-dollar or sensitive items were packaged and transported from *OND* to *OEF* using military or commercial transportation.

For programs that had no follow-on mission, decisions were made on divestiture, transfer, or transportation of equipment back to the original equipment manufacturer or depot. Finally, some programs or portions thereof relocated back to CONUS for reset and technical refreshment before moving onward. In every case, a cost-benefit analysis helped to determine the best course of action for the Soldier and the taxpayer.

SPARE PARTS: MITIGATING RISKS

Because of the quick-response, limited-production nature of its program, PM ODI has had to deal with a number of unique acquisition challenges. One example is the maintenance of adequate spare parts for its systems.

With each system flying an average of 350 to 400 hours per month, PM ODI learned that increased numbers of spare parts are necessary to maintain TFODIN's current 96 percent mission-capable rating. Accomplishing this goal takes a considerable staff of maintainers and logistics support personnel, as well as a large supply of forward-fielded spare parts. If a system goes down, there is little time to wait for a part to be replaced or repaired. To combat these potential part shortages, TF ODIN keeps 40 to 50 percent spare levels of high-usage, high-value, and/or long-lead-time parts on-site, instead of the 30 percent that a typical unit would maintain.

In addition, PM ODI understands that maintaining each of its programs under separate contracts is not optimal with the Contractor Logistics Support (CLS) system. Unlike a program of record, QRCs are unable to use the Army Supply System, whereby spare parts are provisioned and a mature inventory management system is in place; QRCs use CLS instead. Because of contractual limitations, PM ODI has maintained each portfolio program as a separate contract. Each weapon system operates independently, creating spare requirements without factoring in parts availability from other programs, resulting in duplication of material and contractor personnel.

While this has succeeded in maintaining the OPTEMPO and high mission

capability rating, it is an inefficient and, in the long term, unsustainable way to conduct business and a situation to avoid in future programs.

CONCLUSION

PM ODI will continue as a strong provider of the Army's AISR QRC. As operations have evolved, PM ODI has evolved with them and will keep doing so. As its systems have matured, PM ODI has gained deep insight into what it takes to create and sustain a successful AISR program: namely, that multiple high-intensity AISR operations require a significant personnel footprint to operate and maintain the weapon systems.

When evaluating its path forward, PM ODI examined the U.S. Air Force Big Safari program office as a potential model. Big Safari offers a single program office for cradle-to-grave management of the Air Force's QRC special projects. There is no single Army entity that oversees full-system, end-to-end operations for its AISR QRCs. It is PM ODI's long-term vision to become the Army's Big Safari, providing a one-stop-shop QRC turnkey capability for any manned AISR Army initiatives.

For more information on PM ARES and PM ODI, go to <http://peoiews.apg.army.mil>.

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SUPPLY DISTRIBUTION

One of the challenges the Iraqi health care system has faced is a limited ability to disburse supplies before they expire. Here, Soldiers from the 214th Military Police Company help distribute much-needed medical supplies to the Tall Kayf District clinic in Mosul, Iraq, in support of *Operation New Dawn (OND)*, May 3, 2011. (Photo by PFC Aaron Herrera.)





IRAQI HEALTH CARE 911

Crafting a sustainable medical logistics infrastructure for the Ministry of Defense proves critical to rebuilding

by MAJ Edwin H. Rodriguez

In the 1970s, Iraq was at the forefront of health care in the Middle East. The Iraqi government developed a centralized, free health care system by using a hospital-based, capital-intensive model of curative care. The war in 2003 destroyed an estimated 12 percent of Iraqi hospitals and two main public health laboratories.

In 2004, some improvements were made. However, Iraq's supply chain was left significantly crippled, impeding its ability to support and sustain a health care system. Now, nearly nine years after the toppling of Saddam Hussein's government, Iraq's medical supply, distribution, and biomedical maintenance programs are still facing many challenges.

The challenges have included limited funding of medical resupplies; limited automation capability at regional warehouses to help with inventory; limited ability to disburse supplies before

they expire; poor communication between regional warehouses and depots; no medical maintenance program to sustain equipment; and limited access to medical supplies and medical equipment vendors because of local laws and regulations.

THE AFTERMATH OF WAR

In 2003, the Iraqi government was left with an antiquated warehouse infrastructure and a handicapped distribution system. This caused a partial loss of medical stocks and biomedical equipment. All central and government warehouses required extensive repair or replacement, because most of them were aging and were not regularly maintained. The intravenous (IV) fluids warehouse was affected the most.

The supply delivery system was interrupted between March and early June 2003. This increased some of the shortages, particularly at hospitals and health centers in remote



TOWARD A SELF-SUFFICIENT SYSTEM

The Iraqi health care system—including medical supply, distribution, and biomedical maintenance programs—is still facing many challenges but is making improvements after nearly a decade of conflict. Here, an Iraqi Army doctor examines a child during a combined medical engagement and humanitarian aid mission led by the Iraqi Security Forces (ISF). U.S. forces partnered with the ISF to host the event on Sept. 7, 2010. (U.S. Army photo by SSG Tanya Thomas.)

areas. These shortages included commonly used antibiotics, drugs used in anesthesia, anticancer drugs, most laboratory reagents, and medical supplies such as surgical gloves, sutures, surgical blades, IV cannulas, and blood bags. Distribution activities gradually resumed when some contracts previously submitted by the former government were awarded.

The Iraqi government medication production base was almost nonexistent, which exacerbated the shortages. The IV fluid plant in Ninewah completely stopped operating as a result of looting and vandalism. However, the Arab Company for Antibiotics Industries (ACAI)

and Samara Industries were not affected by the war. The ACAI factory resumed activities in August 2003, but the raw materials available were sufficient to maintain production for only one month.

ENABLING SELF-SUFFICIENCY

In June 2004, the Multi-National Security Transition Command – Iraq (MNSTC-I) was established to help the Iraqi government develop capable ministries and adequate Iraqi Security Forces (ISF) that adhere to the rule of law. The establishment of MNSTC-I was a direct response to the need to create a new Iraqi army and to build a new police force using a civilian police assistance team and advisory missions supporting the

Ministry of Defense (MoD) and the Ministry of Interior (MoI).

The U.S. Congress appropriated funding for MNSTC-I to meet its mission of building and supporting the ISF. To assist in distributing this funding, MNSTC-I used nine advisory teams that generated requirements for the ISF. These requirements involved developing the ministerial capacity; arranging training for Iraqi Army and Iraqi National Police forces; and building sustainment efforts to enhance the performance of the ISF.

The health affairs advisory team was tasked with advising the Surgeon General of Iraqi Joint Forces (SGIJF), who

MOST PEOPLE IN THE DEVELOPED WORLD TAKE FOR GRANTED ACCESS TO BASIC HEALTH SERVICES AND THE EXISTENCE OF A FUNCTIONING HEALTH SYSTEM. THE SITUATION IS DIFFERENT IN IRAQ BECAUSE OF FUNDAMENTAL LIMITATIONS IN FUNDING, STAFFING, TRAINING, AND OTHER ELEMENTS OF ESSENTIAL INFRASTRUCTURE.

worked for MoD, and the director of health affairs, who worked for MoI, and their staffs on health care policy, preventive medicine, medical training, medical logistics, and facility planning. The health affairs medical logistics section played a crucial role in the initial distribution of Class VIII (medical materiel) supplies; in the design, development, and equipping of medical infrastructure and logistics systems; and in enabling the ISF to become capable and ready as it moves toward self-sufficiency.

THE BIG PICTURE

The ISF faces discouraging challenges in its efforts to rebuild the shattered Iraqi medical infrastructure. These challenges can be attributed to excessive bureaucracy, a lack of health care professionals, widespread illiteracy, and lack of access to pharmaceuticals and medical equipment.

The shortage of health care personnel in Iraq is the direct result of its three wars since 1980 and years of ethnic persecutions. After June 2003, there was a massive exodus of health care professionals to neighboring nations. This created a huge void in access to care. The Ministry of Health (MoH) adopted an aggressive employment strategy that included a safe work environment, higher salaries, and

an excellent retirement package. The SGIJF was forced to match, and in most cases exceed, MoH benefits in an effort to recruit more clinicians into the ranks.

This prompted extraordinary SGIJF outreach efforts, from recruiting campaigns over the radio to bonuses for highly trained personnel. This endeavor has benefited both MoD and MoI in health care. Trained and proficient human capital is the most important aspect of ensuring that the Iraqis are able to attain true self-sustainment.

The Iraqi Form 101 was meant to streamline the requisition process; however, it still required SGIJF's signature for approval. Such action by itself could take months at a time, thus hindering local commanders' and their surgeons' efforts to replenish their Sets, Kits and Outfits. A complex hierarchy and administrative processes bound by red tape put severe limitations on the ISF's ability to direct, control, and achieve the objectives and requirements from its requesting units and support agencies. Bureaucracy seemed to be the rule for day-to-day operations.

The MoD acknowledged its inability to spend its annual budgets. FY09 budget

expenditures for the SGIJF office did not reach 30 percent of annual funds by the end of the second quarter. In fact, this is one reason MoD provided its Commander's Emergency Relief Program funds to MNSTC-I, so that MNSTC-I could spend MoD money.

Kimadia, the state company managing the importation and distribution of drugs and medical equipment, is the main drug supplier of Iraq. It operates a distribution network of specialized central, governorate, and district warehouses. Kimadia also is the sole legally authorized source for management, planning, selection, quantification, procurement, storage, and distribution of medicines and medical equipment. This restricts the SGIJF and the MoI health affairs director from selecting their own sources of supply at home and abroad.

LAYING A FOUNDATION

Most people in the developed world take for granted access to basic health services and the existence of a functioning health system. The situation is different in Iraq because of fundamental limitations in funding, staffing, training, and other elements of essential infrastructure. It took a joint effort of MNSTC-I, SGIJF, and the MoH to ensure partnering, coordination,

and execution of these initiatives. Several steps must be taken to improve the Iraqi health services system:

- *Create a partnership with Kimadia.* Establishing a strategic alliance between the ISF and Kimadia will enable both organizations to gain a competitive advantage through access to each partner's resources, including markets, technologies, capital, and human resources. This partnership will create a flexible support infrastructure that can

rapidly meet ISF medical supply needs; provide a distribution mechanism that is well represented, both geographically and strategically; reduce cost through a greater pool of suppliers; and standardize supply-chain synergies throughout the country.

- *Train the ISF medical logistics force.* The SGIJF logistics chief has developed guidelines for building and maintaining a comprehensive awareness and training program as part of an organization's medical logistics

program. This guidance is presented in a life-cycle approach, ranging from designing, developing, and implementing awareness and training to post-implementation evaluation. The program includes guidance on how medical logistics professionals can identify awareness and training needs; develop a training plan; and get organizational buy-in for the funding of awareness and training efforts.

- *Establish a biomedical maintenance program.* A planned and

FILLING SUPPLY-CHAIN GAPS

Over the years of conflict in Iraq, medical supply shortages have occurred in commonly used antibiotics, drugs used in anesthesia, anticancer drugs, most laboratory reagents, and medical supplies such as surgical gloves, sutures, surgical blades, IV cannulas, and blood bags. Here, Soldiers from the 214th Military Police Company provide medical supplies to the Tall Kayf District clinic in Mosul, Iraq, in support of OND, May 3, 2011. (Photo by PFC Aaron Herrera.)



well-orchestrated preventive maintenance program consists of regular and repetitive work to keep equipment in good working order and to optimize its efficiency and accuracy. The SGIJF medical logistics office will promote regular, routine cleaning, lubricating, testing, calibrating and adjusting, checking for wear and tear, and eventually replacing components to avoid breakdown. This program includes the proper selection of equipment to be included in planned preventive maintenance. The SGIJF envisions a joint venture with the MoH to train and develop young engineers.

PREVENTIVE MAINTENANCE PERFORMANCE

An important aspect of planned preventive maintenance is the participation and commitment of the users. Preventive maintenance should start with users, and the bulk of the work should be their responsibility. The user must perform preventive maintenance tasks daily, and the user must conduct activities jointly with a technical engineer at the end of each week. Highly technical repairs, which are the engineer's responsibility, may be scheduled every six months.

The SGIJF medical logistics office knows that all equipment in the care of the service workshop should be recorded on cards. All relevant information about the equipment must be entered, including its location, records of repair and maintenance, and manufacturer. A reference number is written on a printed paper label, which is attached to each item. This number is recorded in a ledger of equipment with full identifying details.

Before beginning training, those who are qualified and available to do preventive maintenance must be identified. A list must be drawn up of readily available

personnel. Once the personnel have been listed, specific responsibilities should be assigned, perhaps in the form of a work order, giving clear instructions. Each person should understand his responsibilities. Job assignments must correspond to the training, experience, and aptitude of the individual.

The intent is to have two biomedical technicians per distribution center to assist in day-to-day maintenance. However, the maintenance depot will have the reach-back capability to augment regions on a case-by-case basis. If the MoH hospital staff includes a large number of well-trained, experienced individuals who are familiar with medical equipment, in-service training can easily assist MoD in gaining that technical edge.

IMPROVEMENTS MADE

Improvements have occurred in the form of new policies and procedures that were staffed and published to address operating processes for both the health care field and garrison operations. The policies set into day-to-day use include disposal of regulated medical waste and cold-chain management.

Other improvements accomplished within the warehouse management arena include properly staged oxygen containment, inventory tracking systems, medical unit requisition systems, the introduction of a truck fleet to distribute temperature-controlled medical supplies, and the implementation of wireless and satellite logistics enterprise systems.

CONCLUSION

The challenges facing the SGIJF medical logistics office are large and exceedingly difficult to address. These include a compromised system of expired supplies; poor inventory automation capability in regional warehouses; difficulty

in keeping the SGIJF medical logistics office informed of regional shortages; and a limited range of vendors for resupply.

To tackle these problems, rebuilding the relationship with the different health care organizations and groups in the country is indispensable. The central challenge to this rebuilding does not lie in the repair of the physical and institutional devastation, but in restoring confidence in any political arrangement put in place and in the mechanisms of conflict prevention in general.

The success or failure of Iraq will depend chiefly on whether domestic realities and dynamics are accurately understood and can be translated into a form of governance that sets priorities for health care provided by the Iraqi constituency.

For more information on this topic, contact the author at edwin.rodriguezrosa@us.army.mil.

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PUSHING THE EDGE OF POWER

Army S&T, with industry and academia,
focuses on developing modular, flexible energy
solutions to meet rapidly growing needs

by Dr. Bindu Nair and Kris Osborn

The Army acquisition community has been developing and fielding smaller, lighter-weight power sources and more efficient powered equipment for the past decade. A half-size version of a Soldier Battery (BA 5590) that can last twice as long as the standard battery, and the Advanced Medium Mobile Power Sources, which use 21 percent less fuel than the current Tactical Quiet Generators, are just two examples of the investments in energy technologies that will pay dividends on the battlefield.

As the need for power and energy on the battlefield continues to explode, these efforts alone are not sufficient to get in front of the rapidly growing need. The Army's science and technology

(S&T) community is working vigorously with its industrial and academic partners to develop techniques to address energy challenges at the system and subsystem levels. One important aspect of these development efforts is to examine how power is managed in any given system. To fully understand how power needs to move through a system, we need to understand how to design architectures and develop standards that can assist in handling the energy requirements of the battlefield.

Power management technologies and designs usually rest on understanding the inputs into a device or system and what the power outputs need to be. In Army applications, however, the inputs and the outputs change frequently based on mission, use

MEETING THE DEMAND

SGT Nathaniel Taylor, 161st Field Artillery, Kansas Army National Guard, brushes off a terminal connection to a solar power shade. In spite of dust and mud, the solar shade produced a steady stream of usable electricity over a one-year period in the hot, humid climate of Camp Lemonnier, Djibouti. (U.S. Army photo.)



MUCH LIKE THE RESEARCH EFFORTS CURRENTLY EXPLORING INDIVIDUAL SOLDIER AND INSTALLATION TECHNOLOGIES, THE S&T EMPHASIS ON GROUND AND AIR VEHICLE EXPLORATION IS GEARED TOWARD SYSTEM-LEVEL UNDERSTANDING.

patterns, training, tactics, techniques, and procedures. Therefore, it is critical to understand how to design architectures that could allow us to identify and develop technologies able to advance a more modular approach to the application and distribution of operational energy. We might well find that maximizing the energy efficiency or storage capacity of individual components might not be the most effective solution to powering the battlefield.

THREE AREAS TO CONSIDER

Army operational energy considerations are broadly categorized into three basic areas: the individual Soldier, basing, and vehicles (ground and air). On the Soldier, the key consideration is to reduce the load that he or she must carry. Batteries make up 16 to 25 percent of the Soldier's load. Army S&T has a high-priority program to address how to decrease Soldier load; power management and architecture will be examined as a part of that solution.

For the base camp, there are a variety of efforts to improve power sources, use renewable sources, and reduce the power demands of the equipment. The development of micro-grid architecture that will allow for the effective use of sources and demands is considered a key part

of these efforts. (See related article on Page 72.)

In the area of vehicle power, modernization programs demonstrate improved energy efficiency. S&T demonstration programs are underway to develop vehicle power architectures and corresponding standards. Furthermore, the Fuel Efficient Ground Vehicle Demonstrator (FED) program has given designers and scientists new insights into where energy is lost in vehicles, and is leading to a host of research efforts to minimize these losses. In Army aviation, technology development is closely coordinated among acquisition, S&T, other service partners, and other stakeholders, leading to significant energy efficiencies.

SOLDIER POWER

The capabilities provided to the American Soldier often require power. "Each Soldier has a different mission and therefore has different power requirements. There is a huge range of needs that Soldiers have by way of power," explained Dr. Marilyn Freeman, Deputy Assistant Secretary of the Army for Research and Technology.

"We want to design a power solution that is modular and can accommodate

these differences," she said. "For the next generation of technologies to power the Soldier, we need to think about designing an entire system. A more modular approach for accommodating the individual dismounted Soldier, for instance, is needed to account for a broad range of often-changing power and energy needs."

Current activities in Soldier Power, under the leadership of the Program Executive Office Soldier, have been focused on achieving ever-greater energy densities in power sources. The idea is to develop lighter-weight, smaller, more-easily transportable, longer-lasting battery technologies able to deliver sustained amounts of power more efficiently and with less operational burden. In an excellent example of "technology pull," these metrics from the acquisition community have encouraged the Army's scientists and engineers to develop new battery technologies that are more energy-dense than their predecessors.

These higher-density batteries are achieved by studying different battery chemistries. Lithium ion batteries, used in many consumer electronic products such as computers and mobile handheld devices, have an excellent energy density and a slower loss of charge, compared

with older battery chemistries. Tweaks in the chemistry and the design of the overall battery have led to increased energy densities. Although earlier in the developmental cycle when compared with lithium ion batteries, lithium air batteries are being studied as a means of achieving the next leaps in energy density.

One innovative application of lithium ion batteries, developed by the U.S. Army's Natick Soldier Research, Development, and Engineering Center (NSRDEC), Natick, MA, in conjunction with the Communications-Electronics Research, Development, and Engineering Center

(CERDEC), Aberdeen Proving Ground, MD, is the Soldier Conformal Battery—a thin battery design engineered to align with the contours of Soldier-worn body armor plates. The concept with this application is to increase Soldier mobility and agility by distributing weight around a Soldier's core, thus freeing up space and weight for other essential Soldier gear such as electronics and ammunition. (See related article, Page 12.)

The Soldier Conformal Battery, which weighs less than three pounds and generates up to 16.8 volts over its use

cycle, is guided by the concept of weight distribution.

Also, using lithium ion technology, the Army S&T community improved the energy density of the battery for its widely used handheld, multiband radio, the AN/PRC-148 Multiband Inter/Intra Team Radio; the effort was able to shrink the BA 5590/U military battery to about one-half its former size, weight, and volume while preserving the same amount of power generation.

NSRDEC is also working on high-tech, next-generation concepts aimed at

MANAGING THE SOLDIER'S LOAD

The Army's science and technology community is trying to lighten the Soldier's load with modular, renewable power solutions. The idea is to increase mobility and agility by distributing weight around a Soldier's core. Here, SSG James Wardle (left) and 2LT Raymond Vetter of Task Force 1-71, 172nd Infantry Brigade provide security during a dismounted patrol outside of Forward Operating Base Curry, Paktika Province, Afghanistan, Sept. 20, 2011. (U.S. Army photo.)



integrating power into the fabric of a Soldier's uniform through the use of high-performance fibers. This approach draws upon a cutting-edge form of scientific research known as nanotechnology, which involves the manipulation of microscopic matter on the molecular scale.

"The vision is to provide power on demand for Soldier applications without the weight of the battery or the

mobility restrictions of cables," Freeman said. "In order to get a fiber to be a conducting agent, you have to be able to get all the things that manage power into a fiber. The only way we know how to do that is by making things microscopic or nanoscopic, so there is a lot of nanotechnology that goes into making the fibers. It is worth asking our scientists to think about how we do that."

While S&T certainly supports long-term visions, the S&T community is also providing immediate assistance to the field. CERDEC developed the Rucksack Enhanced Portable Power System (REPPS), a lightweight, portable, blanket-type solar-powered system that can recharge most common military battery types in five to six hours, and the Army has introduced REPPS into the Afghan theater

A STUDY IN VEHICLE EFFICIENCIES

The Fuel Efficient Ground Vehicle Demonstrator is not expected to be a vehicle for procurement. Nevertheless, it has allowed scientists from the U.S. Army Tank Automotive Research, Development, and Engineering Center to understand where the efficiency losses come from in a vehicle. (Photo courtesy of U.S. Army Research, Development, and Engineering Command.)



IT IS CRITICAL TO UNDERSTAND HOW TO DESIGN ARCHITECTURES THAT COULD ALLOW US TO IDENTIFY AND DEVELOP TECHNOLOGIES ABLE TO ADVANCE A MORE MODULAR APPROACH TO THE APPLICATION AND DISTRIBUTION OF OPERATIONAL ENERGY.

of operations through the Rapid Equipping Force.

Consisting of solar panels, chargers, and adaptors, the REPPS kit draws upon a fast-evolving technology known as flexible photovoltaics (PV), solar panels that convert light energy into electricity. The REPPS kit provides Soldiers with mobile, deployable power, removing the need to haul large generators around the battlefield or theater.

While smaller, more powerful batteries are a focus of ongoing research, Army scientists are increasingly concentrating on Soldier power management techniques. CERDEC has demonstrated a Soldier Power Manager that allows a variety of equipment to be connected to a power source (such as the conformal battery) by managing the power draws and conditioning the power. These types of efforts are the first foray into a longer-term look into Soldier architectures that takes into account modularity principles.

BASING POWER

Contingency bases in theater have energy needs that are currently supplied in an ad hoc manner that is not necessarily energy efficient. A large community

across the Army is working to figure out how to reduce the energy requirements of forward operating bases (FOBs) by using tools across the DOTMLPF spectrum (Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities).

Innovative concepts in basing technologies have made the Army a leader in flexible photovoltaics. Photovoltaics harness light energy from the sun and convert it into electricity. Flexible PV products have been developed for use in solar-powered, portable tents and shelters of various sizes and configurations, such as the Power Shade, TEMPER Fly, and QUADrant.

The TEMPER Fly is a roughly 16-by-20-foot tent structure able to generate 800 watts of electricity. A QUADrant is a smaller variant of the TEMPER Fly, able to generate 200 watts of power. The Power Shades range in size and are capable of generating up to 3 kilowatts of exportable electrical power. The PV integrated military shelter items use a lamination process to combine the PV materials into the textile substrate.

Additionally, energy-efficient solutions such as LED (light-emitting diode)

lighting, more efficient field feeding equipment, and higher R-value tent liners can reduce the power needs on FOBs.

As with Soldier Power, these power source innovations and power demand reductions are only part of the story. Power management on FOBs can provide significant fuel savings. Micro-grids, electric grids that smartly allocate, manage, and distribute power in a FOB, are an active area of investigation.

Army S&T is also advancing key technologies to increase power efficiency and output on FOBs through a program called HI Power, which looks at the pros and cons of various micro-grid architectures in order to allow Project Manager Mobile Electric Power to set standards for the types of grids that the Army might want to invest in. (See related article on Page 8.)

GROUND AND AIR VEHICLE POWER

Much like the research efforts currently exploring individual Soldier and installation technologies, the S&T emphasis on ground and air vehicle exploration is geared toward system-level understanding, meaning that the



HARNESSING THE SUN

Using flexible photovoltaics (PV), the Power Shade shelter can generate up to 3 kilowatts of electricity from solar power. The Power Shade, like other integrated military shelter items, uses a lamination process to combine the PV materials into the textile substrate. (U.S. Army photo.)

research paradigm is focused less on individual technologies or applications and instead is immersed in identifying systemwide approaches.

Nevertheless, there are numerous instances of power- and energy-related innovations that are having a positive impact on the near-term development of promising technologies. For instance, the U.S. Army Aviation and Missile Research, Development, and Engineering Center, Huntsville, AL, is deeply invested in developing a next-generation helicopter engine called the Improved Turbine Engine Program (ITEP), a more fuel-efficient engine designed to increase the horsepower-to-weight-ratio and to lower costs, compared with the current T700-701D engine.

The ITEP is being planned for future attack and utility helicopter programs, such as the UH-60 Black Hawk, AH-64 Apache, and Joint Multi-Role helicopter, a next-generation utility/attack aircraft slated for fielding by 2030.

A materiel development decision on the ITEP is slated for later this year, to

be followed by a technology development contract award by late 2014. A formal competition among vendors is planned for the ITEP program, which aims to produce a 3,000-horsepower turboshaft engine able to reduce specific fuel consumption by 25 percent and to decrease maintenance and production costs by 35 percent.

The Army is also building fuel efficiency parameters into its next-generation Joint Light Tactical Vehicle (JLTV), designed to export up to 10 kilowatts of onboard electrical power.

This power capability is considered essential to the design, construction, and engineering of next-generation tactical and combat vehicles; they will need to house an abundance of advanced command, control, communications, computers, intelligence, surveillance, and reconnaissance gear, such as onboard electronic systems and networking and computer technologies. Along these lines, it is also important that these vehicles be built with modularity in mind, such that they can accommodate anticipated technological growth

and the emergence of new systems and applications.

Instead of having a belt-driven alternator, the JLTVs are being built with an integrated generating system that is sandwiched between the engine and transmission. The JLTV program recently completed its technology demonstration phase, in which requirements were aligned and technology was developed in preparation for the engineering and manufacturing development phase. Official production of the JLTVs is scheduled to begin by 2015.

The U.S. Army Tank Automotive Research, Development, and Engineering Center (TARDEC), Warren, MI, is heavily involved in researching, designing, and testing next-generation power and energy technologies, such as more fuel-efficient engines, improved electronics, and lighter-weight protective materials such as armor composites. TARDEC also has developed programs that will permit both the S&T and the acquisition communities to make smarter decisions going forward.

For instance, TARDEC recently conducted a hybrid-electric vehicle evaluation in which hybrid and conventional engines were evaluated side by side during a variety of assessments covering as many as six different potential mission scenarios.

“The six different missions were based on different scenarios involving different terrain, for example. TARDEC wanted to determine the circumstances and conditions that influenced the performance of the various engines,” Freeman said. “This type of program, that can tell us when hybrids can be useful in our ground vehicle fleet, will provide the data for decision makers

as they consider the next generations of vehicles.”

Another example is TARDEC’s FED program, directed by the Assistant Secretary of Defense for Research and Engineering. The FED is a demonstrator and is not expected to be a vehicle that can be procured. Nevertheless, it allowed TARDEC scientists to understand where the efficiency losses come from in a vehicle. Identification of the different sites of energy loss forms the basis of the next generation of S&T efforts to improve system efficiency.

CONCLUSION

Overall, the S&T power and energy research paradigm is geared toward providing decision makers with analysis, input, and relevant data to find adjustable, modular, systemwide

integrated solutions; the research is designed to identify, harness, and develop next-generation material solutions to solve a particular problem or fill a specific capability gap.

A key concept informing the S&T emphasis on modularity and architecture is the idea that the research can produce data on the advantages, drawbacks, and challenges related to a variety of potential solutions. “We want to provide data to decision makers saying, for instance, ‘If you go with this kind of design, these are your trade-offs, and if you go with this kind of design, we’ve done the analysis to show that this is where you can go,’” said Freeman.

Nowhere is this mind-set more important than in developing and designing

the next generation of power and energy technologies.

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EVALUATING BASE CAMP EFFICIENCIES

The fully instrumented Base Camp Integration Laboratory (BCIL) consists of a test camp and “control” base camp, allowing for integrated evaluations of the operational efficiencies of existing and emerging technologies. The BCIL is a collaborative effort to respond to the Army’s need to rapidly integrate and assess new technologies, materials, and/or methods related to contingency basing in a realistic environment. (Photo courtesy of Program Executive Office Combat Support and Combat Service Support (PEO CS&CSS).)



EFFICIENCIES TEST BED

Base Camp Integration Laboratory provides a realistic but controlled environment to test resource-efficient technologies for Soldier base camps

*by LTC H. Brad Hodge, MAJ John S. Pires,
Cynthia Merritt, and John Viggato*

At first glance, the Army's Base Camp Integration Laboratory (BCIL) at Fort Devens, MA, resembles a small forward operating base. Closer observation reveals a 300-Soldier camp divided into two subsets, each comprising an Army standard 150-PAX Force Provider (Expeditionary). One subset is maintained as a control camp to demonstrate the current Force Provider (FP) configuration. The second is designed to evaluate developing solutions as applied to FP, specifically emerging energy- and resource-efficient technologies.

Established in June 2011, the BCIL, managed by Product Manager Force Sustainment Systems (PM FSS) in nearby Natick, MA, evaluates proposed efficiencies from an integrated system-of-systems perspective. The 10-acre site provides a much-needed basing capability for active and reserve Soldiers, supporting training rotations in all seasons.

During rotations, the BCIL receives realistic use and stress while Soldiers train in and receive training on FP. The fully instrumented base camp measures energy efficiency, power management, and water consumption, and provides baseline metrics to evaluate new capabilities.

"The ability to rapidly but thoroughly evaluate energy- and resource-efficient technologies is absolutely vital. The BCIL provides a controlled environment to help separate fact from fiction regarding system capabilities. Given the sense of urgency surrounding operational energy, the BCIL is a catalyst that will speed up that evaluation process and get products fielded more quickly," said LTC James Tuten, PM FSS, which falls under the leadership of the Project Manager Force Projection (PM FP) within Program Executive Office Combat Support and Combat Service Support (PEO CS&CSS).

IMPROVING SOLDIERS' QUALITY OF LIFE

Several evaluations are underway at the BCIL, measuring energy efficiency, power management, and the wastewater recapture aspects of various technologies. Emerging technologies have demonstrated the potential to reduce demand for base camp water by up to 75 percent, and to dramatically reduce fuel demand through efficient use of current systems.

Reducing fuel and water consumption translates into direct savings for the Army—in operating costs, the logistics support tail, and, most important, saving Soldiers' lives. These

savings are vital: Data from the 2009 Army Environmental Policy Institute's *Sustain the Mission Project: Casualty Factors for Fuel and Water Resupply Convoys, Final Technical Report* (online at http://www.aepi.army.mil/docs/whatsnew/SMP_Casualty_Cost_Factors_Final11-09.pdf) show that a significant percentage of U.S. casualties in Iraq and Afghanistan were related to ground resupply missions.

"The BCIL evaluations are focused on the efficiencies that a base camp system can have so fewer Soldiers are needed to run the base. The base camp is a force projection platform that enables the commander to accomplish a mission. An efficient base camp will free up more of a commander's combat strength to perform the mission, rather than conduct base camp operations," said COL Eric Fletcher, PM FP.

Efficient base solutions enhance the Soldiers' ability to execute their mission by

aligning troop-to-task ratios and by producing efficiencies in power, water, and waste management. This has a significant impact on the logistics support tail for operations and Soldiers' safety as we focus on reducing risk-intense ground resupply convoys.

INTERAGENCY COLLABORATION

The BCIL is evaluating current Army and Joint Service base camp-related initiatives. PM FSS has teamed with U.S. Army Central (ARCENT) to explore contingency base camp efficiency and environmental (E2) solutions that can be deployed immediately in Afghanistan to improve energy, water, and waste efficiency.

Off-the-shelf alternatives have been sought that will improve sustainment efficiency and reduce operational risks for commanders. Specifically, materiel developers within the Army have sought solutions in water management and energy-efficient structures (E2S).

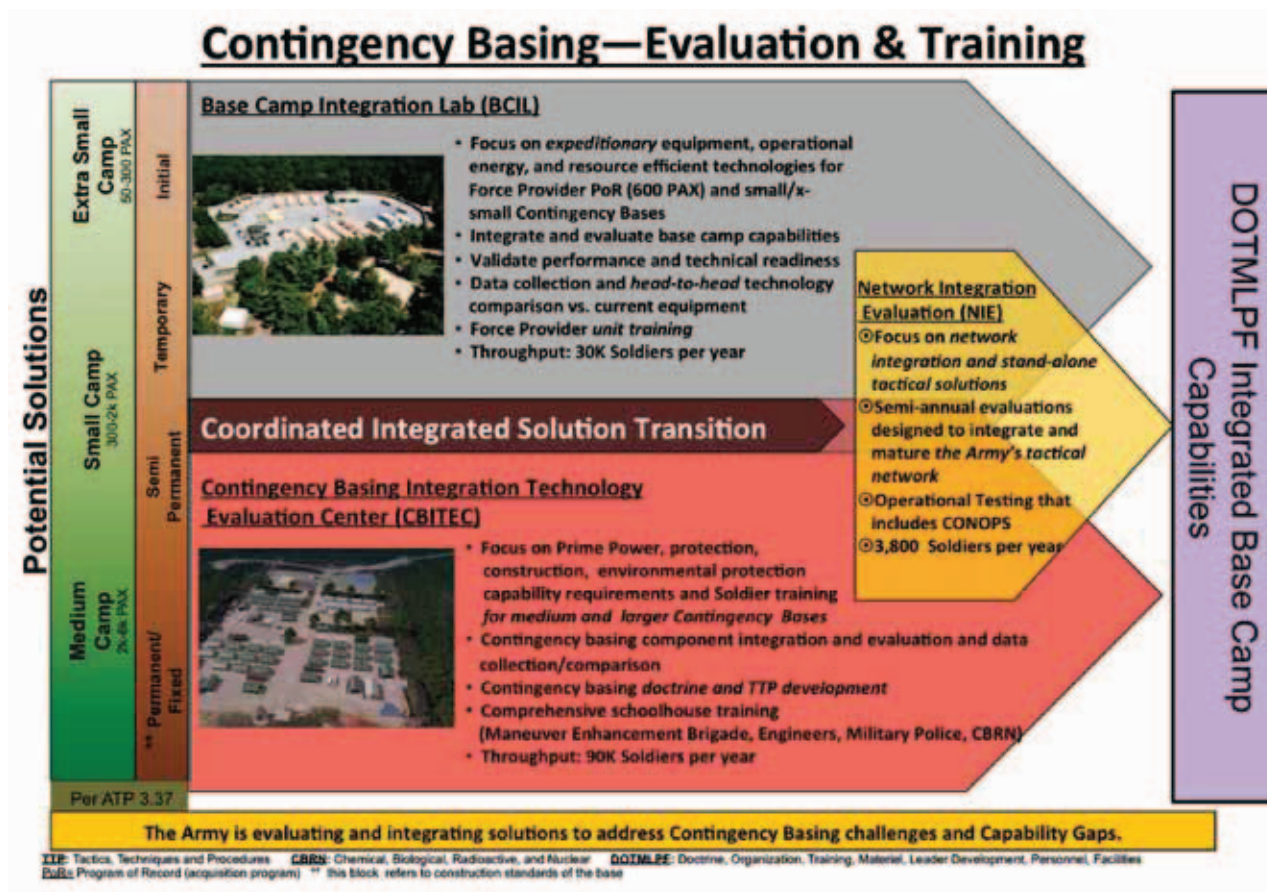
Ideal water management solutions reduce resupply demand as well as reducing and/or mitigating the environmental and health hazards of liquid waste generation, while also minimizing increases in energy demand. E2S solutions will reduce the energy and fuel required for heating and cooling shelters and structures by increasing their R-value (thermal resistance) while maintaining their redeployment capability. Alternative solutions that meet E2 requirements are being tested at the BCIL to provide direct, real-time data and comparison of components and systems.

"The Army's contingency basing community greatly benefits from having the BCIL to integrate and test related technologies in a realistic but controlled environment," Tuten said. He noted that the BCIL is near the Natick Soldier Systems Center, which is home to PM FSS and the Natick Soldier Research, Development, and Engineering Center (NSRDEC) of the U.S. Army Research,

“THE BCIL EVALUATIONS ARE FOCUSED ON THE EFFICIENCIES THAT A BASE CAMP SYSTEM CAN HAVE SO FEWER SOLDIERS ARE NEEDED TO RUN THE BASE. ... AN EFFICIENT BASE CAMP WILL FREE UP MORE OF A COMMANDER'S COMBAT STRENGTH TO PERFORM THE MISSION, RATHER THAN CONDUCT BASE CAMP OPERATIONS.”

Contingency Basing Effort Comparison

Figure 1



The BCIL at Fort Devens, MA, and the Contingency Basing Integration Technology Evaluation Center (CBITEC), operated by the U.S. Army Maneuver Support Center of Excellence at Fort Leonard Wood, MO, conduct collaborative and mutually supporting evaluations, allowing the Army to focus on very different aspects of improving contingency basing. BCIL, with its fully instrumented base camp, measures energy efficiency, power management, and water consumption from an integrated system-of-systems perspective and provides baseline metrics to evaluate new capabilities. CBITEC, by contrast, focuses on base camp technologies as they apply to larger and more enduring camps for 600 to 1,000 Soldiers. (SOURCE: PEO CS&CSS.)

Development, and Engineering Command (RDECOM).

The BCIL is resourced by leveraging and integrating ongoing ARCENT-sponsored energy and efficiency efforts, PM FSS developmental and modernization programs, RDECOM developmental efforts, DoD customer-funded integration efforts, and Fort Devens training support. This holistic approach to energy

solutions enables the Army to operate more efficiently and effectively and to employ cost-avoidance measures in the near term. Further cost savings are expected through greater commonality of solutions on the battlefield.

PM FSS has been collaborating with the U.S. Army Maneuver Support Center of Excellence (MSCoE), Fort Leonard Wood, MO, to study base camp technologies

as they apply to larger and more enduring camps. MSCoE has developed the Contingency Basing Integration Technology Evaluation Center (CBITEC) at Fort Leonard Wood to expand contingency basing research to include design and analysis of semipermanent and permanent facilities; prime power; protection; construction; environmental protection; contingency basing doctrine; tactics, techniques, and procedures; and

training. The BCIL and CBITEC efforts are collaborative and mutually supporting, and will allow the Army to focus on very different aspects of improving contingency basing (see Figure 1, Page 65).

In September 2011, PM FSS calibrated the base camp at the BCIL to determine baseline power, fuel, and water usage requirements for a Force Provider (Expeditionary)-equipped 150-Soldier camp. As a system integration laboratory, the BCIL was designed, instrumented, and built with the capability to evaluate innovative base camp equipment for the Joint Expeditionary Basing Working Group, which is focused on sharing information and working toward interoperability and common standards. Establishing common engineering standards decreases research and

development costs by removing duplication of effort.

ONGOING EVALUATIONS

Future plans at the BCIL include integrating and evaluating FP capabilities in concert with NSRDEC and the Integrated Base Defense in the Assistant Secretary of the Army for Acquisition, Logistics and Technology's Office of the Chief Systems Engineer.

PM FSS has also partnered with the Logistics Innovation Agency's Smart and Green Energy for Base Camps initiative (SAGE) to analyze energy-efficient solutions at the BCIL. SAGE seeks to reduce the amount of fuel needed for electrical power generation on contingency base camps by employing existing utility-industry smart generators, U.S. Department of Energy

smart micro-grid technologies, renewable energy sources, and energy-efficient modular structures.

Energy-efficient contingency basing efforts can provide a holistic capability for energy generation, storage, and management to better administer and control base camp power operations, reduce fuel consumption, and incorporate renewable energy sources.

"What is unique about the BCIL is that it allows a direct comparison against a baseline. Force Provider is a program of record that's been in operation for years, and the BCIL uses it in its standard configuration as a baseline. This allows us to conduct controlled, quantifiable technology evaluations, which dispel the hype while also identifying

LEADERSHIP INTEREST

Heidi Shyu (center), Acting Assistant Secretary of the Army for Acquisition, Logistics, and Technology, gets an in-depth look at the Shower Water Reuse System at the Base Camp Integration Laboratory, Fort Devens, MA, during a visit Dec. 13, 2011. (U.S. Army photo by David Kamm.)



future improvements to Force Provider,” Fletcher said.

Furthermore, work at the BCIL has identified immediate solutions to increase operational efficiency, such as energy-efficient liner systems, solar shade systems, new heating technologies, water reuse technologies, and micro-grid power systems that can be integrated into existing base camps.

For example, the Shower Water Reuse System is emerging as a resource-efficient technology. It processes 12,000 gallons of water per day, returning up to 75 percent for base camp reuse. Preliminary results for environmental control technologies are promising as well. Emerging results show up to a 35 percent reduction in base camp fuel consumption in evaluations involving micro-grid power distribution.

Additional evaluations at the BCIL will determine the efficiency of rigid-walled vs. soft-side shelters, and the costs and benefits of each. Multiple evaluations are underway for soft-side shelters as well; testing began in September 2011 to determine whether solar shades and insulated liners can lower the interior temperatures of shelters and reduce demand on the climate control system.

CONCLUSION

“There are multiple organizations across the Army and DoD that are working on operational energy and contingency basing solutions. We are eager to partner with those organizations and think the BCIL can serve as a platform to improve collaboration and reach our common goals,” Tuten said.

The BCIL brings a much-needed capability to the Army: the ability to rapidly integrate and assess new technologies, materials, and/or methods related to

EMERGING TECHNOLOGIES HAVE DEMONSTRATED THE POTENTIAL TO REDUCE DEMAND FOR BASE CAMP WATER BY UP TO 75 PERCENT, AND DRAMATICALLY REDUCE FUEL DEMAND THROUGH EFFICIENT USE OF CURRENT SYSTEMS.

contingency basing in a realistic environment. The BCIL will continue to provide data to substantiate and support all aspects of contingency basing, including technologies, training, installation, and maintenance, and to support the rapid fielding of solution sets integrated into currently deployed, developmental, and future expeditionary force sustainment and basing solutions.

Improving the quality of life for deployed Soldiers means more than just fielding comfort items. By improving the effectiveness and efficiency of old and new technologies, the Army can create resource-efficient solutions and enhance the quality of life for our deployed forces.

For more information, contact Gary McMichael, BCIL Configuration Manager, at gary.p.mcmichael.civ@mail.mil or 508-233-5626; or go to <https://pmfss.natick.army.mil>.

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Army Gains Operational Efficiencies from Existing Technologies

*by LTC H. Brad Hodge, MAJ John S. Pires,
Cynthia Merritt, and John Viggato*

MICRO-GRID POWER DISTRIBUTION SYSTEMS

The 60 kilowatt Tactical Quiet Generator micro-grid manages energy production by measuring demand on the system and allocating energy to meet that load. (Photo courtesy of Program Executive Office Combat Support and Combat Service Support (PEO CS&CSS).)



Ongoing evaluations at the Base Camp Integration Laboratory (BCIL), Fort Devens, MA, show that several existing technologies significantly improve operational energy and resource efficiency at forward operating bases. Integrated with the Army's Force Provider (FP) system of systems, these technologies in most cases are ready to be procured, produced, and fielded today.

These energy- and resource-efficient capabilities, which represent the first group of mature systems to be evaluated at the BCIL, are being fielded now and over the next 12 months. A second phase of capabilities will follow over the next five years, incorporating renewable energy and other resource-efficient technologies to further cut fuel and water usage as well as to reduce and better manage waste. Ultimately, the intent is to reduce resource consumption and operational cost, reduce resupply missions, and take Soldiers out of harm's way, while simultaneously maintaining or improving the quality of life in a deployed environment.

"I sometimes relate energy and resource efficiency technologies to the advances made with tactical vehicles," said LTC James Tuten, Product Manager Force Sustainment Systems (PM FSS). "First came up-armor kits, which can be equated to tent liners and solar shades. Then the family of MRAP vehicles, which is the phase we are entering with micro-grids, water-conserving systems, and more energy-efficient shelters. However, it is the next, more deliberate phase which will deliver and institutionalize the big gains associated with renewable energy and behavior change," he said.

PM FSS, which manages the BCIL, falls under the leadership of the Project Manager Force Projection within Program



REUSE AND SAVE

The Shower Water Reuse System can be set up by two users in 30 minutes and runs unattended for approximately three days. The LCD touch screen provides real-time monitoring, instructions, and troubleshooting guides. (U.S. Army photo by David Kamm.)

Executive Office Combat Support and Combat Service Support.

Following are several existing technologies that show significant promise in BCIL evaluations:

SHOWER WATER REUSE SYSTEM *Technical Specifications:*

- 12,000 gallon-per-day capacity with approximately 75% recovery.
- Saves up to 9,000 gallons per day per system.
- Meets reused shower water quality standard contained in the Surgeon General's Information Paper IP 31-027.
- Housed within an ISO TRICON 8 x 8 x 6.5.
- Weight: 7,500 pounds.
- Power requirement: 208-volt, 3-phase, 50/60 Hertz.
- Self-cleaning (air-purge) pre-filter to remove solids (15 micron).
- Micro-filters (0.2 micron) to remove suspended solids with automatic backwash.
- Reverse osmosis (RO) membranes to remove organic materials, bacteria, viruses, and soap.
- Carbon filtration following RO membrane filtration.
- Automated chlorine injection for disinfection.
- Operational in temperatures from 25F to 125F.
- Unattended automatic operation (7 days minimum without operator interaction).
- Built-in test equipment, self-monitoring.

- Programmable logic control with LCD-screen graphical user interface displaying controls, conductivity, flow rates, pressures, setup and operating instructions, and troubleshooting procedures.

Current Status:

- Leveraged from existing technology from the Hospital Containerized Batch Laundry technology and the 1,500-gallon-per-hour Tactical Water Purification System for integration into the FP system.
- Full-rate production began in 2010.
- Currently fielded to theater.
- System procurement cost can be recovered in 5 days, assuming most conservative battlefield cost of water.

Near-Term Objectives:

Laundry water reuse

- Shower Water Reuse System (SWRS) currently processes only shower wastewater.
- Lint in laundry waste clogs the micro-filter.
- Army Research Office, Pennsylvania State University, and PM FSS are collaborating on a solution to add laundry water processing capability to SWRS.
- Solution is based on coagulating laundry waste to increase the particle size of lint.
- SWRS pre-filter will effectively filter coagulated lint before it clogs the micro-filter.
- Coagulant and dosing device evaluated at Penn State starting in November 2011 at a laundry facility using a SWRS.
- Final solution will be evaluated in a

field environment at the BCIL, using Soldier-generated laundry waste.

- Incorporating laundry wastewater processing into the SWRS will result in the recovery of 75% of the 5,600 gallons generated per day in a 600-person base camp.

MICRO-GRID POWER DISTRIBUTION SYSTEMS

System Description:

- Monitors power demand in camp and allows the shutdown of underused generator sets, resulting in significant fuel savings.
- Distribution boxes are connected to each generator and to one another, creating a shared distribution grid in which any generator can power any load.
- Links 6 to 60 kilowatt (kW) Tactical Quiet Generators (TQGs).

Current Status:

- Currently under assessment at BCIL.
- Efficient use of available power.
- Replaces spot power generation.
- Manages power supply based on demand.
- Automatically shuts down and restarts generators. Reduces generator run time and “wet stacking,” in which a diesel engine operates below the rated power output level, causing carbon buildup and damage to the generator.
- Increases generator life by reducing wear and tear.
- Reduces necessary maintenance.

Near-Term Objectives:

- Kits will be applied to the current 60 kW TQGs in FP to provide automatic on/off capabilities for the generators based upon load demand within the camp.
- Initiative will reduce fuel consumed to operate the FP base camps by more than 30%.
- 20 kits to be deployed to theater for retrofit into existing camps and/or new deployments.

LIVING WITH ENERGY SAVINGS

Liner systems insulate tents and shelters, increasing the effectiveness of cooling units in summer and heating units in winter. (Photo courtesy of PEO CS&CSS.)



ULTIMATELY, THE INTENT IS TO REDUCE RESOURCE CONSUMPTION AND OPERATIONAL COST, REDUCE RESUPPLY MISSIONS, AND TAKE SOLDIERS OUT OF HARM'S WAY, WHILE SIMULTANEOUSLY MAINTAINING OR IMPROVING THE QUALITY OF LIFE IN A DEPLOYED ENVIRONMENT.

- FP configuration to be modified in 2013 to incorporate micro-grid kits in all new production modules.

SOLAR SHADES AND LINERS

System Description:

Combined Liner/Shade Kit

- Consists of improved insulating liner systems and solar shade systems that reduce cooling and heating demands on shelters, in turn reducing the fuel demand for environmental controls.
- Combining liners and shade systems reduces fuel demand in the base camp by up to 30%.
- Maintains expeditionary attributes and shelter redeployment capability.

Liners

- Replaces Standard Single Ply Liner with 250-gram Thinsulate Liner.
- Up to 50% reduction in BTUs required, from 82,000 to 41,000 BTUs.
- Convective space heater fuel per day is reduced by up to 50%, from 14.8 to 7.4 gallons.
- Assuming a 6-month heating season with average ΔT of 50F, rough estimate of fuel savings per tent is about 900 gallons for the season.

Shades

- Shading systems will reduce solar loading by up to 85%.
- Current technology should reduce BTU demand by more than 30%.
- FP 600 Soldier fuel savings per year (rough estimate) exceed 15,000 gallons (100 gallons per Soldier per year).
- Technical (chamber) and operational (Fort Devens) evaluation of numerous

configurations of insulated liners, solar barriers; and right-sized heating, ventilation and air-conditioning systems conducted in 3rd and 4th quarters of FY11.

Current Status:

- 20 kits will be deployed to theater for retrofit into existing camps and/or new deployments.
- FP configuration modified in 2012 to incorporate efficiency and environmental (E2) kits in all new production modules.
- Four E2 kits have been deployed to theater.
- Immediate energy savings can be realized by using solar shading systems.
- Currently available shading solution is Ultra Lightweight Camouflage Net Systems (ULCANS):
 - Reduces solar/thermal transmission by up to 85 to 90%.
 - Reduces shelter power requirements by up to 22%.
 - Reduced solar load equates to reduced demand for fuel.
 - Extends equipment life span.
 - Improves Soldier comfort.
 - Stock is available.

Near-Term Objectives:

Future Shading Solutions

- Fitted Shade System – ULCANS
 - Blocks up to 85 to 90% of solar load.
 - Fitted for TEMPER Air-Supported Shelter.
 - Can be used as a stand-alone shade.
 - Uses standard ULCANS materials.
- Fitted Shade System – Flame Resistant Mesh Fabric
 - Up to 65 to 85% sun block.
 - Scalable to fit various shelters and structures.

- Uses new and improved solar shade materials.

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MICRO-GRID POWER

Working intelligently and working together

by Marnie de Jong

LIVING EFFICIENTLY

The Rucksack Enhanced Portable Power System is a lightweight, portable power system capable of recharging batteries and/or acting as a continuous power source. It combines anti-glint solar panels, connectors, and adaptors for increased charging options, and can charge most common military battery types in five to six hours. (U.S. Army photo.)



The Army traditionally has addressed power generation through a collection of application-specific, stand-alone solutions. But no matter how good the individual technology, variations in loads lead to inefficiencies in operation. It is nearly impossible to keep generators operating at peak efficiency when they are operating by themselves. That's why the right solution is a mix of all technologies.

Micro-grid systems are currently the only solution that allows the incorporation of multiple technologies, such as renewables and energy storage systems, to supplement traditional power generation techniques. This allows us to create platforms that manage and distribute power efficiently while using smaller generators.

This type of integrated generation and distribution system is a sustainable practice that has applicability across all echelons, from the forward operating base down to the individual Soldier.

A DEVELOPING CONCEPT

In 2007, the Army Power division of the Communications-Electronics Research, Development and Engineering Center's Command, Power, and Integration Directorate (CERDEC CPI), formerly the Command and Control Directorate, in technical support of Project Manager Mobile Electric Power within Program Executive Office Command, Control, and Communications – Tactical, was one of the first DoD organizations to work in this area with the start of the Hybrid Intelligent (HI) Power program, an initiative funded by the Office of the Secretary of Defense. Its goal is to network generators and loads to a common grid to enable source and load management, keeping in check redundancy of power generation and optimizing generator performance



GETTING SOLUTIONS TO SOLDIERS

The Reusing Existing Natural Energy from Wind and Solar (RENEWS) system, which leverages wind generation, solar power, and power storage, is undergoing testing at Communications-Electronics Research, Development and Engineering Center's Command, Power, and Integration (CERDEC CPI) Directorate (formerly the Command and Control Directorate). The system will be shipped out for user evaluations upon completion of testing. Here, NCOs view the RENEWS system as part of the U.S. Army Research, Development, and Engineering Command's Quarterly NCO Professional Development program. (U.S. Army photo by Allison Barrow.)

while reducing maintenance and the logistical footprint.

This is all transparent to the Soldier; the plug-and-play system has an open, user-friendly architecture that allows for greater operational flexibility.

Earlier versions of this concept, focusing on renewable energy, have been fielded at the Soldier level. For example, the

Rucksack Enhanced Portable Power System kit features a photovoltaic panel for solar charging of multiple batteries, thus ensuring continuous power for sensors and radios. (See related article on Page 12.)

The Soldier Power Manager takes this a step further by calculating available and required power and allocating power to loads according to availability and priority. It also allows multiple power

generation sources to be hooked up simultaneously, using energy based on a predetermined set of energy costs.

The Reusing Existing Natural Energy from Wind and Solar (RENEWS) system, which leverages wind generation, solar power, and power storage, is undergoing performance and safety testing at CERDEC CPI. Once this testing is successfully completed, the RENEWS systems will be shipped out for user evaluations.

Next up is Renewable Energy for Distributed Undersupplied Command Environments (REDUCE), a new mission program in FY12 that is geared toward operating in the 1 to 5 kilowatt power space. The program focuses on incorporating renewables and energy storage on a trailer that can be towed by a High Mobility Multipurpose Wheeled Vehicle and can interface with traditional JP-8 fueled generators.

As with HI Power, the goal of REDUCE is to make things easier on the Soldier by letting the systems manage all the power. Ideally, the technologies from both programs will be complementary, resulting in power grid technology that addresses power generation, distribution, loads, renewables, and storage across the full Army power spectrum.

LOOKING AHEAD

Most micro-grids centralize the intelligence (see Figure 1), but CERDEC CPI is working to make all of the devices smart so that each piece of the grid can communicate and operate in an intelligent manner: smart generators, smart storage, and smart renewables. This collection of autonomous systems would have the capability to determine which source is delivering power to a given load and what to do if there is excess energy.

The next step would be incorporating smarts into the loads so that they can request power as well. That would pave the way toward additional fuel reduction by allowing the scheduling of loads to keep peak power demands at a minimum. That said, with the large number of power-consuming systems in the Army, implementing a solution like this is still a ways off. The idea is to go after the larger power consumers, such as the Environmental Control Units, then move forward. This type of fully automated system would require less training and oversight than currently fielded systems, thus freeing up troops to do other tasks.

CERDEC CPI is also working on incorporating smart grids into wearable Soldier platform technologies, to reduce the weight and number of batteries on each Soldier. The Soldier Wearable Integrated

Power Equipment System (SWIPES) is a first-generation example of where we are going. SWIPES incorporates a variety of pouch-mounted chargers and power cables for batteries, GPS units, shot detection systems, and handheld communications within the Modular Lightweight Load-carrying Equipment (MOLLE) vest. This provides power and protection for extended missions without the burden of power source swaps or separate power source charging.

With these combined capabilities, the Soldier has a highly versatile system that is easy to use, greatly reduces the number of batteries carried, and can save 30 to 50 percent of battery weight on long missions. But while SWIPES provides the distribution for the Soldier, it doesn't have the smarts to control all of the different loads and sources, nor to provide the Soldier an interface for situational awareness of remaining power. We are not there yet, but that is where we are heading.

CONCLUSION

The shift to micro-grids represents a change in the way we do business, but it is more than intelligent control and distribution of power. In order to be really successful, systems will need to be able to work intelligently with one another. The key is to produce a solution that works for everyone across the military services. No matter how good my system is, if my system can't talk to yours, we still have interoperability issues.

All of these systems have played a part in the learning process. We've been able to develop numerous point-based micro-grid solutions that are specific to size, platform, and application. But we've yet to establish a common operating environment for micro-grids within DoD—and this is important. We need an integrated

MICRO-GRID SYSTEMS ARE CURRENTLY THE ONLY SOLUTION THAT ALLOWS THE INCORPORATION OF MULTIPLE TECHNOLOGIES, SUCH AS RENEWABLES AND ENERGY STORAGE SYSTEMS, TO SUPPLEMENT TRADITIONAL POWER GENERATION TECHNIQUES.

effort whereby A plugs into B, which plugs into C, and systems can grow or decrease with the changing demands of the environment—scalable micro-grids.

All of our previous work has paved the way for scalable micro-grids, which allow users to add units, whether 20 or 100, without changing technologies, platforms, or cables. Basically this is a matter of applying the smart-grid architecture from the Soldier platform up to the tactical operations center. Scalable micro-grids can affect size, weight, and power by decreasing weight while powering the same amount of equipment, and will dramatically reduce fuel logistics—especially with the incorporation of renewable technologies.

In addition to developing a proof-of-concept system with specifications, we are hoping to establish working groups of DoD and industry in this arena—or use existing groups—but coordination across the two communities is a major challenge.

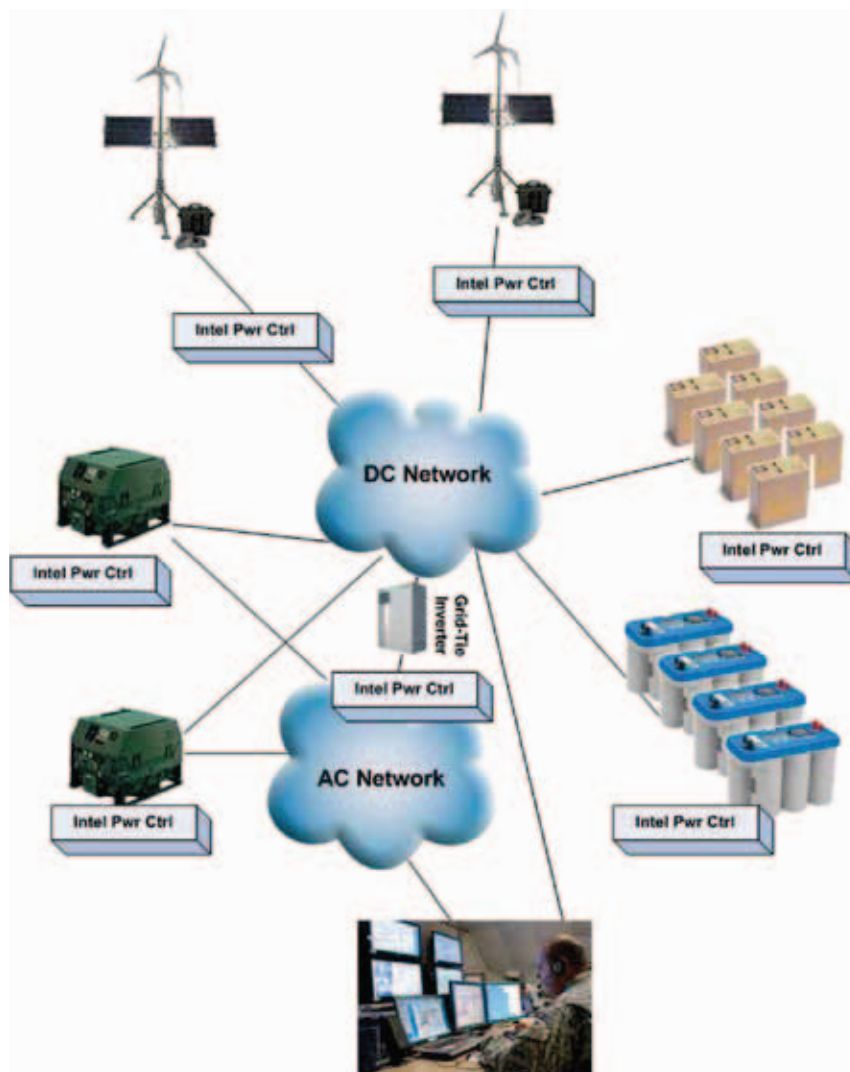
The Power Sources 2012 conference June 11-14, in Las Vegas, NV, will focus on energy generation and storage technology for military application. It will be an opportunity for Joint collaboration, as it is sponsored by CERDEC CPI Army Power and the U.S. Army Research Laboratory in conjunction with the U.S. Air Force, U.S. Navy, Defense Advanced Research Projects Agency, U.S. Department of Energy, and NASA.

The conference (<http://powersourcesconference.com>) will feature demonstrations and information concerning what we are working on in regard to scalable micro-grids, and we invite you to participate.

MARNIE DE JONG is the Research Project Manager for the Renewable Energy

Desired Performance Attributes

Figure 1



Micro-grid systems allow Army engineers to create platforms that manage and distribute power efficiently while using smaller generators. Most micro-grids centralize the intelligence, but CERDEC CPI is working to make all the devices smart so that each piece of the grid has the capability to communicate and operate in an intelligent manner. (SOURCE: CERDEC CPI.)

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SEEKING A LOWER PROFILE

Soldier input guides development of next-generation body wearable antennas

by Steve Goodall

For years, Soldiers have had to balance the need to communicate and the risks required to do so. Soldier communication has improved dramatically over the years, with smaller man-portable systems and improved signal reception and transmission distances. But in many cases today, Soldiers still require large, protruding whip antennas to receive signals.

Not only do such antennas provide a visual signature with meter-long devices that can compromise a Soldier's location to adversaries, but there are also risks that the antennas will become entangled and the Soldier will lose mobility.

These hazards are among the reasons that antennas embedded into Soldiers' armor and helmets may be a game-changer, or better yet, a lifesaver.

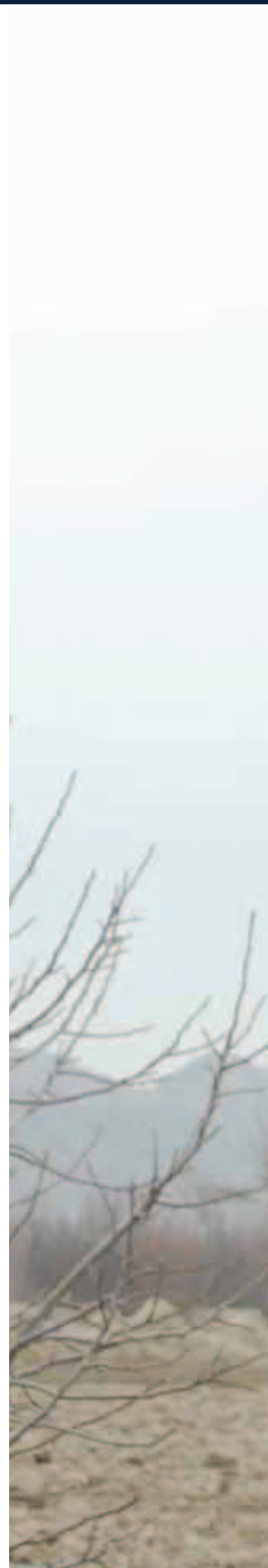
HOW ANTENNAS HAVE EVOLVED

Such embedded devices, known as body wearable antennas (BWAs), aren't a new concept; in fact, an initial prototype developed by the U.S. Army Research, Development, and Engineering Command's Communications-Electronics Research, Development, and Engineering Center (CERDEC) was tested in 2007. The prototype fit into a pouch that contained ceramic armor plates on the front and back of the Soldier and was connected by a small cable that ran over the shoulder. At that time, the Natick Soldier Systems Center conducted an evaluation of 70 to 100 units of this prototype.

While the evaluation proved its effectiveness and enabled Soldiers to transmit and receive signals at adequate distances, it didn't take on the popularity that we at CERDEC had hoped.

WHIP ANTENNA AT WORK

1LT Austin Cattle, a Platoon Leader with 1st Battalion, 67th Armor Regiment, 2nd Brigade Combat Team, 4th Infantry Division, uses his radio with a whip antenna to call in a situation report to his commander during a joint clearance operation with the Afghan Uniformed Police from Police Substation 8 in Kandahar, Afghanistan, Feb. 1. (Photo by SGT Seth Barham.)







BUILT-IN INNOVATION

Scientists with the Army's Communications-Electronics Research, Development, and Engineering Center (CERDEC) are developing small antennas that can be built into Soldiers' body armor vests. These body wearable antennas are lighter and less visible than current whip antennas and provide better reception when troops are lying down or taking cover. (Photo by Sharon Rushen, CERDEC Public Affairs.)

The feedback we received from Soldiers was that they really liked the design but missed the simplicity of integrating the whip antenna, which didn't require any pre-configuration; it just screwed in.

So, although we were on track with the technical and operational benefits of BWAs, we had to go back to the drawing table and continue to work on the capability, which we were confident

was a significant step in communications development. We needed to refine BWAs to address the Soldiers' priorities, and we needed to seek out new collaboration opportunities.

Over the next few years, we continued development in-house and evaluated a number of proposals. With the help of Ohio State University (OSU) through a Small Business Innovation Research project, we developed the diversity-based antenna system, which distributes certain antenna elements around the body.

NEEDED CAPABILITIES

Basically, the radio can determine the direction of the signal where the Soldier wants to receive or transmit, and can maximize communications in that direction. For the Soldier, this means a consistent signal in the direction that he or she wants to talk, independent of the Soldier's position.

As it is now, the design of the whip antenna, while offering simplicity with integration, is limited by physics to operating only at low frequencies. This is good for covering longer distances but limits the amount of data the Soldier can share or receive.

In its prime, the whip antenna worked with one radio, making our jobs a bit simpler. But today's battlefield requires multiple Soldiers with varying missions, using different radios to share a larger volume of data than ever to increase situational awareness—video, images, geographical locations, and other data. Rather than operating with one specific radio at one frequency level (high or low), the diversity-based antenna system is to be device-agnostic.

To do this, we are working with software-defined radios (SDRs) that do not require

IN ITS PRIME, THE WHIP ANTENNA WORKED WITH ONE RADIO ... BUT TODAY'S BATTLEFIELD REQUIRES MULTIPLE SOLDIERS WITH VARYING MISSIONS, USING DIFFERENT RADIOS TO SHARE A LARGER VOLUME OF DATA THAN EVER TO INCREASE SITUATIONAL AWARENESS—VIDEO, IMAGES, GEOGRAPHICAL LOCATIONS, AND OTHER DATA.

manufacturers to change their hardware design, but instead allow us to change and edit the software to fit the different needs of Soldiers. Because SDR allows us to tinker with software rather than constantly change hardware or radio type, we are able to incorporate different waveforms to meet the individual dismounted Soldier's needs.

For instance, incorporating the Soldier Radio Waveform (SRW) on SDR allows the Soldier in the field to talk with another Soldier hundreds of meters away. SRW is targeted to the individual Soldier and small units; it searches for available radios within the same unit, then hops through nodes to create a path for data and voice communications.

This is a big plus for a number of reasons, one being that because SRW operates at a high frequency, its size can be reduced greatly, down to 6 to 9 inches. With that reduction, we can place the antenna elements around the body while still ensuring enough signal processing to communicate. So, regardless of whether the Soldier needs to communicate with another Soldier far away, or to share large amounts of data, the diversity-based system is able to

determine where and how to process the signal.

To prove out this concept, we worked with OSU to create a rudimentary prototype. Following that successful experiment, we replicated changes we made to the software in an SDR.

CONCLUSION

Five years from that first demonstration, Soldiers are asking for something better than the whip antenna they currently use. We are working with program managers to incorporate the prototype technology we have developed with OSU into another program that will take it to a higher level of maturity. At that level, we can work with the radio program managers as they design a feature into their radios that can provide the needed processing.

We are planning to have this mature prototype ready for Soldiers to evaluate in the 2013-14 timeframe. In addition to further development, we need to take the time to see how the prototype antenna will fit into the network and what effect it will have on transporting information to and from command centers.

Our ultimate goal, fundamentally, is to ensure that we provide the Soldier with a capability that is flexible enough to adapt to the dynamic nature of the operational environment regardless of the mission. It is probably not reasonable to think that one antenna system will be a silver bullet. But it will be a system that pushes technology a little further while enhancing capability, reducing risks, and providing our Soldiers a much better communications platform.

For more information, go to <http://www.cerdec.army.mil>.

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CORROSION CONTROL

Thorough knowledge and proper design of products and product support help reduce costly long-term risks

by Dr. Roger D. Hamerlinck

PREDICTING AND PREVENTING

Incorporating corrosion resistance in a product's design, based on the established chemistry of various materials in given environments and in mathematical models and simulations, helps reduce life-cycle cost. Here, Corrosion Engineer Nancy Whitmire goes over the findings of a corrosion test with Steve Carr, Corrosion Program Manager for the U.S. Army Aviation and Missile Life Cycle Management Command at Redstone Arsenal, AL. The test involved coating metal coupons with different finishes and then placing them in an accelerated corrosion chamber to determine the amount of corrosion that would develop in a sand-and-salt environment. (U.S. Army photo by Kari Hawkins, U.S. Army Garrison Redstone Arsenal.)



In the Army acquisition workforce, formal risk management programs normally are focused on cost, schedule, and performance risks. Corrosion isn't traditionally one of the considerations that go into the formal risk management activity. Yet the Army spends approximately \$6 billion annually in preventive and corrective maintenance, nearly 15 percent of the entire maintenance budget.

Army Regulation 750-59, *Army Corrosion Prevention and Control Program* (http://www.apd.army.mil/jw2/xmldemo/r750_59/main.asp), defines corrosion as “the impairment, degradation, or damage of materials (metallic and nonmetallic) as a result of exposure to a natural or induced environment owing to the individual or combined effects of chemical, electrochemical, biological, or physical attacks on the material.”

Whether we are talking about equipment or infrastructure, corrosion is one of the risks that should be considered in design and risk management efforts. If proper corrosion prevention and control are not included, there are negative effects on cost, availability or readiness, and safety.

KNOWING THE ‘ENEMY’

One of the greatest challenges that the senior Army leadership has today is in identifying future threats and enemies, developing potential DOTMLPF (Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities) solutions to those threats, and acquiring and sustaining the materiel solutions that will provide our forces with an overmatch capability to defeat the enemy.

Our manpower and equipment needs are determined in part by the reliability and maintainability of equipment and



RUST RISKS

Corrosion prevention and control are major factors in designing support systems to ensure that equipment or infrastructure is always available when needed, enabling the Army to respond to threats. Here, MK19 Grenade Launchers are showing signs of corrosion. (U.S. Army photo.)

infrastructure. Should we encounter more corrosion than anticipated, we not only require more preventive and corrective maintenance, resulting in the need for more mechanics and tools, but we also increase the demand for spare and repair parts to return the item to its full operational capability.

In the Army, the design of equipment and infrastructure is based on the customer's statement of desired capabilities.

The desired capabilities must adequately address corrosion resistance. Otherwise, the specification and contract won't adequately require corrosion resistance, the support system won't be designed to provide corrosion prevention and control, and the support rendered won't provide adequate corrosion prevention and control. The result will be that equipment or infrastructure may not be available for use because there are insufficient spare or repair parts, storage, manpower, or tools.

The item's unavailability can diminish the Army's ability to respond to a threat, or an unsafe condition can arise. The result may be damage to or destruction of the equipment or infrastructure; injury, requiring first aid or more intensive medical treatment; loss of productive time because of restricted duty or hospitalization; or even loss of life.

CALCULATING THE RISK

The uncertainty over variables leading to our acquisition decisions is called risk. With every source of risk, there is a probability and a significance of that risk being realized at some point.

Reports clearly show that corrosion has negative effects on the cost, availability and readiness, and safety of equipment and infrastructure.

Numerous scientific and engineering disciplines inform us about the chemistry of various materials, coatings, finishes, and

lubricants, and how all these behave in given environmental conditions. Based on this scientific evidence and on mathematical models and simulations, we can predict how the materials we use in equipment and infrastructure will react

based on the environment(s) in which they will be used or stored.

This information enables us to forecast life-cycle costs through analysis of repair or replacement parts needed, manpower

required, inventory turnover, and overhaul, to mention a few factors.

Science and the testing community inform us of test processes and procedures that can validate and/or verify material selections and their reactions to various environmental stimuli. Even the rates of corrosion—the time it takes to damage a specified amount of material—are known for most materials under specified conditions.

INDIVIDUAL RESPONSIBILITY

Command emphasis on taking responsibility for equipment can help prevent corrosion. Here, SFC Julio Ascencio, a UH-60 Black Hawk repairman with 2nd Battalion, 82nd Aviation Brigade, washes a Black Hawk to prolong the life of the aircraft, Jan. 26 in Logar Province, Afghanistan. (Photo by SPC Cody Barber.)



Through historical trend analysis, we can accurately estimate that 80 percent of the life-cycle cost is locked in by the design at Milestone B, and that 90 percent is locked in at Milestone C.

PREVENTION BY DESIGN

Defense and industry experts have identified some factors of a good corrosion-resistant design. They include: technology investigation, demonstration, and implementation; operating parameters; operating and non-operating environmental stimuli; test requirements and testing provisions; inspection requirements; shape (joints and flanges, crevices and deposits, trapped and contained liquid, drainage, etc.); maintenance; material requirements; reliability requirements; external surface treatment; design life; packaging, handling, storage, and transportation; sealants; and effective corrosion control programs.

Likewise, a good corrosion design has a typical set of sources for risk: threat, requirements, technology baseline, testing and evaluation, modeling and simulation, logistics, production and facilities, concurrency, industrial capabilities, cost, management, schedule, external factors, and budget, among other sources.

The design of the product support system that will sustain performance of the

design is every bit as critical to reducing the negative effects of corrosion. This raises two questions: How will this product support be affected by DoD's standard logistics system? (How will it be constrained by the standard policies and procedures?) What unique policies, processes, and procedures will be required to effectively and efficiently sustain the product?

Given that the system's design, and the product support system's design, are critical to any reduction, the importance of logistics support cannot be underestimated. The design has been established based on the customer's expectations, and validated through testing. The instructions for operation and maintenance have been validated. The individual and collective success of those responsible for possessing, operating, maintaining, and

otherwise supporting our equipment and infrastructure will depend on:

- a command climate that emphasizes the importance of properly maintaining the property entrusted to them.
- proper training in the identification and mitigation of corrosion.
- proper use and maintenance of the product.
- appropriate packaging and preservation for the type of storage and length of time in storage.
- correct precautions in selecting and executing the mode of transportation.

CONCLUSION

It is evident that the best way to reduce the negative effects of corrosion is to invest more time and money concentrating on corrosion resistance in the design of our products, major assemblies, components,



THROUGH AND THROUGH

Corrosion like this has negative effects on cost, readiness, and safety. (U.S. Army photo.)

and parts before Milestone B, the point at which we have the greatest opportunity to influence the life-cycle cost.

Collectively we are the world's greatest fighting force. By collectively committing to properly designing the system, designing the product support system, and supporting those designs, we can reduce the negative effects of corrosion.

For more information on corrosion threats and solutions, go to <https://www.corrdefense.org>.

SCIENCE AND THE TESTING COMMUNITY INFORM US OF TEST PROCESSES AND PROCEDURES THAT CAN VALIDATE AND/OR VERIFY MATERIAL SELECTIONS AND THEIR REACTIONS TO VARIOUS ENVIRONMENTAL STIMULI. EVEN THE RATES OF CORROSION—THE TIME IT TAKES TO DAMAGE A SPECIFIED AMOUNT OF MATERIAL—ARE KNOWN FOR MOST MATERIALS UNDER SPECIFIED CONDITIONS.

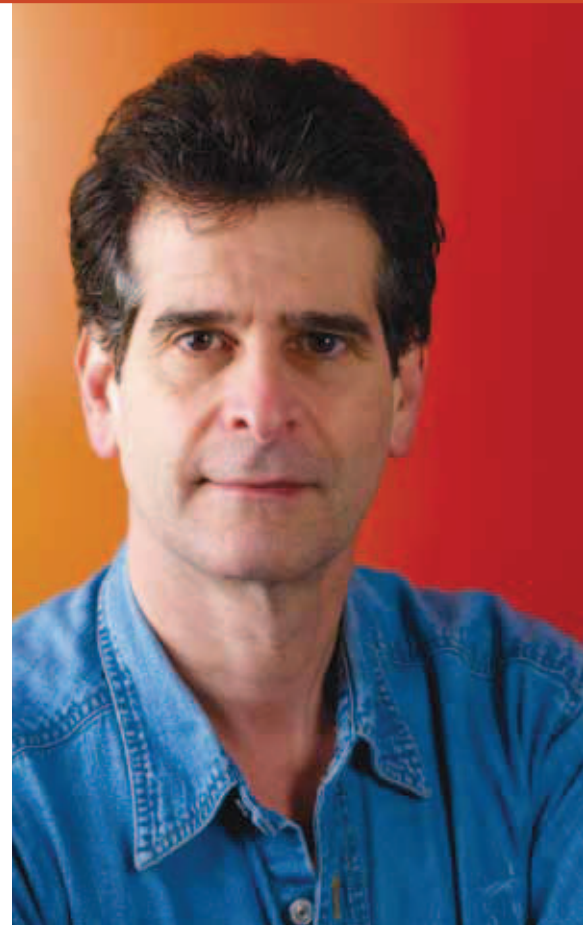
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CRITICAL THINKING

IDEAS *and* INNOVATION

Avid inventor and successful entrepreneur Dean Kamen is passionate about generating young people's interest in science, technology, and engineering



This Critical Thinking interview is with Dean Kamen, an inventor, entrepreneur, and advocate for science and technology (S&T), particularly among students.

Kamen holds more than 440 U.S. and foreign patents—many of them in the health care realm, including the first wearable infusion pump (developed while he was a college undergraduate), which is used in chemotherapy, neonatology, and endocrinology; and the first wearable insulin pump for diabetics. Following his interest in medical devices, he founded AutoSyringe Inc. in 1976 to manufacture and market the pumps.

By age 30, Kamen had sold AutoSyringe to Baxter Healthcare Corp. and subsequently

founded DEKA Research and Development Corp., providing an avenue for DEKA's own inventions, as well as research and development capabilities for major companies. At DEKA, Kamen led several different development teams, including teams for the HomeChoice™ peritoneal dialysis system for Baxter International Inc., which enables patients to have dialysis in their own homes; the Hydroflex™ surgical irrigation pump for C.R. Bard Inc.; the iBOT™ Mobility System; and the Segway® Human Transporter, among many others.

One of Kamen's greatest personal accomplishments, as he sees it, is the founding of FIRST (For Inspiration and Recognition in Science and Technology) in 1989. The organization, which works to motivate

students to understand, use, and enjoy S&T, will serve nearly 300,000 young people ages 6 to 18 in 2012.

FIRST uses mentor-based programs to enhance science, engineering, and technology skills while fostering self-confidence, communication, and leadership. One of FIRST's biggest initiatives is its robotics program, culminating in the FIRST Robotics Championship for grades 9-12. FIRST also has programs for younger students, such as the Junior FIRST LEGO League, which gets children as young as age 6 involved in science, math, and critical thinking activities.

In addition to fostering innovation through competition, FIRST awards more than \$14 million in college scholarships to high school

participants, furthering Kamen's vision of fostering the next generation of scientists, engineers, and innovators.

In 2000, President Bill Clinton awarded Kamen the National Medal of Technology. He also received the Lemelson-MIT Prize, referred to as the "Oscar for inventors," in 2002 for his medical technology inventions, specifically the iBOT, a multifunctional solution to the limitations of traditional power wheelchairs. Kamen was inducted into the National Inventors Hall of Fame in May 2005 and has been a member of the National Academy of Engineering since 1997.

Q. As an inventor and entrepreneur, what is the single biggest hurdle you have had to negotiate in either role?

A. I am a firm believer in the principle behind Moore's law: Technology has and will continue to advance at an accelerating rate. However, mankind's ability to adapt to new technologies does not progress as rapidly, so that has probably been the biggest hurdle I have had to overcome.

Q. Do you think that being both an inventor and a businessperson has an advantage over being just one or the other?

A. Yes. Inventors don't often have access to resources and sometimes have difficulty figuring out which are the proper problems to solve. Keeping business objectives in mind—and keeping focused on specific problems—gives you the discipline to make inventions that are both scalable and useful to the public.

Q. What lessons do you think the Army Acquisition Corps might learn from your experience as an inventor or a businessperson, or both? How do you think those lessons would apply to the way we do acquisition?

ROBOT VS. ROBOT

Dean Kamen's FIRST Robotics Competition seeks to encourage innovation, invention, and discovery among students. Here, students participate in the 2011 FIRST Robotics Competition. (Photo by Adriana M. Groisman.)



“I AM A FIRM BELIEVER IN THE PRINCIPLE BEHIND MOORE’S LAW: TECHNOLOGY HAS AND WILL CONTINUE TO ADVANCE AT AN ACCELERATING RATE. HOWEVER, MANKIND’S ABILITY TO ADAPT TO NEW TECHNOLOGIES DOES NOT PROGRESS AS RAPIDLY.”

A. Acquisition people need to understand that new technology is not often easily measured by old metrics. I would encourage the Acquisition Corps to make sure that they are evaluating new technology in the right context.

Q. What inspires you to work on a new invention? Do you see a customer need to which you want to respond, or do you just want to make something work better? Can you give us some examples?

A. At DEKA, we have employed both methods. Sometimes, an outside client comes to us with a problem. That was the case with DARPA [the Defense Advanced Research Projects Agency], who asked us to create a new prosthetic arm [the DEKA Arm] for our returning veterans. Other times, we at DEKA will find a problem and work internally to solve it, which is how we developed the iBOT mobility device.

Q. What invention are you most proud of: the DEKA Arm; iBOT; Stirling engines; water purification; HomeChoice PD; Segway; or AutoSyringe? Why?

A. I am, of course, proud of all of our projects, each for a different reason. Asking to compare them is just as unfair as asking parents which of their children is the favorite. That said, FIRST, a program I founded that uses robotics competitions to encourage kids to pursue careers in math and science, holds a special place. Each of our engineering projects is a golden egg, but every kid who goes on to become an inventor or innovator after experiencing FIRST is a golden goose. And the goose is more valuable than a single egg!

Q. Without naming a favorite, then, could you pick one project and give some detail on the impact it has had?

A. We’re all very proud of the growth and success FIRST has experienced over the past 20 years. We started with a couple dozen teams in a high school gym in New Hampshire; this year, the FIRST Robotics Championship will be held at the Edward Jones Dome in St. Louis, MO [April 25-28], and nearly 300,000 kids

worldwide will participate in our four programs. We will continue to expand until every student has the chance to participate and experience the excitement of innovation and discovery.

Q. I know your passion



IMPROVING MOBILITY

Kamen’s iBOT Mobility System, which uses self-balancing technology to overcome the limitations of traditional wheelchairs, earned him the Lemelson-MIT Prize in 2002.

lies with FIRST. Why do you believe this organization is so important to America's youth and our country?

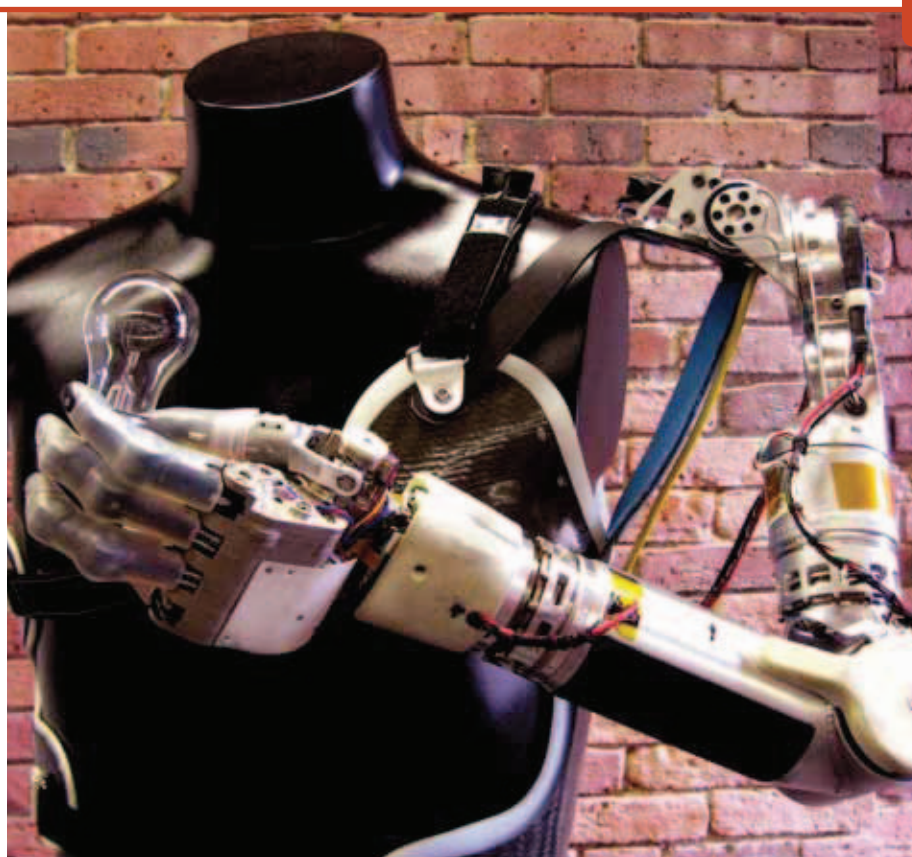
A. FIRST is committed to training and inspiring the next generation of technology leaders and professionals. Our country needs science and engineering innovators; they are the key to ensuring our economic success, military superiority, and national security. FIRST not only changes the lives of individual students, but is also strengthening our Nation and preparing us for the future.

Q. What areas of technology do you think hold the most promise for the U.S. military?

A. I am interested in the new developments in advanced sensors, particularly biologics and weapons.

Q. Does the military have a role in FIRST?

A. The military absolutely should have a big role in FIRST. There are currently pockets of support, but nothing equivalent to the support we receive from another government organization, NASA, which has clearly seen FIRST's importance. NASA sponsors more than 200 teams, and we have received the



EXTENDING TECHNOLOGY'S REACH

The DEKA Arm, a Defense Advanced Research Projects Agency and U.S. Army Research Office sponsored project which is still in development, is designed to restore functionality for people with upper-extremity amputations.

personal commitment of their Administrator, General Charles Bolden [MG Charles F. Bolden Jr. (USMC Ret.)]. I hope to see the military embrace FIRST as NASA has.

Q. What are two or three of the coolest projects to come out of FIRST?

A. As it happens, an all-girl FIRST LEGO League team from Iowa developed a prosthetic device to help a little girl from Georgia. Their invention has changed her life, and considering that DEKA is currently working on its own prosthetic device with DARPA, I'm excited that FIRST is already producing my competition! I'm very confident that the innovations developed by other FIRST teams will have extraordinary benefits for many more people.

Q. What is the next big thing?

A. I hope to see the next big thing at a FIRST event sometime very soon.

For more information on FIRST, visit www.usfirst.org.

“OUR COUNTRY NEEDS SCIENCE AND ENGINEERING INNOVATORS; THEY ARE THE KEY TO ENSURING OUR ECONOMIC SUCCESS, MILITARY SUPERIORITY, AND NATIONAL SECURITY.”

ENGINEERING ADVANTAGE

Dispelling misconceptions and improving
efficiencies, using MIL-STD-1916

by Jorge A. Muñoz, Chad A. Bareither, David M. Dreifus, and Sanket Patel

ZERO DEFECTS

Ensuring the prevention of defects in materiel provided to Soldiers, including munitions, produces products that allow them to meet mission demands. Here, Watervliet Arsenal (NY) General Foreman of Tubes Leon Rosko, accompanied by Watervliet Commander COL Mark Migaleddi, briefs Adjutant General of New York State MG Patrick A. Murphy about Watervliet's new lightweight 60mm mortar production on Aug. 23, 2011. (U.S. Army photo by John B. Snyder.)



Since 1996, DoD has used the methodology prescribed in MIL-STD-1916, *DoD Preferred Methods for Acceptance of Product* (online at [http://guidebook.dcmamil/34/milstd1916\(15\).pdf](http://guidebook.dcmamil/34/milstd1916(15).pdf)), instead of the traditional sampling plans noted in MIL-STD-105 (attributes sampling plans), MIL-STD-414 (variables sampling plans), and MIL-STD-1235 (continuous sampling plans) to accept product. MIL-STD-1916 is considered to be the foundation of the four pillars of supplier quality necessary for manufacturing good product. The four pillars consist of a robust:

1. Prevention System (Process Capability, Control, and Improvement (PCCI)).
2. Critical Characteristic Control System.
3. Quality Management System (QMS).
4. Detection System (Measurement System Evaluation (MSE)).

MIL-STD-1916 acceptance is based upon process control or, alternatively, “0-1” plans (zero accept-one reject). Accept on Zero (AOZ) replaces Acceptable Quality Levels (AQL). The tables listed in MIL-STD-1916 are less numerous than those of the other standards, which makes the sampling plans simpler and more user-friendly.

The purpose of this article is to dispel common misconceptions about MIL-STD-1916 and to remind the acquisition community of its usefulness and efficacy when applied correctly to reduce defects and waste and to improve efficiencies for both the government and the contractor. The U.S. Army Armament Research, Development, and Engineering Center (ARDEC) has taken the lead in delivering training sessions to government and contractor personnel to improve awareness, competent use, and consistent application of MIL-STD-1916.

This article does not, however, supplement or supersede any requirement stated within MIL-STD-1916 or any contract, nor individual guidance from any procuring officer for a specific contract.

PURPOSE OF MIL-STD-1916

A primary purpose of MIL-STD-1916, which went into effect in April 1996, is to encourage defense contractors, along with other commercial organizations supplying goods and services to the government, to leverage efficient and effective acceptance techniques based on process control (prevention), instead of prescribed sampling requirements, to ensure total conformance to contract requirements. MIL-STD-1916 fosters cooperative relationships between supplier and customer.

The goal is to support the movement away from an AQL-based inspection (detection) strategy to implementation of an effective prevention-based strategy including a comprehensive QMS, continuous improvement, and collaboration between the government and suppliers.

The objective is to create an atmosphere in which every noncompliance is recognized as a process variance and an opportunity for improvement, rather than an atmosphere in which acceptable quality levels are contractually sufficient.

KEystone OF QUALITY

MIL-STD-1916 supports Army Regulation 702-11, *Army Quality Program* (http://www.apd.army.mil/pdf/files/r702_11.pdf), and is a keystone for the four pillars of supplier quality, which support contractual quality assurance requirements.

In fact, complementing and improving cohesion with MIL-STD-1916 has been the foundation for the PCCI Clause

to prevent defects. The PCCI Clause was recently approved for use on Single Manager for Conventional Ammunition procurements (see “Process Capability, Control, and Improvement Clause Allows Enhanced Process Monitoring and Control,” *Army AL&T Magazine*, January-March 2011; http://asc.army.mil/docs/pubs/alt/archives/2011/Jan-Mar_2011.pdf), and for the new effort to establish a more robust Measurement System Evaluation Clause to replace the current Acceptance Inspection Equipment Clause. PCCI and MSE encourage process control and effective prevention-based strategies.

The basis for PCCI requirements, as stated in MIL-STD-1916, is that sampling inspection is inefficient and by itself does not control or improve quality. Product quality comes from robust product and process design, and from process control activities. PCCI requires contractors to develop controls to manage identified processes affecting key characteristics, and encourages continuous improvement in line with ISO 9001 of the International Organization for Standardization. The intended result is reduced inspection, in accordance with the options provided within MIL-STD-1916.

MISCONCEPTIONS

MIL-STD-1916 has often been misunderstood, resulting in misapplication of requirements and preventing the government and/or contractor from reaping its full benefits. Common misconceptions include the following:

1. The preferred method of acceptance is by attribute sampling.

MIL-STD-1916 prefers acceptance using contractor-proposed and process-focused provisions to ensure delivery of conforming product.

MIL-HDBK-1916—the companion document to MIL-STD-1916, for guidance only—describes tools such as Process Capability and Statistical Process Control that can be used to meet MIL-STD-1916 requirements.

The AOZ sampling tables are the alternate methods of acceptance. MIL-STD-1916 has a unified approach to lot inspection by attributes, lot inspection by variables, and continuous sampling by attributes. The verification levels (VLs) determine the level of effort in the sampling plan; the higher the verification level, the larger the sample size. All sampling plans use lot acceptance on zero nonconforming items in the sample and lot rejection on one nonconforming item.

While technical data packages note the VLs associated with the characteristics, that does not indicate a preference for acceptance by sampling, merely a minimum threshold that must be met if acceptance by sampling is desired. This misunderstanding has created confusion among government and contractor personnel.

2. MIL-STD-1916 is not applicable because specifications note 100 percent inspection for Critical Characteristics.

MIL-STD-1916, when specified in the contract, includes requirements that go beyond 100 percent inspection. More specifically, Paragraph 4.4 calls for a VL-VII sample to be taken after 100 percent inspection to validate the effectiveness of the inspection equipment and the applicable process. Consequently, detection of any critical nonconformance would result in actions as prescribed in Paragraph 4.5 of MIL-STD-1916.

3. MIL-STD-1916's sampling tables specify an AQL and therefore inherently allow acceptance of some nonconforming product.

Sampling plans do not use AQLs, and the government's expectation is total conformance to contract requirements. In certain cases, misinformed positions have stated that due to the statistical probability of a defect occurring within the lot, the AOZ plan is equivalent to an AQL-based acceptance requirement. This is false.

There is always a balance between producer and consumer risks; the AOZ plan stipulated in MIL-STD-1916 reinforces the customer's expectation that if a defect is found in the sample, the manufacturer must screen the product (at 100 percent) to remove any nonconformances.

The incentive is to guide contractors toward acceptance based upon process control, thereby preventing defects from occurring, rather than sampling and not improving their processes. The contractor's quality system, including manufacturing, inspection, material handling processes, and quality control measures, will be established and operated to consistently produce product that meets all requirements in accordance with Federal Acquisition Regulation 52.246-11, *Higher-Level Contract Quality Requirement*, or similar local nonstandard clauses that typically specify an ISO 9001-based QMS. Absence of any inspection or process control requirement in the contract does not relieve the contractor of responsibility for ensuring that all product submitted to the government conforms to all contract requirements.

The sampling plans and procedures of MIL-STD-1916 are not intended for use with destructive tests or when product screening is not feasible or desirable. In such cases, the sampling plans for use will be specified in the contract or product specifications. Paragraph 1.5 of MIL-STD-1916 notes these limitations.

OPPORTUNITIES FOR EFFICIENCIES

Notwithstanding the inefficient aspects of sampling, MIL-STD-1916 provides sets of sampling plans. However, as noted previously, these are alternate preferences. The primary focus of MIL-STD-1916

MIL-STD-1916 HAS OFTEN BEEN MISUNDERSTOOD, RESULTING IN MISAPPLICATION OF REQUIREMENTS AND PREVENTING THE GOVERNMENT AND/OR CONTRACTOR FROM REAPING ITS FULL BENEFITS.



FOUNDATION FOR QUALITY

A robust Quality Management System (QMS) is one of the four pillars of supplier quality for which MIL-STD-1916 is considered to be the foundation. Pictured is Alessandro Donati of Army Field Support Battalion-Italy, which earned recertification from the International Organization for Standardization as 9001:2008-compliant for its QMS. (U.S. Army photo by Chiara Mattiolo, U.S. Army Garrison Livorno Public Affairs.)

is to base acceptance on process control and robust QMS. Prevention of defects ensures that the Soldier receives products that meet the rigorous demands of warfare; that the flow of product delivered consistently meets all quality, cost, and schedule requirements; and that the back-end, life-cycle costs of maintenance are reduced by eliminating or reducing product defects.

The life cycle of munitions is long, and most munitions are single-use items by design. Elimination of waste is the core Lean principle. In an environment where all must “do more without more,” it is crucial that the community assess the health of its processes to improve efficiency and reduce waste.

How can the government and contractor, who partner to achieve improved efficiencies, reach this end state?

1. Build a foundation on fundamental principles of an effective QMS and compliance with standard requirements of an ISO 9001 or other contractually required QMS. Without an effective QMS, neither process control nor sampling-based acceptance will yield improvement. Process controls on characteristics and reduction of defects (waste) are proven approaches for improved customer satisfaction and long-term profitability. Government and contractors must communicate along these lines.

2. Review current requirements for improved cohesion with MIL-STD-1916. Government and contractors should be encouraged to review requirements periodically to ensure that they continually reinforce MIL-STD-1916.
3. Leverage government and contractor resources to jointly improve awareness and competency, and invest in training for personnel to ensure that all are in lockstep with achieving the vision of robust warfighting systems based upon high-quality processes.

EXAMPLES

Sampling plans use a common approach matched through seven VLs and five code letters (CLs).

THE INCENTIVE IS TO GUIDE CONTRACTORS TOWARD ACCEPTANCE BASED UPON PROCESS CONTROL, THEREBY PREVENTING DEFECTS FROM OCCURRING, RATHER THAN SAMPLING AND NOT IMPROVING THEIR PROCESSES.

The sampling plan selection follows a four-step process:

1. Determine VL (contract).
2. Decide on sampling type (lot attributes, lot variables, or continuous attributes).
3. Determine CL based on lot or production size.
4. Determine switching state (normal, tightened, or reduced) based on production history.

Examples are provided in the appendix to MIL-STD-1916.

SUMMARY

MIL-STD-1916 is a keystone in achieving higher-quality processes and products by reinforcing concepts of prevention, continuous improvement, acceptance based on process control, and collaboration between customer and supplier.

MIL-STD-1916 does not specify AQLs. However, it does provide sampling plans as secondary options that are based upon an “Accept on Zero” philosophy, with an expectation of total compliance with contract requirements.

There are still some misconceptions about MIL-STD-1916, as well as difficulties

in its implementation. However, working collaboratively with the contractor regarding these matters through customer/supplier integrated product teams will lead to a mutually rewarding and assertive “win-win” relationship that will result in improved products and services for the Soldier.

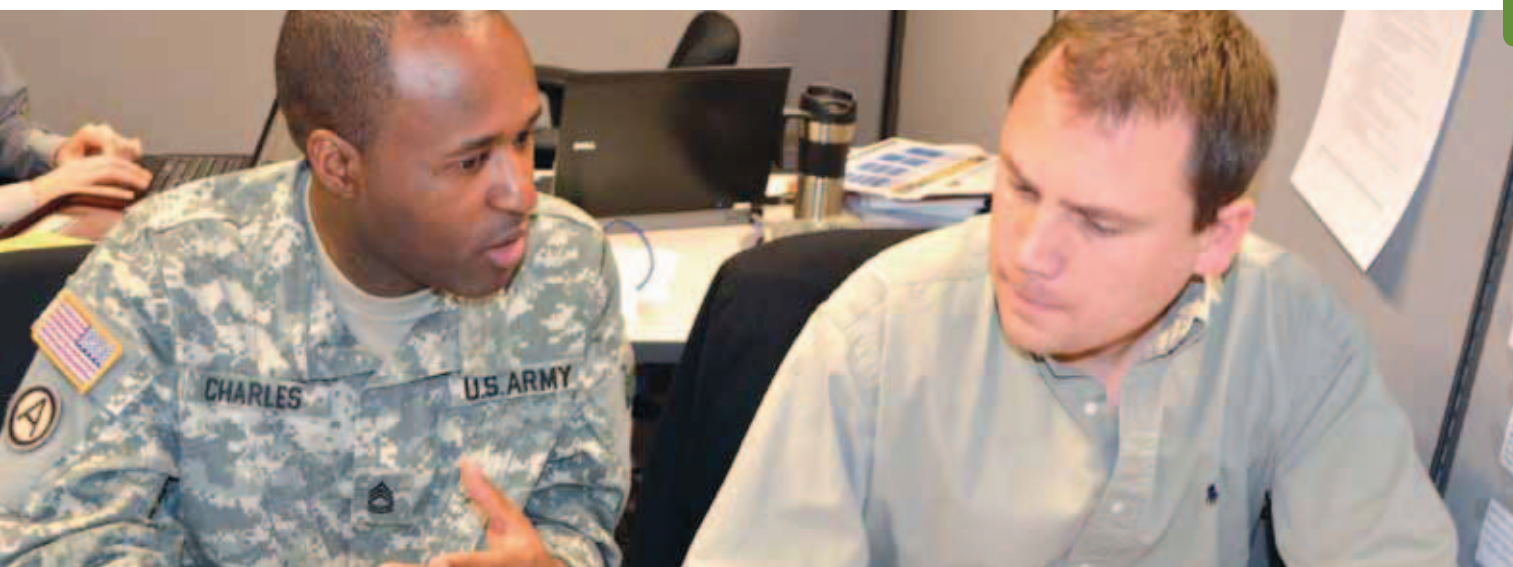
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CONTRACTING SCENARIO

Setting up an effective contingency contracting office is a key element for successful operations. Here, SFC Phil Charles, of the 714th Contingency Contracting Team at Scott Air Force Base (AFB), IL, and Isaac Thorp, Contracting Officer with the Aeronautical Systems Center at Wright-Patterson AFB, OH, work on contracting actions Jan. 30 at Fort Bliss, TX, as part of the two-week readiness exercise *Joint Dawn 2012*. (U.S. Army photo by Daniel P. Elkins.)

WHAT THE CUSTOMER SEES

A capabilities approach to establishing a contingency contracting office

by LTC Vernon L. Myers

Contingency operations are chaotic by nature. Usually they are defined by disorder, uncertainty, and immature processes and procedures. Contingency contracting officers (CCOs) are normally among the first personnel to deploy in response to a contingency or wartime situation. This first-in, boots-on-ground contracting presence fills the gap resulting from the Army supply systems' inability to fulfill the requirements of a rapid buildup.

Establishing a contingency contracting office is generally the first priority for CCOs; however, before a CCO can focus on serving as a business advisor and executing contracts, a decision must be made concerning how to operate.

Providing contracting support in this environment requires an efficient office that is easy to set up, familiar to Soldiers, and focused on providing contracting capability to customers. Too often, CCOs are so focused on setting up the office quickly that they forget to examine customer needs. A CCO should never establish an office just to have an office; the purpose of a contracting office is directly linked to the capability that it can provide. While the physical layout is important, a contracting office represents much more than that.

Specifically, an office is composed of people, systems, and capabilities that enhance the customer's ability to execute contingency operations. Instead of concentrating on the physical layout of the office, the focus must be on determining what contracting

Capabilities to Consider

Figure 1

CAPABILITY	DESCRIPTION	OUTCOME/RESULT
Acquisition Planning	Provide acquisition planning assistance.	Complete requirements packages are submitted IAW published acquisition lead times.
Procurement	Provide pre-award contracting support.	Contracts are awarded IAW customer requirement documents, in a timely manner and at a reasonable cost.
Workload Management	Manage new and existing requirement packages.	New requirements are assigned within one day of receipt; existing requirements are tracked until contract files are destroyed.
Customer Service	Provide quality, professional, and responsive customer service.	Customer needs/expectations are met or exceeded throughout the acquisition process.
Information and Data Management	Provide timely, accurate responses to data calls and taskers; manage contract information effectively.	Responses to taskers and data calls are submitted IAW suspense dates; contract files are organized to ensure easy file retrieval.
Common Operational Picture	Provide updated status of current operations.	Contracting personnel maintain operational situational awareness.
Vendor Base Intelligence	Provide useful information on the regional and local vendor base.	Vendor information is used to make effective business decisions.
Theater-wide Contracts Intelligence	Provide useful information on existing theater-wide contracts.	Existing contract information is used to make effective business decisions.
Contract Administration	Provide post-award contracting support.	Contracts are administered IAW FAR Part 42.
Training	Provide contracting officer's representative (COR), field ordering officer (FOO), and quality assurance (QA) training.	COR/QA personnel are trained to effectively execute contract oversight and management; FOO personnel are trained to initiate purchases below micro-purchase threshold.

capability will be provided to customers. Currently, a standard structure for a contingency contracting office does not exist; therefore, this article explores planning considerations and proposed capabilities, and presents a simple layout for establishing and operating a deployed contracting office.

It has been said that failure to plan is planning to fail. CCOs should heed this message as they consider how to establish an initial contracting capability in support of a contingency operation.

CONDITIONS FOR SUCCESS

Even before the deployment, CCOs should have a general idea of how they will operate. Setting the conditions for success requires the CCO to consider key elements of the overall operational environment, including the mission,

operational location, the operation's duration, and available resources.

- **Mission:** An understanding of the mission is crucial in determining what capability is required for the operation. If possible, the CCO must be fully integrated into the mission analysis process conducted by the supported unit.
- **Location:** A CCO needs to understand, among other things, the local vendor base, predominant languages spoken, types of currency, and the information technology infrastructure (i.e., Internet availability). CCOs can expect to be integrated with the supported units' logistics element, where office space is shared, or to operate out of independent offices consisting mostly of contracting personnel. Additionally, operating out of a tent or hotel room is not uncommon. The capabilities-based

approach for a stand-alone office can be tailored and/or adjusted based upon the situation. Whether operating out of a physical location or from a three-ring binder in a remote location, a CCO must understand that the location is not as important as the specific capability to be provided to a customer.

- **Duration:** The projected duration or length of the mission—whether it will be short-term or enduring—will influence the capability provided. The purpose of a CCO is to provide short-term contracting capability in support of contingency operations. As the duration of the mission changes, the capability provided will change.
- **Available resources:** A CCO should consider what resources are available to execute the mission: How many contracting personnel will support this operation? What is their level of

experience? Are any of these personnel warranted? What type of contract actions have they executed in the past, and what additional expertise is required?

A detailed analysis of the mission, operational location, duration, and available resources will help the CCO prepare for the upcoming mission. Many considerations will influence how a CCO operates; however, the key to success is deciding what capabilities will be provided to customers.

DEFINING CAPABILITIES

What is a capability? It is the quality of performing a specific function that is required, valued, or important to an internal or external customer. How can a capabilities-based approach be applied to establishing a contingency contracting office and to executing contracts during a contingency operation? In short, such an approach is concerned solely with what an office can do for customers: When a customer walks into a contracting office with a requirement, what can the CCO do for that customer? By viewing the office from the customer's perspective, it is easier to decide what capability is required.

In general, most contracting offices provide pre-award and post-award capability. The capabilities approach is a conceptual framework that not only addresses pre-award and post-award capability, but also helps CCOs structure the office and determine what additional capabilities to provide. When considering how to organize a contingency contracting office, CCOs should consider the 10 capabilities in Figure 1. These are not all-inclusive list of required capabilities, but a starting point that allows CCOs to add additional capabilities as necessary.

THE PHYSICAL LAYOUT

The next step is integrating these capabilities into a simple, efficient office layout.

CCOs typically approach establishing a contingency contracting office in an ad hoc fashion, with a focus on doing rather than thinking. CCOs should focus on providing specific contracting capabilities that are directly related and inextricably linked to the needs of the customer. Based upon U.S. Army Field Manual 4-92, *Contracting Support Brigade*, these are standard sections assigned to a contingency contracting battalion, including plans and policy, operations and requirements, and contract administration services.

Additionally, the layout demonstrates that the battalion has taken on the role of a regional contracting center (RCC) in a deployed location. The leadership and management of an RCC may consist of a director (a lieutenant colonel or major), a deputy director (a GS-14 in the 1102 series), and senior enlisted advisor or sergeant major (in Military Occupational Specialty 51C). A brief functional description of capabilities, and their corresponding sections or teams, follows:

- Acquisition planning is provided by the operations and requirements section, in coordination with the contract administration services section.
- Pre-award procurement is provided by the construction, services, and commodities teams.
- Workload management is performed by the director and/or deputy director, in coordination with the construction, services, and commodities team leaders.
- The operations NCO in charge provides customer service, via a dedicated help desk located at the entry point, by rapidly engaging customers and directing them to the appropriate section.
- Information and data management is accomplished by arranging multiple tracking and status charts or boards that display information about the current operational picture, thereby ensuring

that the RCC maintains operational situational awareness.

- The existing theater contracts and regional or local vendor base information capabilities provide real-time information for use in making business decisions.
- Post-award contract administration, along with training for quality assurance personnel and contracting officer's representatives, is performed by the contract administration services section.
- Finally, the plans and policy section provides customer training on the procurement process and field ordering officer's duties and responsibilities.

CONCLUSION

The capabilities-based approach to establishing a contingency contracting office is a customer-centered method that considers not only what the customer sees, but also what the customer can expect.

As long as the CCO conducts detailed planning, provides value-added capability, and integrates that capability into a simple structure, he or she will excel at helping customers fulfill their critical requirements.

For more information, contact LTC Myers at 210-295-6147/DSN 421-6147 or vernon.myers@us.army.mil. Or go to the 916th Contingency Contracting Battalion's milBook site at <https://www.milsuite.mil/book/groups/916th-contingency-contracting-battalion>.

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BETTER DATA, BETTER DECISIONS

U.S. Army Central deploys Theater Requirements, Contracting, and Execution Reconciliation Program to support fiscal stewardship

by BG Thomas A. Horlander and LTC James P. Kopko

“The Federal Government must have sufficient capacity to manage and oversee the contracting process from start to finish, so as to ensure that taxpayer funds are spent wisely and are not subject to excessive risk.” —President Barack Obama, March 2009

The United States enters the second decade of the 21st century with a weakened economy and an ever-increasing debt problem that ultimately affects every American. In the U.S. government, DoD in particular feels the pressures of this fundamentally different fiscal reality. Couple this with a rapidly changing security environment; the emergence of new threats and missions; and the recently published 2012 Defense Strategic Guidance, *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense* (online at http://www.defense.gov/news/Defense_Strategic_Guidance.pdf), which calls for a reduction in the U.S. Armed Forces, and DoD and its leaders face the daunting task of protecting the country’s strategic interests with reduced resourcing levels.

The Office of Management and Budget projects that the federal budget will grow by almost 25 percent from FY12 through FY16. During the same period, security spending, which includes DoD’s budget and constitutes the largest portion of the discretionary half of the federal budget, is forecasted to decrease from 24 to 20 percent. This stark fact alone is driving a watershed change to how leaders in our Armed Forces think about national defense. Secretary of Defense Leon E. Panetta emphasized in his Jan. 5 statement on the Defense Strategic Guidance (online at <http://www.defense.gov/speeches/speech.aspx?speechid=1643>), “We will continue aggressive efforts to weed out waste reduce overhead, to reform business practices, to consolidate our duplicative operations.”

SUPPORTING GOOD STEWARDSHIP

The Theater Requirements, Contracting, and Execution Reconciliation (TRCER) program combines contract data to create a unified data table that provides a wealth of information to leadership in order to make informed decisions quickly. Here, Contract Specialist Jo Price offers contracting advice to MAJ Michael Watson, a 614th Contingency Contracting Team Soldier, as part of her mentoring duties Feb. 13 at Fort Benning, GA. (U.S. Army photo by Kristian Ogden.)



EMPOWERING LEADERS

TRCER works to engage key leaders in the contracting process from start to finish. Here, Brig Gen Casey D. Blake, Deputy Commander, Joint Theater Support Contracting Command, U.S. Central Command, Afghanistan, speaks with a civil-military operations Soldier and Afghan contractor supporting Task Force Gridley, 1249th Engineer Battalion, during a visit to a project site in Sharana City, Paktika Province, Afghanistan. Blake's June 17, 2011, visit to the site was part of an assessment of civil-military operations in Paktika. (Photo by SSG Anna Rutherford.)

DEPENDENCE ON CONTRACTED SERVICES

Over the past decade, the DoD budget has more than doubled. The U.S. Army's top line more than tripled, from \$78 billion in 2001 to more than \$252 billion in 2008. Since the 2008 high-water mark, the Army's annual budget has decreased (to \$207 billion in FY12), proportionate to the decrease in the defense budget. However, the impacts of the unprecedented magnitude and velocity of that budgetary growth in the first decade of this century still prove challenging and wanting of more reform to the department's business practices.

A growth of this magnitude, velocity, and complexity cannot be assimilated easily in a bureaucracy the size of DoD. Consequently, much of this growth—by design—came through the use of contracts: for staff augmentation, services, weapon systems procurement, and large enterprise systems. In virtually every aspect of national security, contractors are present and contributing. From Highly Qualified Experts, think tanks, and

expert advisory/consulting services at the highest levels of DoD, to aviation and vehicle mechanics, groundskeepers, and dishwashers at the tactical level, an outsourced capability is integral to virtually every operation.

USARCENT CONTRACTING ENVIRONMENT

Because of the rapidly changing operational environment and a multitude of nontraditional missions assumed by the Armed Forces in two separate theaters of operation (Iraq and Afghanistan), the Army and DoD as a whole have become highly dependent on outsourced capabilities.

Consistent with DoD and the Army in FY11, U.S. Army Central (USARCENT) executed almost 60 percent of its \$26.4 billion Overseas Contingency Operations budget on contracts, which were serviced by more than 20 contracting offices located throughout CONUS and abroad.

While many non-enduring and unique capabilities clearly require some degree

of outsourcing in many specialty areas where the Armed Forces lack the capabilities, force structure, and skill sets to accomplish the mission, the command has taken the theater lead to institutionalize a program and embed control measures into business processes that will achieve more precise requirements generation, improve process management, and produce cost savings and/or avoidance by right-sizing existing outsourced capabilities that the theater no longer needs for the current fight.

TRCER PROGRAM

The declining budget, complex resourcing environment, and changing strategic mission call for the theater to have an even more vibrant financial management program to optimize its purchasing power and to ensure the highest level of fiscal stewardship over the command's resources. USARCENT leadership recognizes that it cannot have an effective financial management program without an effective contract management program. To embed that concept into its operations, ARCENT has established the Theater Requirements, Contracting, and Execution Reconciliation (TRCER) program, founded on three basic keys to success:

1. Leadership involvement.
2. A comprehensive, automated information management system.
3. A structured review process.

The overarching principle of the program is simple: Empower leaders with a comprehensive database and a process by which to review key management information in that database on a recurring basis, and they will inevitably identify efficiencies, cost savings, and cost avoidance that ultimately enhance the effectiveness of their operations while increasing their purchasing power.

First and foremost, TRCER is a leader's program. Its success depends on key senior leadership involvement to inculcate new processes into the organization that are enduring and that enable leaders at all levels to make timely, fiscally informed operational decisions.

The TRCER database is a "dashboard" tool that leverages inbound feeds from existing databases of records throughout DoD in the areas of financial management, contracting data, contracting officer's representative (COR) data, and a limited amount of manual input from the user. This desktop tool combines the data into a unified data table that produces a dashboard to review each contract, enables the leader to perform customized searches, and automatically generates email to specified users to inform them of critical milestones, such as when the next requirements package is due or when a COR's certification requires renewal.

TRCER provides total contract visibility throughout the continuum of requirements generation and validation; contract solicitation and award; and post-award management and execution. The automated tool interfaces with other Army systems to provide a one-stop, user-friendly database that a leader can access, manipulate to generate key reports, and use to view program-generated contract management review templates and to organize and schedule TRCER, such as a Coalition Acquisition Review Board packet submission, contracting office actions, and post-award reviews.

The review process starts at the action officer level, where the requirements owner, the COR, and the resource manager conduct a monthly assessment of the contract. The assessment is to update information such as financial

execution data, satisfaction with the contractor's performance, identification of key future events such as when the next requirements package is due and when the period of performance expires, and a recommendation regarding the execution of a contract option year.

The monthly assessment allows the leader of the Office of Primary Responsibility for managing the contract (usually at the staff level) to conduct internal contract reviews that identify where efficiencies can be gained and the necessary actions required to manage the contract.

The review process culminates with the organization's Quarterly Contract Review Board, chaired by a senior leader (a colonel or general officer) who reviews an established portfolio of contracts with the requirements owner, contracting and resource management staff, staff judge advocate, COR, etc. who are present during the review.

Leveraging this comprehensive body of expertise, all present in a single forum, empowers the leader to have a holistic understanding and assessment of the contract and to make well-informed decisions in a timely manner. The results of these reviews are reported out to the commanding general of the organization.

THE WAY AHEAD

The TRCER program is not without precedence and is applicable at virtually every level in any environment.

Similar programs have been implemented with excellent results in operational units and deployed environments, such as in support of *Operation Iraqi Freedom*. TRCER is a powerful tool to aid commanders in one of their fundamental duties—being good stewards of the

Army's resources while providing high-quality, essential contracted services to the Soldiers and civilians they are privileged to serve.

The Army's ability to sustain itself fiscally as the world's premier fighting force depends on tools like TRCER. It has proven to facilitate sound and timely sourcing and resourcing decisions that fully support Army Force Generation operations and other key operating and generating force requirements, while maximizing the purchasing power of its operating budget.

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CATALYST FOR CHANGE

Shrinking defense budget heightens meaning
of better buying power and Army efficiencies

by Joseph M. Jefferson

“We are changing the culture and focusing on teamwork and collaboration. We are focusing on affordability and efficiency across multiple organizations to figure out how we can be more efficient.”

—Heidi Shyu

Acting Assistant Secretary of the Army

for Acquisition, Logistics, and Technology, Oct. 11, 2011

BETTER AMMO, MORE EFFICIENTLY

Program Executive Office (PEO) Ammunition's Project Manager Combat Ammunition Systems achieved a cost avoidance of \$20 million from FY14 to FY16 by developing a standard inspection process to identify hardware in the Excalibur round that was susceptible to tin-whisker failure, to improve the projectile's quality. Here, SGT Joseph Hatch, 1st Battalion, 37th Field Artillery Regiment, waits next to an Excalibur round that shoots from an M777A2 Howitzer during a field training exercise at Fort Irwin, CA, Aug. 19, 2011. (U.S. Army photo by SPC Jennifer Grier.)

The signing of the Under Secretary of Defense for Acquisition, Technology, and Logistics memorandum, *Implementation Directive for Better Buying Power – Obtaining Greater Efficiency and Productivity in Defense Spending*, on Nov. 3, 2010, ushered in a new era of defense acquisition.

The term “efficiencies”—and the units of measurement used to identify and capture them—have taken on an entirely new meaning. As the adage goes, “What it means to you often depends on where you are standing.” So it is with capturing tangible monetary savings and the not so tangible, which have come to be known

as savings and avoidance, respectively. The *Budget Control Act of 2011*, passed by Congress in August, requires DoD to cut \$487 billion in projected spending over the next 10 years.

As a result, the defense budget will be more competitive than ever. The necessity to represent the affordability and credibility of Army acquisition programs to Congress will be more critical than ever. Enter the concept of better buying power, which in its simplest form represents the dichotomy of the economic theories of positive economics, or “what is,” and normative economics, “what ought to be.” In this contrast lies the underpinning for the change in defense acquisition culture.

SOURCES FOR EFFICIENCIES

The model for sources of Army efficiencies (Figure 1) illustrates that the Better Buying Power initiatives (BBPi) are not the only source of practices and ideas to cut a path to a leaner more efficient Army. Long-standing efforts in the disciplines of value engineering (VE) and Lean Six Sigma (LSS) have been and continue to be mediums for gathering and realizing both monetary and nonmonetary efficiencies across the Army.

Value engineering, to quote the U.S. Army Materiel Command’s *Contractor’s Guide to Value Engineering*, is “a systematic and creative way of analyzing an item, system, process, facility, etc.,

GETTING MRAPS TO SOLDIERS FASTER

PEO Combat Support and Combat Service Support and the Joint Program Office Mine Resistant Ambush Protected (MRAP) Vehicles, through a Lean Modernization Project, were able to economically recover vehicles to avoid long procurement lead times. Here, rows of MRAPs are lined up at Contingency Operating Base Adder, Iraq, as the 2nd Squadron, 183rd Cavalry Regiment, Virginia Army National Guard prepares for its final convoy out of Iraq Dec. 2, 2011. (Photo by SPC Anthony Zane.)



for the purpose of identifying essential function(s) and alternate methods to adequately satisfy those essential functions in the most cost-effective manner. The normal result of VE application is a decrease in cost while improving quality, reliability, durability, effectiveness and/or other desirable characteristics.” LSS is the synergy of Lean and Six Sigma that results in the elimination of the seven sources of wastes (defects, overproduction, transportation, waiting, inventory, motion, and over-processing), using the scientific methodology of Define, Measure, Analyze, Improve, and Control.

BBPi uses the practices and disciplines of VE and LSS, coupled with very specific language, to attack inefficiency across the areas of costing and budgeting, contracting, and the Army’s overall approach to program management. It should not be relegated to five categorical focus areas and 23 initiatives, but rather viewed as a broad new approach, giving greater breadth and depth to garnering and realizing efficiencies.

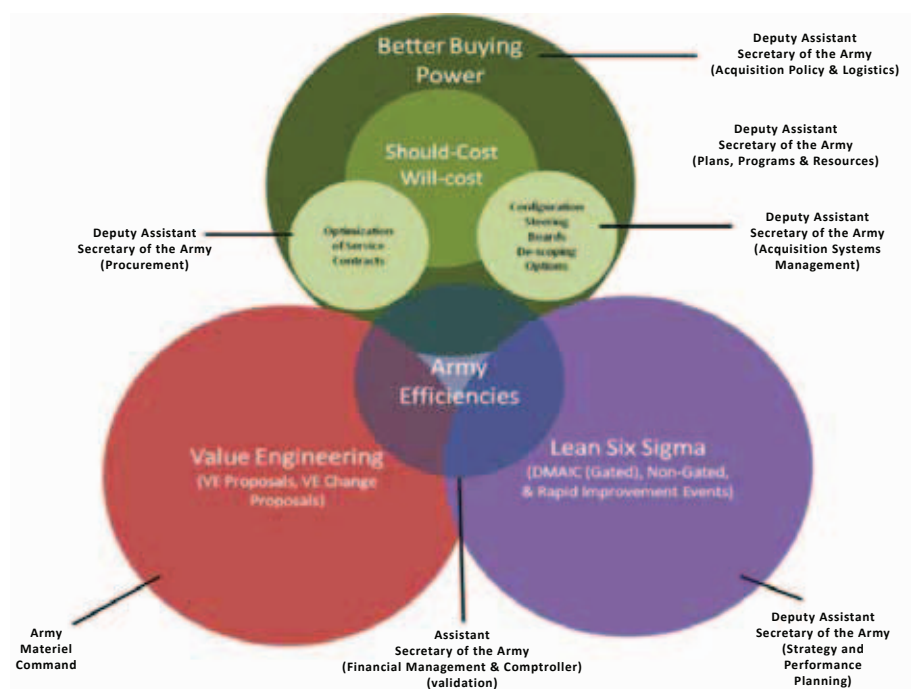
MEETING THE CHALLENGE

“We’re facing fiscal realities. We’re all sharing the pain,” Shyu said during a town hall meeting Aug. 19, 2011, at Aberdeen Proving Ground, MD. As of Feb. 2, through actions directly attributable to BBPi, the Army had achieved acquisition program efficiencies totaling \$11,028,851,029 in savings and \$12,681,894,257 in avoidance across Program Objective Memorandum 2012 through 2017, effective Jan. 12.

This represents clear and measurable progress toward the targeted \$487 billion defense deficit. As with all major change, BBPi has ample critics, who provide a healthy dose of skepticism regarding its effectiveness. Critics aside,

Finding Efficiencies

Figure 1



Better buying power and Army efficiencies involve multiple players and multiple methods. (SOURCE: PEO Command, Control, and Communications – Tactical.)

it is undeniable that applying better buying power principles yields results; is the impetus for cultural change in defense acquisition; and has forged a permanent place in the defense acquisition lexicon.

For more information, go to the Defense Acquisition Portal’s Better Buying Power Gateway (<https://dap.dau.mil/leadership/Pages/bbp.aspx>). The BBPi training modules contain exhaustive information on the initiatives, briefings, and templates.

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FOCUS ON SERVICES

ASAALT's Senior Services Manager takes steps to optimize acquisition practices and reduce costs

by Kevin A. Maisel

MOVING THE FORCE

The transportation portfolio includes services such as moving equipment to Army operations worldwide. Here, Soldiers from the North Carolina Army National Guard's 1452nd Heavy Equipment Transport Company prepare to depart on convoy from Camp Arifjan, Kuwait, to Camp Buehring, Feb. 9. (Photo by MAJ Matthew Devivo.)



The Army spends more than \$50 billion annually to buy essential services for Soldiers and their families, an amount more than half of the Army's yearly acquisition spending. Federal acquisition regulations define services as procurements that directly engage the time and effort of a contractor whose primary purpose is to perform an identifiable task, rather than to furnish an end item of supply

To improve efficiencies in the execution of service procurements, the Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASAALT) established the Senior Services Manager (SSM) position as the single Armywide focal point for effective services acquisition.

In May 2011, six months after establishing the SSM position, Secretary of the Army John McHugh directed ASAALT to develop a plan that would optimize services acquisition and reduce costs by 5 percent. In September, McHugh approved the *Optimization of Army Services Acquisition Implementation Plan*, the blueprint for a new approach to efficiently and effectively execute services acquisition. The plan included development of a supportable governance structure with well-defined approval and delegation processes, corresponding management controls, and visibility of cost savings.

The implementation plan does not formally apply to services obtained for construction, research, and development, or in support of programs managed by program executive offices (PEOs) and subject to a milestone decision review; it does require that efficiencies be applied to processes and requirements for Army-funded service acquisitions equal to or greater than \$10 million—a



MAINTAINING EQUIPMENT

Equipment-related services encompass aviation maintenance. Here, SGT Jonathan Lane, a crew chief assigned to Task Force Lobos, 1st Air Cavalry Brigade, 1st Cavalry Division, installs lockwire on a transformer rectifier in preparation for installation in a CH-47F Chinook helicopter's electrical system, Feb. 9 at Camp Marmal, Afghanistan. (Photo by SGT Felix Acevedo.)

lower value threshold than ever for acquisition oversight.

The plan's underlying tradecraft efficiencies apply to the acquisition of services at all dollar values, however. The plan sets minimum criteria for internal processes and leverages them to ensure the desired visibility. The criteria include the designation of a Command Service Executive (CSE), the use of multifunctional integrated process teams, standard processes for the requiring activity to employ for services requirements, and application of the portfolio management concept.

Moreover, the plan institutes a governance structure that provides a portfolio-based, life-cycle management and oversight architecture for services acquisition.

DATA CALL

In spring 2011, to establish increased management controls and visibility, the Office of the SSM conducted a

services acquisition inventory data call, a significant accomplishment. The collective response to the data call provided the first-ever Army baseline of requirements for services by command and by portfolio, as well as a requirements forecast and savings projections. Together, all 32 Army Commands, Direct Reporting Units, Army Service Component Commands, and the acquisition PEOs identified service requirements valued at \$10 million or more for FY12 through FY16.

The commands also reported 1,047 different service requirements with a total value of \$109 billion. In these requirements, they identified how they would use DoD better buying power techniques and other efficiency measures to reduce the cost of services by 5 percent. Collectively, they identified \$11.4 billion in savings for the reporting period, a targeted cost reduction of approximately 10 percent.

The initial 2011 data call projections are tracked through quarterly savings and semiannual forecast efficiency reporting. The objective of this reporting mechanism is both to track the commands' progress toward the projected savings and to capture savings data that were not anticipated when the forecasts were made. The data call links fiscal accountability of commanders for the services they are buying with future periodic peer review processes. The Office of the SSM expects to brief McHugh this spring on the latest results from the data call and cost-saving effort.

An emerging effort is the Annual Requirements and Execution Review (ARER), intended to assess the success of cost-saving

measures applied to requirements execution. Service acquisitions from each portfolio group are selected to undergo this annual review, to examine the efficiency of improved tradecraft practices.

All service acquisitions valued at \$10 million or greater are subject to an ARER, which can be characterized as an annual appraisal of service acquisition management and oversight processes. The review is a valuable tool in determining what works and what doesn't in meeting the Army's fiscal and mission objectives.

The first ARER is scheduled for May. The results are expected to serve as a benchmark for future such reviews.

IMPROVED TRADECRAFT

The implementation plan also describes tools and training available to both acquisition and non-acquisition personnel that will enhance the conduct of services acquisition by improving the skills and understanding of those who will execute it. Improved job skills unleash the capability for better buying power efforts.

Applying better tradecraft to services acquisition takes a comprehensive approach that addresses the need to reduce costs while maintaining mission capability. It relies on oversight and governance structure, establishing clear lines of accountability to those who procure services. This is an important component in the successful application of better buying power efficiencies to Army procurement.

Improving efficiencies also includes well-defined roles and responsibilities for HQDA and subordinate organization leaders; enhanced tradecraft processes for acquiring services; and formal governance and review mechanisms to improve the visibility and accountability of requiring activities for what they spend. Most important is that better tradecraft introduces a new way of doing business in services acquisition.

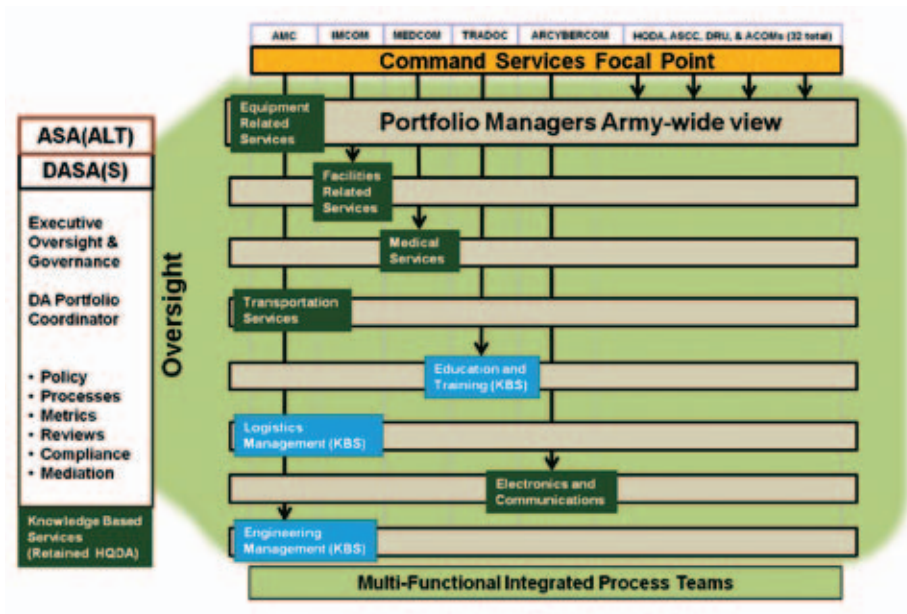
Integral to this approach is a governance structure that includes portfolio management and processes to identify, track, and monitor projected savings.

PORTFOLIO GOVERNANCE

The *Optimization of Army Services Acquisition Implementation Plan* established an Armywide services governance structure with day-to-day oversight by the SSM. As an integral part of the plan, the portfolio management concept promotes efficiency and cross-command synergies in buying services. This "new way of doing business" has improved better

Services Governance Structure

Figure 1



The Army's recently established services governance structure shows the interrelation of the full-time portfolio managers in five designated commands and the Office of the Senior Services Manager (SSM). (SOURCE: SSM.)

Services Acquisition Approval Process

buying power for the Army and has led to significant savings.

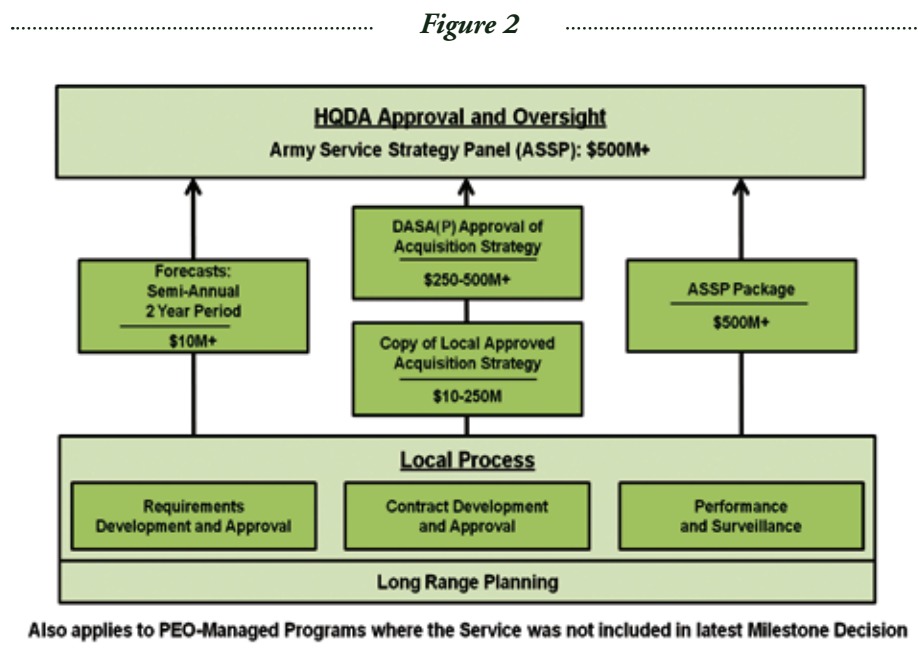
The portfolio governance structure is organized in accordance with the taxonomy directed by the Under Secretary of Defense for Acquisition, Technology, and Logistics. Six broad portfolio groups—knowledge-based, facility-related, transportation, medical, electronics and communication, and equipment-related—align with this taxonomy.

Portfolio governance is essential to achieving the Army’s goal of a disciplined and rigorous services acquisition process. The structure integrates relationships between Army commands and designated portfolio managers as responsible agents to manage horizontally across commands within their portfolio group.

Portfolio governance requires commanders or staff principals to be responsible for managing resources, delivering services, and achieving savings. Commanders are responsible for efficiencies in all phases of the services life cycle and are encouraged to treat service acquisitions as programs, not merely contracts.

Commanders are required to appoint a CSE, at the general officer or Senior Executive Service level, as a single focal point to manage all service acquisitions for the command. Commands must have an internal process for managing service acquisitions that meets minimum standards, including the use of multi-functional integrated process teams.

Commands are supported by full-time portfolio managers, each a senior civilian in five designated commands—U.S. Army Materiel Command, Installation Management Command, Cyber Command, Medical Command, and Training



An important aspect of the efficient governance of services acquisition is the new process for approving services procurement acquisition strategies. (SOURCE: SSM.)

and Doctrine Command—and in the Office of the SSM (see Figure 1). The five commands are mission-organized and have expertise in specific portfolio groups. Because no single command is mission-oriented to oversee the knowledge-based services portfolio group, the Office of the SSM retains this portfolio for management.

Portfolio managers recommend strategic sourcing solutions and best practices, provide lessons learned, assist in market research, maintain tools and templates, and support the conduct of periodic spending analyses to gain insight and enable fact-based strategic decisions. They also help commands improve the management and effectiveness of services acquisition. They promote better buying power initiatives and compliance with DoD Instruction 5000.02, Enclosure 9, *Acquisition of Services*; Army Regulation

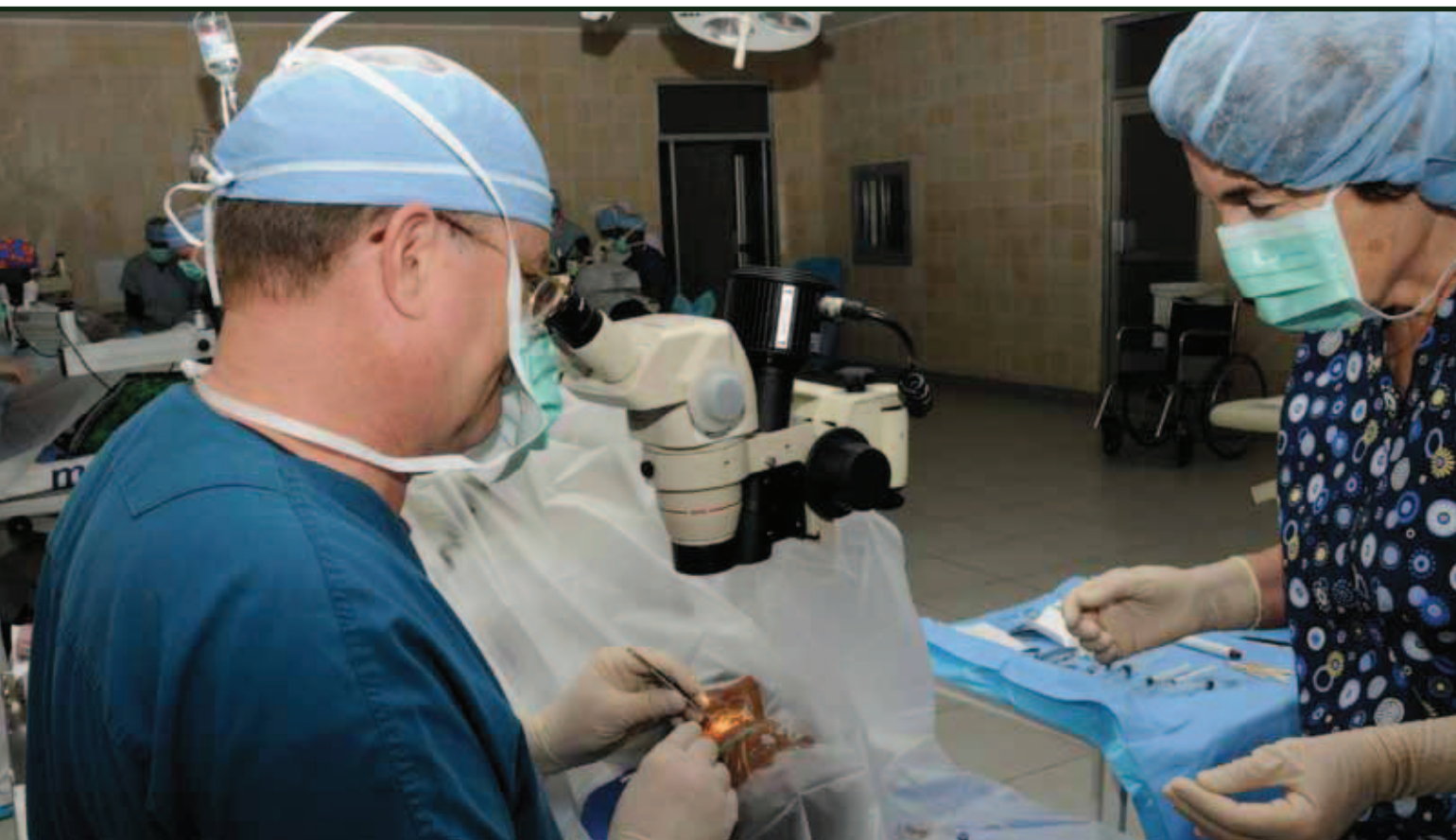
70-13, *Management and Oversight of Service Acquisitions*; and ASAALT guidance.

Portfolio coordinators are assigned to the Office of the SSM to provide HQDA staff oversight and coordination of service acquisitions within assigned portfolios. They help the SSM, CSEs, and portfolio managers implement governance and policy; resolve governance issues within and across commands; and plan for each ARER of services acquisition portfolios.

ACQUISITION STRATEGY APPROVALS

Lastly, an important aspect of the efficient governance of services acquisition is the new process for approving services procurement acquisition strategies.

Services acquisition strategies valued at more than the simplified acquisition threshold, but less than \$250 million, will



SUPPORTING HEALTH CARE

High-quality health care services for military members, veterans, and their families, including supplying military hospitals, fall within the medical services portfolio. Here, Dr. Bill Wilson, a retired U.S. Army ophthalmologist, conducts cataract surgery on a patient while his wife, Mary, provides surgical assistance at Bububu Military Hospital in Zanzibar, Tanzania, in February. (Photo by SGT King Terys.)

continue to be reviewed and approved at the local agency level, in accordance with current *Army Federal Acquisition Regulation Supplement (AFARS)* guidance. To maintain visibility, the SSM receives copies of all acquisition strategies valued at between \$10 million and \$250 million.

The SSM will now approve acquisition strategies for service acquisitions valued at \$250 million to \$500 million. Service acquisitions valued at \$500 million or more will continue to follow the current *AFARS*. (See Figure 2, Page 107.)

CONCLUSION

Ultimately, the ASAALT, as the Army Acquisition Executive, is the senior official responsible for acquiring services for the Army. The Office of the SSM has the

job of developing Army services acquisition policy and providing oversight of the services governance concept. Portfolio groups provide the structure needed to effectively and efficiently manage specific mission requirements.

This enhanced oversight of services acquisition strategies, along with the emerging portfolio governance approach, has led to significant efficiencies and substantial savings in services contracting. New roles for CSEs, portfolio managers, portfolio coordinators, and the SSM have improved oversight and allowed services acquisition tradecraft practices to flourish.

For more information on services acquisition, contact Mike Padden,

Acting SSM and Director for Services Acquisition Coordination, Execution, and Analysis, at michael.c.padden.civ@mail.mil or 703-545-4771.

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Provide affordable, world class
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situational understanding
and decisive action.

Mission

A team of dedicated
professionals driving
innovation and exceptional
value in understanding and
shaping the Battlespace.

Vision



Intelligence - Electronic Warfare - Sensors - Situational Understanding

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SECOND-GENERATION PARADIGM

By staying ahead of product growth,
PEO STRI improves efficiencies

by Brian E. Kemper and Dr. Jeremy T. Lanman



BETTER INFORMATION, BETTER TRAINING

Soldiers perform live-fire qualification on a Digital Range Training System Instrumented Range. Live Training Transformation (LT2) products allow for improved training data collection and after-action review capabilities in heavy tactical vehicle training, live-fire gunnery training and qualification, and combined live-fire exercises. (U.S. Army photos.)



BRINGING TRAINING ALIVE

Soldiers undergo a simulated improvised explosive device attack at Camp Blanding, FL. LT2 products enhance the training experience by providing battlefield tracking, control of effects, and after-action review.

With success comes growth that often introduces new challenges. The key is to address these challenges early and to proactively develop next-generation solutions. For Project Manager Training Devices (PM TRADE), this involves streamlining the software product line to support the efficient production of systems by reducing the complexity of development, deployment, and sustainment.

As noted in the article “Integration Imperative: Transforming live training through common standards” (*Army AL&T Magazine*, October-December 2011; http://asc.army.mil/docs/pubs/alt/archives/2011/Oct-Dec_2011.pdf), PM TRADE has taken the lead within Program Executive Office Simulation,

Training, and Instrumentation (PEO STRI) in evolving core asset-based product lines through the introduction and development of the Live Training Transformation (LT2) strategy.

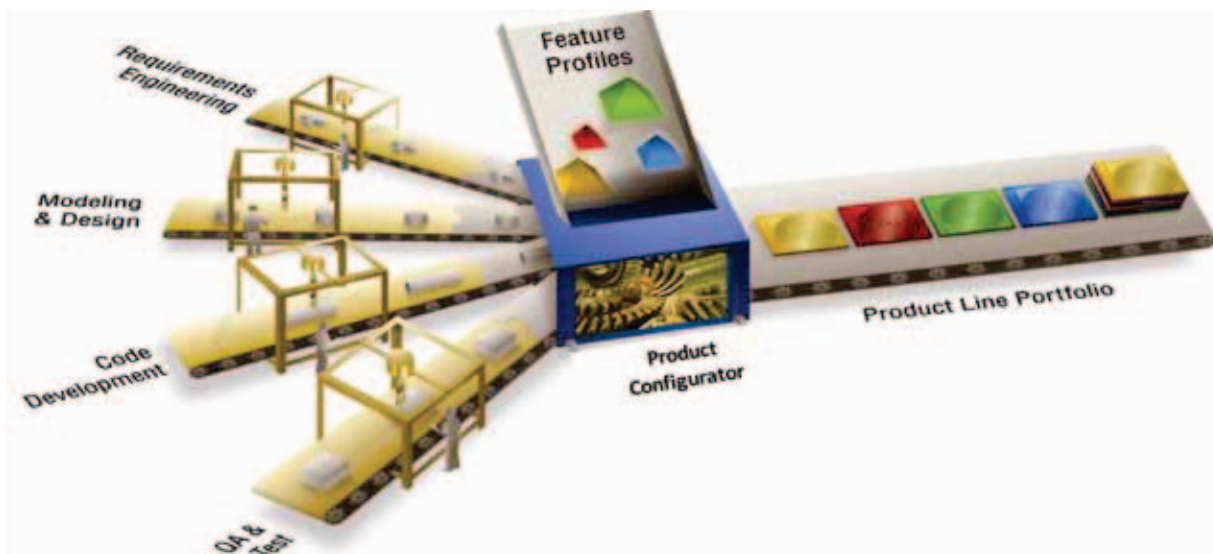
The LT2 Family of Training Systems is based on the Common Training Instrumentation Architecture (CTIA), common components, and other LT2 core assets. The CTIA is the technical framework that provides commonality across training instrumentation systems and is the live training instrumentation interface to the Live, Virtual, Constructive Integrated Training Environment. It consists of standards and protocols to be used by system developers and is the core software infrastructure of training instrumentation systems.

Reusable LT2 core assets consist of the open architectures, common software components, standards, processes, policies, governance, documentation, and other assets. Together these make up the common approach and frameworks for developing live training systems in support of home station, deployments, Military Operations on Urban Terrain, the Maneuver Combat Training Center, instrumented live-fire range training, and Joint training domains.

Maximizing component reuse reduces fielding time and minimizes programmatic costs, while enhancing training benefits. “This live training transformation has generated a considerable return on investment within PM TRADE’s live training portfolio and realized significant cost avoidance for the Army

Product Line Management

Figure 1



Second-generation product line management (2G PLM) introduces a new factory model, whereby products are created from feature profiles and an automated product line factory, generating all variants of products and programs from a consolidated set of core assets. (SOURCE: Program Executive Office Simulation, Training, and Instrumentation.)

across development and sustainment,” said COL Mike Flanagan, PM TRADE.

The LT2 product line architecture, standards, assets, and environment have been used by more than 16 major Army and DoD live training programs, with more than 130 systems fielded. (See “Supporting the Warfighter.”)

Second Generation Product Line Engineering (2G PLE) techniques will ensure that the PM TRADE software product line strategy maintains the combat edge and builds resilience in our forces by providing state-of-the-art training systems using a Consolidated Product Line Management (CPM) paradigm. This enables an automated production line process that optimizes productivity and cost, eliminates duplication and divergence, and provides scalable and efficient means of production. With CPM/2G PLE, the

Army live training domain has made an investment in an advanced product line systems engineering capability and is reaping substantial benefit.

SUCCESS BRINGS CHALLENGES

This widespread usage of LT2 products presented challenging repercussions. The first-generation software product line reduced stovepipe development and the initial cost of developing new products in the LT2 family. However, with this product-centric perspective and increasing demand, managing the multiple customer variations could have become an issue as the portfolio continued to evolve. Product teams could pull individual components and add features unique to their individual solutions.

With each new baseline created, the cost and effort would begin to grow

exponentially for merging software features and patches from the products back into the core assets and then out to other members of the product line.

“We recognized early on that as the number of successful deployments in the LT2 product line grew, the associated exponential growth in cost and complexity for maintaining the integrity of the product line would become difficult to manage,” said Mike Dillon, CTIA Project Director. “To optimize productivity and cost, we needed to eliminate duplication, divergence, and the resulting merging. Our most effective way ahead would be to implement a product line approach that provides scalable and efficient means of production.”

With these challenges identified, PM TRADE is implementing Second Generation Software Product Line Management

(2G PLM) to consolidate the LT2 product baselines using variation management and an integrated, feature-driven, product-line factory approach to software (see Figure 1). This incremental approach incorporates state-of-the-art automated software tools and processes, management dashboards, and software product line technology, all while protecting the investment in the existing LT2 core assets.

“The main shift in 2G PLM is realizing it is much more effective to view systems and software product line engineering as creating a means of production—a single system capable of automatically producing all of the products in a product line—rather than viewing it as the creation of numerous interrelated products,” said Dr. Charles Krueger, Chief Executive Officer and Founder of the consulting firm BigLever Software Inc., and an internationally known software product line expert.

FEATURE-DRIVEN PERSPECTIVE

2G PLM allows for an automated process of generating all variants of products from a consolidated set of core assets. This means of production is simpler, more agile, more scalable, and more cost-effective. Shifting from a product-centric to a feature-driven perspective supports core assets based on the needs of the entire product line, resulting in high levels of reuse, deep asset expertise, and optimal quality. This eliminates uncontrolled growth in complexity management and allows us to move beyond trying to keep up with all the current product issues and instead to focus on the evolution of the LT2 product line.

Supporting the Army vision to evolve live training solutions and to improve cost efficiencies in a resource-limited

SUPPORTING THE WARFIGHTER

LT2 software assets have been used not only by the Army, but also by the Marine Corps and Air Force to meet their requirements ahead of schedule and for significant cost savings.

The Marine Corps Instrumented Training System was developed reusing 87 percent existing LT2 software and was completed in two years, saving \$11 million and seven years in schedule.

The U.S. Air Force Counter Improvised Explosive Device (IED) After-Action Review System leveraged LT2 assets and fielded seven training systems to meet the Air Force IED training needs at four bases, with very little developmental investment.

LT2 Exercise Control, a composable set of capabilities, has been systematically leveraged for 13 different products fielded around the globe, delivering more than \$94.2 million in cost avoidance for new product development, as well as significant cost avoidance for new equipment training, sustainment, and procurement.

environment, the 2G PLM approach provides the means to:

- Protect the significant live training investment.
- Provide for the continued development, production, and sustainment of LT2 products and ease the insertion of new technology.
- Realize objectives for return on investment and sustainment cost avoidance.
- Enable managers to maintain visibility and provide enhanced configuration

control of their systems, to avoid duplicating efforts.

CONCLUSION

“Managing the LT2 product line based on features rather than products will result in optimized scalability and improved time-to-field, ensuring our Soldiers are prepared for the challenges they face on the modern battlefield,” said Flanagan.

PM TRADE is focused on systemic reuse to eliminate redundancy, increase cost avoidance, and improve production efficiencies. The 2G PLM approach demonstrates PM TRADE’s dedication to remain at the forefront of finding efficiencies, providing Soldiers with the realistic training solutions necessary to ensure that they are the best-trained force in the world.

For more information, visit the Live Training Community portal at www.lt2portal.org.

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THE EFFICIENCIES CHALLENGE

How one PEO charted a path to working smarter, faster, and better—at less cost

by Lori A. Grein

Program Executive Office Ground Combat Systems (PEO GCS) is responding to the changing fiscal environment by embracing the challenges set by our country's leaders to become a more efficient and agile organization. The outcome? Within one year, PEO GCS completed 33 projects, resulting in a total cost savings or avoidance of more than \$136 million.

“Our success in developing and delivering ground combat capabilities depends on our ability to adapt to the environment, transform our culture, and change the way we operate,” said Scott Davis, Program Executive Officer GCS. “We must become more efficient and remain accountable for how we manage and employ the resources provided by the taxpayer.”

The Assistant Secretary of the Army for Acquisition, Logistics, and Technology

(ASAALT) presented PEOs with a 2 to 3 percent efficiency target for FY11. PEO GCS achieved 280 percent of that goal in cost savings and cost avoidance. To achieve this goal, PEO GCS employees obtained PEO approval to independently form a team that draws on perspectives from three subject-matter experts: a Continuous Performance Improvement/Lean Six Sigma (CPI/LSS) lead, a Better Buying Power expert, and a senior cost analysis manager who is also a certified LSS Black Belt.

The team enlisted representatives from across the PEO and project management offices (PMOs) and formed a CPI steering committee to guide the process improvement-oriented activities.

THREE TYPES OF PROJECTS

The first task of the steering committee was to define CPI as it relates to the organization.

Three types of project were identified: the LSS gated project, the non-gated project, and value engineering (VE). The LSS gated projects follow a disciplined, five-step process to achieve fact-based solutions that meet customer requirements. LSS is used when the solution to a problem or opportunity is not known. The non-gated project is one in which the solution is clearly identified but there is a need to determine a process for implementation. The VE process analyzes product functions or processes and is used to achieve the lowest total cost of effective ownership consistent with user needs.

PEO GCS partners with VE experts from the U.S. Army Tank Automotive Research, Development, and Engineering Center and PEO Simulation, Training, and Instrumentation to facilitate studies and conduct VE workshops.

REUSING MISSION-CAPABLE EQUIPMENT

Robotic Systems Joint Project Office is turning in unused robots to Defense Logistics Agency Disposition Services, allowing other federal and state entities to use mission-capable equipment that Soldiers no longer need and avoiding additional costs. Here, a Talon 4 remote-controlled bomb disposal robot investigates the area after an improvised explosive device destroyed the rear axle and tires of a Mine Resistant Ambush Protected vehicle during *Operation Kherwar Pahtar*, Kherwar District, Logar Province, Afghanistan, May 14, 2011. (Photo by 1LT Darrick Noah.)

ENGAGING THE WORKFORCE

After defining the types of CPI projects, the steering committee held workshops to engage the workforce in identifying critical projects and potential opportunities. During this process, one challenge became evident: There was a need to change the culture and the mind-set of the staff, to help them understand that what once seemed impossible—reducing waste (non-value-added tasks and activities) and lowering costs while maintaining and improving schedule and performance, without disrupting operations—was now achievable.

To guide employees to be more proactive in pursuing efficient solutions in daily operations and to help them become more cognizant of the importance of their individual roles in productively using resources, the steering committee developed a set of CPI foundational goals, including:

1. Ensure leadership involvement.
2. Educate every employee about projects that qualify as efficiencies and how those actions benefit the workforce and the Soldier.
3. Ensure that the documentation process for capturing efficiencies is easy to understand and readily accessible.
4. Train, mentor, and empower employees to be innovative, creative, and motivated to change.
5. Provide incentives to the workforce.
6. Promote collaboration with industry.

LAYING THE FRAMEWORK

The next step after the project selection workshop was selecting project leads to develop strategies for individual project implementation and to guide the process. Finally, tracking mechanisms and documentation procedures were established to monitor the health and progress of each project.

“The CPI documentation process is important because it helps us track our progress so we can learn how to better sustain and mature improvements,” said Barb Dmoch, Process Improvement Lead/CPI Director. “The system is user-friendly for the project leaders and makes it easy for them to record the good work being done to make our organization more efficient.”

An informal mentoring program also ensures that help is available to guide and support organizational leads. CPI strategy experts coach PMO project leads; PEO resource management and cost analysts support their PMO counterpart leads.

SNAPSHOTS OF SUCCESS

An example of a successful CPI project lies in the initiatives of the Robotic Systems Joint Project Office (RS JPO), under the management of PEO GCS. RS JPO reduced the cost of shipping and storage for robotic assets to be drawn down, while establishing a new process for the disposal of robotic systems that are no longer required. Unused robots can be turned in to Defense Logistics Agency Disposition Services, enabling other federal and state entities to make further use of mission-capable equipment. The total cost avoidance for this project was nearly \$1.4 million.

Although most projects generally yield a cost savings or avoidance, PEO GCS noticed that some initiatives simply resulted in better business practices, which are also vital to mission success. For example, the Process Conformance Improvement project provided the benefit of establishing an organizational assessment mechanism that checks for conformances of key processes across the PEO. In one case, methodologies to accomplish the

same procedure were reduced from five to one.

CONCLUSION

“Our recent success can be directly related to the leadership of our PEO and PMs (project managers), as well as the dedication and ideas of our employees to identify waste and lower costs,” said Dave Taylor, PEO GCS Better Buying Power Expert. “Our leaders and people delivered excellent results, and we are incorporating best practices to raise the bar this fiscal year.”

PEO GCS is on its way to surpassing its FY11 accomplishments. By January, 56 percent of PEO GCS leaders had completed CPI project sponsor training. An additional three projects, totaling more than \$50 million in cost savings or avoidance, have been completed to date; 40 more projects are expected to close by the end of FY12.

“We are faced with austere economic conditions that constrain our resources and demand innovative approaches to accomplish our mission,” Davis said. “We will pioneer efficiency initiatives to do things smarter, faster, better, and at less cost, so we can continue to provide affordable, integrated, and robust ground combat systems and ensure the success of our warfighters.”

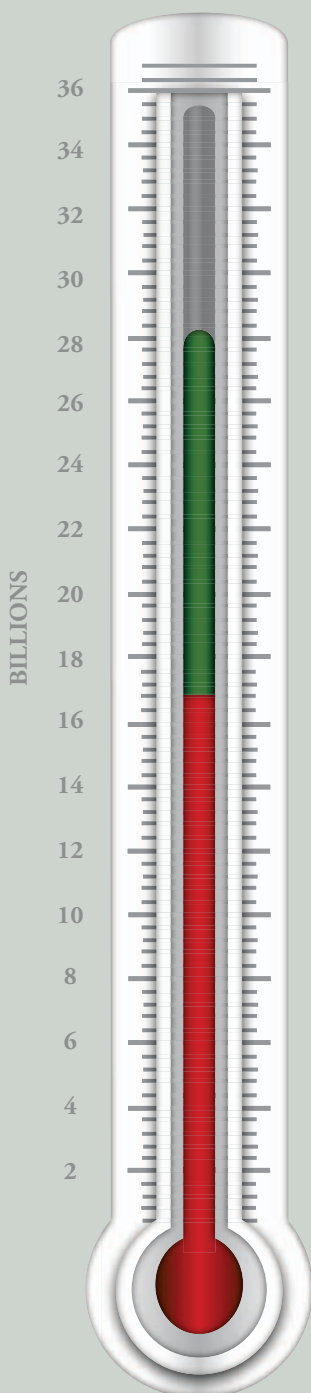
For more information on PEO GCS, go to <http://www.peogcs.army.mil>.

LORI A. GREIN is the Public Affairs Officer for Program Executive Office Ground Combat Systems. She holds a B.S. degree and is a graduate of the Defense Information School. Grein has eight years of government experience in leadership and public relations roles and is an experienced correspondent for Army publications.

COST SAVINGS
**\$11.3
BILLION**

COST AVOIDANCE
**\$17
BILLION**

CURRENT
TOTAL
**\$28.3
BILLION**



DOLLARS & SENSE

The Army is facing tremendous pressure to meet Soldiers' needs with reduced manpower, funding, and contractor support. To answer this challenge, the Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASAALT) is committed to identifying cost savings and avoidance in all areas of Army acquisition. Army AL&T Magazine is tracking this effort.

As of Feb. 2, ASAALT organizations had completed 837 Continuous Performance Improvement (CPI) projects valued at \$28.3 billion in efficiencies, through actions directly attributable to the DoD-wide Better Buying Power (BBP) initiatives and Lean Six Sigma (LSS) process improvement projects. The Army had achieved acquisition program efficiencies totaling \$11.3 billion in cost savings (\$11 billion attributable to BBP and \$317 million to LSS), and \$17 billion in cost avoidance (\$12.7 billion BBP and \$4.3 billion LSS). Some examples follow.

BBP INITIATIVES

- *Combining Vehicle Buys to Attain Economies of Scale (Project Management Office Stryker Brigade Combat Team (SBCT), Program Executive Office (PEO) Ground Combat Systems)*—The SBCT Project Management Office focused on combining the procurement of two separate orders of Stryker Double-V Hull configuration vehicles with the buy of Stryker nuclear, biological, and chemical reconnaissance vehicles to attain economies of scale. The initiative netted a validated savings of \$66 million, which will be used to purchase survivability kits for vehicles in *Operation Enduring Freedom*.

LSS IMPROVEMENT PROJECTS

- *TDY Reduction (Lower Tier Project Office, PEO Missiles and Space)*—Excessive temporary duty (TDY) assignments caused lost work opportunities and used excess funding, which reduced the ability to get products to the Soldier quickly. An LSS team reviewed the TDY process. Improving the Travel Standard Operating Procedures and formalizing the TDY process will eliminate excessive trips and reduce overall travel costs, for a total cost avoidance of \$1.8 million.
- *Survival Equipment System Reset (Project Manager Soldier Warrior, PEO Soldier)*—The Primary Survival Gear Carrier System (PSGCS) consists of the flight gear worn by an aircrew member. Product Manager Air Warrior established a reset capability to inspect, evaluate, repair, and/or replace components, refurbishing the PSGCS to “as new” condition. A cost savings of \$2.82 million was recognized in FY11, with a projected cost savings/avoidance of \$5.59 million over the next two years.

For more information on ASAALT efficiencies initiatives, contact Colleen Prasil in ASAALT's Strategy and Improvement Directorate at colleen.f.prasil.civ@mail.mil.



DOWNRANGE DEVELOPMENT

CERDEC forward-deployed team uses
Soldier feedback to improve apps

by Brittany Ashcroft

As technology and smartphone use increases across the Army, developing valuable applications for Soldiers downrange becomes more critical.

An important aspect of developing and fielding new apps is obtaining and implementing Soldier feedback. Recognizing this need, the U.S. Army Research, Development, and Engineering Command's Communications-Electronics Center (CERDEC) sent members of its Transformative Apps (TransApps) support team downrange.

The team, supporting the TransApps program of the Defense Advanced Research Projects Agency's (DARPA), was responsible for a limited fielding of smartphones and apps to small unit leaders at Combat Outpost (COP) Kandalay in the southern Afghan province of Kandahar.

The program focuses on mobile handheld apps to ensure that DoD remains in

sync with commercial technology while also meeting Soldiers' evolving needs. The team's responsibilities included providing training, installing software updates, performing "bug" fixes, and adjusting the apps with updates and new capabilities.

QUICK TURNAROUND

The TransApps team, which included computer scientists Zacharie Hall, Robert Beckinger, and Zachary Kjellberg, worked on app development in Afghanistan, supported by a team of about 60 at DARPA. The team spent a total of nine months in Afghanistan, with each person deployed for three months and a one-month overlap to aid in the transition between members.

"We did quick turnaround in theater of adjustments we could make there, but we were also communicating larger requirements back to the CONUS team, which would get changes back to us to get to the Soldier," Hall said.

Those requirements came from direct Soldier requests and feedback, as well as the team's observation of the units' day-to-day operations. "We noticed a couple of the Soldiers carried wrist-worn commercial GPS devices. We found that after each mission, the data from the device would be loaded into TIGR [Tactical Ground Reporting], but the leaders did not have a great way to analyze the historical information for future mission planning," Hall said.

In-theater Soldier feedback led to the creation of an app that could be used during pre-mission briefings to show previous locations on a heat map overlaid on a geographic map. "It quickly became apparent to them [Soldiers] where they spent their time while on patrol, which routes were frequently used, where they often stopped along their routes, and which parts of their AO [area of operations] were neglected," Hall said.



SOFTWARE OUTPOST

The Communications-Electronics Research, Development, and Engineering Center (CERDEC) Transformative Apps (TransApps) team had to adjust to the remote location of a combat outpost (COP) while providing software development support. Here, Zacharie Hall works on smartphone and handheld solutions at COP Kandalay in the southern Afghan province of Kandahar. (Photo courtesy of CERDEC.)

Another quick fix arising directly from Soldier feedback was the use of QR (quick response) codes to share information from one phone to another. While each phone had the ability for the Soldier to draw on a map, there was no way to share that information across users. In contrast, everything could be put into the QR code, and another Soldier could use the camera to download and import the information.

“It was funny because they finally, when we gave them tablets to hook up with a big-screen TV in the pre-mission room, they

would do the same thing there. ... There’s this giant QR code on the screen. All of the guys would bring out their phones, and you’d hear all this beep, beep, beep with them taking the picture,” Hall said.

As a result of the Soldiers’ immediate need for adjustments, the TransApps team used a combination of custom-developed software and commercial-off-the-shelf products to develop a solution as quickly as possible. The team then relayed that information back to DARPA so that updated versions of the apps would integrate those features.

Identifying smaller requirements as they emerged was a vital part of the team’s role downrange. “Those smaller problems don’t always get attention,” Kjellberg said. “While we were out there, we could address a smaller need in a quick manner. The problem is always changing. A lot of times, by the time we had the ability to react, if we weren’t out there, that need could change.”

IN-THEATER CONSTRAINTS

While the team’s work resulted in fielding useful apps to Soldiers and modifying them along the way, it was not without

challenges. Being one of the first team members in theater, Hall had difficulty with communications software. “None of our development tools are credited to work on those networks,” the Non-Secure Internet Protocol Router and Secure Internet Protocol Router. “We stood up commercial satellite dishes in several places and worked on commercial Internet and networks,” he said.

Fellow team member Beckinger agreed. “The COP is a pretty sparse place, almost in the middle of nowhere, and everything’s running on generators. The bandwidth is ridiculous,” he said.

A higher operations tempo (OPTEMPO) at the COP, compared with CONUS, was also something with which the team struggled. “While we’re working 18 hours a day, 7 days a week, we might give a request to CONUS, and we might get it on Monday. We’d have a call on Friday, and they’d say, ‘Have a good weekend,’” Hall said. At the COP, “There are

no weekends. There’s an OPTEMPO mentality gap between CONUS and OCONUS, so we had to adjust to that.”

“It’s a different perspective,” Beckinger added. “We were there with the Soldiers, and we had a trailer there. They’d come in, on and off missions, 24 hours a day. They’d come wake us up if they needed something. We’d tell CONUS, ‘We need this now because the Soldiers need this now.’”

A MODEL FOR THE FUTURE

The direct link between the technology team and the Soldiers’ operational environment is key to providing useful solutions, both in the TransApps program and with other technology, said LTC Richard Hornstein, Military Deputy for CERDEC’s Command, Power, and Integration Directorate.

“One of the things I always see is, there is always some type of preconceived notion of what the requirement or need is. It’s

different” in theater, Hornstein said. “As these guys [the TransApps team] are developing capability and Soldiers are using it, they are saying, ‘This is neat, but this needs to be changed.’ There’s nothing like that type of environment, where you are changing software for use in an operational setting, where you are getting that feedback. You are obviously going to produce a better-quality product.”

That’s exactly what the TransApps team was able to do. The team’s work allowed deployment of the Transformative Apps concept throughout the 3rd Brigade Combat Team of the 10th Mountain Division and eventually a larger portion of the division. While CERDEC does not have any engineers currently deployed to Afghanistan, TransApps still has a presence in Regional Command (RC) South and RC East.

The TransApps team’s work has also provided a model for CERDEC to use in the future. “As we start addressing future capability technology efforts, we know we are operating in a constrained resource environment. Getting Soldier feedback to specifically target gaps is going to be done more effectively,” Hornstein said.

“It’s having people dealing with Soldiers, who are dealing with constraints every day, and being closely linked with the operational community in dealing with their problems. I think TransApps and what we are doing now is the model for how it’s going to continue in the future.”

BRITTANY ASHCROFT provides contract support to the U.S. Army Acquisition Support Center through BRTRC Technology Marketing Group. She has nearly 10 years’ experience in magazine editing and holds a B.A. in English from Elmhurst College.

ENHANCING FUNCTIONAL TOOLS

The TransApps team developed software using some of the functions of the Tactical Ground Reporting (TIGR) tool as a base. TIGR’s graphical, map-referenced user interface, shown here, allows multimedia data such as voice recordings, digital photos, and GPS tracks to be collected and searched easily. (U.S. Army photo by Defense Advanced Research Projects Agency.)





PEO AMMUNITION



PM
Combat
Ammunition
Systems



PD
Joint
Services



PM
Close
Combat
Systems



PD
Joint
Products



PM
Towed
Artillery
Systems



PM
Counter
Explosive
Hazard

PM
Maneuver
Ammunition
Systems





COMMENTARY

FROM THE DIRECTOR,
ACQUISITION CAREER MANAGEMENT
LTG WILLIAM N. PHILLIPS

CHANGING THE ACQUISITION PARADIGM: WHERE WE STAND

For our Soldiers who serve and sacrifice in combat, the Army's acquisition community is honored to continue tirelessly striving to improve our acquisition procedures and to "change the paradigm" for how we identify, harness, develop, and deliver the best technologies and services possible.

In keeping with the aims and strategies articulated in the Pentagon's 2012 Defense Strategic Guidance, ASAALT continues to zero in on a host of goals and objectives to help ensure that our Army remains a Force of Decisive Action—agile, deployable, innovative, technologically advanced, and equipped to respond effectively to the full spectrum of anticipated future challenges and potential conflicts.

As part of this effort, it is imperative that we sharpen our focus on the core capabilities our Soldiers will need for current and future engagements; at the same time, we must strengthen and sustain our quest to innovate and develop new, next-generation capabilities. Improved capabilities in the areas of cyber, electronic warfare, air and missile defense, ISR, and networking technologies are among our key priorities.

However, we must pursue these aims with an ever-sharper focus on finding

efficiencies wherever possible in today's more constrained budget environment; improving the responsiveness and agility of our acquisition processes, procedures, and business practices; and prioritizing affordability, "achievable" requirements, and technological maturity in our procurement endeavors.

IN SYNC WITH DEFENSE STRATEGY

Along these lines, our ongoing efforts to change the paradigm for acquisition are entirely consistent with the Pentagon's new strategy, articulated by Defense Secretary Leon E. Panetta and President Barack Obama. The strategy requires

KEEPING IT REAL

The Network Integration Evaluations (NIEs) use 3,800 Soldiers to test emerging technologies. Here, 2nd Brigade, 1st Armored Division (2/1 AD) Soldiers participate in NIE 12.1 in November 2011. (U.S. Army photo.)





BRINGING INFORMATION TO THE SOLDIER

The Nett Warrior system, which was evaluated at NIE 12.1, incorporates handheld, mobile technology. Here, PFC Philip Kerr of 2/1 AD demonstrates a Nett Warrior device during NIE 12.1 at White Sands Missile Range, NM, Nov. 16, 2011. (Photo by Katie Cain.)

that we continue to instill rigor and objectivity into our Army equipping decisions, build upon our progress in locating efficiencies, eliminate redundancy wherever possible, and engender a culture of accountability and professionalism within our Army's acquisition workforce.

Essentially, the days of multiyear Army procurement efforts geared toward unrealistic, unachievable, or overly ambitious requirements are over. We have worked diligently to harvest technologies and lessons learned from our prior experiences, with a mind to cultivating a more agile, affordability-conscious acquisition strategy geared toward more rapidly and effectively identifying, developing, and delivering needed capability to our Soldiers.

Our successful and still ongoing efforts to streamline requirements and control costs with the Joint Light Tactical Vehicle and Ground Combat Vehicle programs provide evidence of this. In both of these programs, we have made specific efforts to challenge, prioritize, and in some cases realign requirements to maintain an emphasis upon technological maturity and to preserve our cost and schedule goals.

Making important "trade-offs" in our JLTV program requirements, for instance, aligned the requirements with our Marine Corps partners, preserving the key capabilities needed for this new vehicle and lowering the per-vehicle unit cost from roughly \$500,000 to about \$225,000.

FURTHERING THE AGILE PROCESS

Army acquisition has embarked upon an Agile Process strategy, oriented toward helping the Army keep pace with rapid technological change and commercial innovations in order to better leverage key technical advances and synchronize our systems for maximum interoperability. While informing much of our acquisition-related efforts throughout the entire Army and across a range of areas, this concept is intricately woven into our network developmental modernization strategy in particular, a key priority for the Army.

Our ongoing biannual Network Integration Evaluations, 3,800-Soldier-strong exercises that place emerging technologies

ESSENTIALLY, THE DAYS OF MULTIYEAR ARMY PROCUREMENT EFFORTS GEARED TOWARD UNREALISTIC, UNACHIEVABLE, OR OVERLY AMBITIOUS REQUIREMENTS ARE OVER.

in the hands of Soldiers conducting combatlike operations at White Sands Missile Range, NM, are a large part of this process. Performing needed integration and key assessments of systems prior to deploying them is a way to better inform and streamline the acquisition process, and is the fundamental rationale for the NIE.

For example, our Nett Warrior program, which was evaluated at the most recent NIE, achieved substantial cost savings and additional weight reductions to improve Soldier mobility by incorporating handheld, mobile device technology. Specifically, the program adjustments produced \$800 million in savings, and the weight was reduced from more than 7 pounds to just over 3 pounds.

The Nett Warrior system provides combat-relevant force tracking information and mapping technology for dismounted Soldiers and small, tactical units on mobile, handheld digital displays. Nett Warrior combines the networking capability of software-programmable radio technology, developed within the Joint Tactical Radio System (JTRS) effort, with the latest commercial innovations in mobile computing and portable devices.

The latest in Nett Warrior applications combine JTRS single-channel Rifleman Radios as a networking technology with

Joint Battle Command-Platform, a next-generation force tracking technology. This combination allows dismounted units to network more quickly and efficiently, sharing and receiving tactically relevant voice, data, and images across the force in real time.

In addition, the Army's 75th Ranger Regiment recently completed an operational assessment of the JTRS Rifleman Radio in Afghanistan; the findings determined that the increased ability to communicate and share tactically significant information afforded by the software-programmable radio technology greatly enhanced the Ranger unit's operational effectiveness while conducting combat missions. This operational assessment marked the first-ever combat use of software-programmable JTRS radios using Soldier Radio Waveform, a high-bandwidth waveform able to draw upon a larger portion of the available spectrum than legacy waveforms to transmit data across the force.

As a result of the NIEs, we are refining and improving our message to our industry partners in order to better delineate the contracting and procurement opportunities emerging from the Agile Process. We greatly value our industry partners and their substantive contribution to our technological innovation; it is with this message firmly in our minds that we seek

to codify the mechanisms whereby contracts can emerge from the NIE process.

CONCLUSION

These instances of successful innovation are merely a few among the many acquisition accomplishments that draw upon the dedication and expertise of our workforce, laboratories, academia, and industry partners; yet they represent a tremendous spirit of progress, the very spark of innovation that we will continue to emphasize and cultivate throughout our organization.

As we challenge ourselves and our industry partners by finding efficiencies and uncovering promising new technologies that are of value to our Soldiers, let us remain unwavering in our resolve to serve our Soldiers, our Army—and our great Nation.

LTG William N. Phillips, Principal Military Deputy to the ASAALT, joined LTG Robert P. Lennox, Deputy Chief of Staff, G-8, on a panel testifying before the House Armed Services Committee's Subcommittee on Tactical Air and Land Forces, at a hearing March 8 on the U.S. Army and Marine Corps ground system modernization programs. Scan the QR code for a video of the full testimony.





FROM THE ASSISTANT SECRETARY OF THE ARMY
FOR INSTALLATIONS, ENERGY, AND ENVIRONMENT
MS. KATHERINE HAMMACK

CHANGING THE CULTURE

‘Making energy a consideration in everything we do’

I am pleased to have the opportunity to work with the Army Acquisition, Logistics, and Technology community to prioritize energy as a key decision factor in the Army.

The Army is changing the way we view power and energy by making it a consideration in everything we do, from

decision making to equipping a squad out on patrol, to exploring better use of the energy we have, to constructing and modernizing our facilities to meet high-performance building standards.

Collectively, the Army has a challenge before us: to provide our Soldiers a decisive advantage in any mission by

developing, acquiring, fielding, and sustaining the world’s best equipment and services, and by leveraging technologies and capabilities to meet current and future Army needs.

Often, the decisive advantage is having the power and energy required to power a Soldier. Emerging technologies, such as the Soldier Wearable Integrated Power Equipment System taken to the field by the Iron Rangers [1st Battalion, 16th Infantry Regiment], is helping to leverage new technologies. The Soldier System Integration Lab at Fort Devens, MA, is helping us design and measure systems in order to provide Soldiers the capabilities they will have to have to meet future Army needs.

We are not only examining new technologies, but also reexamining how we are using the resources we already have. We are changing the Army’s culture and making energy a consideration in everything we do.

Today, we are giving Soldiers and leaders the authority and capability to manage all aspects of energy to include status, resources, and performance. We are significantly reducing our energy footprint. We are providing flexibility and resiliency by developing alternatives and adaptable capabilities.

POWERING GENERATORS

The Army uses 40 percent or more of the fuel it consumes on contingency bases to power generators. Here, SGT Ricky Tucker adjusts controls on a generator outside U.S. Army Africa’s contingency command post in Longare, Italy, Feb. 23. (Photo by Richard Bartell.)



SEEKING ENERGY SECURITY

This change in culture is essential to the Army's mission. Power and Energy has been a top priority in the Army for more than a year. In his *Marching Orders: America's Force of Decisive Action* (online at <http://usarmy.vo.llnwd.net/e2/c/downloads/232478.pdf>), Army Chief of Staff GEN Raymond T. Odierno wrote, "Our future security rests upon our careful and deliberate management of resources, energy, water, and the environment."

To remain operationally relevant and viable, the Army must reduce its dependence on energy, increase energy efficiency, and implement renewable and alternate sources of energy.

The recent establishment of energy security as a Campaign Objective in the *Army Campaign Plan – 2012* will continue to drive the energy culture change.

REUSE MORE, WASTE LESS

A Soldier cleans a vehicle at the Central Vehicle Wash Facility after training at Fort McCoy, WI. The facility has an 11 million-gallon holding pond and can recycle 98 percent of the water used, reusing it to clean vehicles and equipment. (U.S. Army photo by Fort McCoy Public Affairs.)

Campaign Objective 8 concentrates on achieving energy security and sustainability objectives as well as installation energy security and sustainability strategies, and on enhancing operational energy effectiveness. It will be the work of leaders and Soldiers that will make this Army Campaign successful while sustaining and implementing efficiencies in providing facilities, programs, and services to Soldiers, civilians, and families, and investing in energy security and sustainability programs.

Energy security is defined as having assured access to reliable supplies of energy and the ability to protect and deliver sufficient energy to meet essential requirements. The key to improving energy security and managing an effective energy security program is first to adjust the Army's culture and to inform people so that energy security becomes an integral portion of Army decision making.

THREE AREAS OF FOCUS

The Army groups power and energy into three areas: Soldier Power, Basing Power, and Vehicle Power. As part of our Soldier Power efforts, we are lightening Soldier energy loads and helping Soldiers become more agile and self-reliant through advanced portable power systems, lighter batteries, universal charging devices, and water purifiers. Our Basing Power efforts focus on fuel, water, and energy security on our installations and base camps. Vehicle Power focuses on new efficient technologies, alternative fuels, and auxiliary power units.

The cornerstone of Basing Power is Net Zero, a holistic approach to addressing energy, water, and waste. The Army's vision is to manage our natural resources appropriately with a "net zero" strategy, producing as much energy as we use, capturing or reusing water equal to use, and eliminating solid waste disposal. This approach consists of five interrelated steps: reduction, repurpose, recycling and composting, energy recovery, and disposal. We are investing in and improving efficiencies in energy, conserving water, and reducing waste—all of which are essential to our current security and future operational missions.

In 2011, the Army established the Energy Initiatives Task Force to help further drive significant culture change. The goal of the task force is to identify, prioritize, and support the development and implementation of large-scale, renewable, and alternative energy projects, and to enable strategic revitalization of federal lands inside the boundaries of Army facilities and installations.

Operational Energy is the thread that binds Soldier, Basing, and Vehicle Power. In the area of Operational Energy, we





IN-THEATER EFFICIENCIES

Solar panels heat water for this shower facility at the 4th Zone Afghan Border Patrol compound in western Afghanistan. (U.S. Army photo by U.S. Navy LCDR Nate Overtree.)

have passed several major milestones with the opening of the System Integration Lab, deployment of the Soldier Wearable Integrated Power Equipment System, and the opening of the Ground Systems Power and Energy Laboratory in Warren, MI. The Army has designated G-4 as the chief Army Staff proponent for Operational Energy, thus ensuring a high-level uniformed advocate for Operational Energy efforts.

CONCLUSION

Today, the military accounts for 80 percent of the federal government's energy usage. The Army uses more than 20 percent of that total. The Army is the largest user of electric energy in DoD, not only on our permanent installations but also on our contingency bases, where 40 percent or more of the fuel used is to power generators.

However, through our changing culture, we are beginning to reap measures of success.

The Army's overall "energy intensity" went down last year. The Army's energy use per square foot has decreased by more than 4 percent. Since FY03, the Army has reduced total energy consumption by 13.1 percent, while its total number of active Soldiers has increased 20 percent. At the same time, the Army has decreased its total reportable square footage by 6 percent.

Over the past two years, the Army has been right-sizing its non-tactical vehicle fleet and has significantly reduced the total number of vehicles and fuel usage. The Army currently has 803 Low Speed Electric Vehicles and is leasing alternative-fuel vehicles, hybrids, and plug-in hybrids, which provide better value.

The Army continues to meet its goals for reducing water intensity at its facilities through efforts to upgrade aging water systems and reduce unnecessary water use.

With changes to processes, materiel, policies, and procurement, we can continue to change the way we use energy. We can reduce the amount of energy we consume while increasing our force capabilities. We can manage energy without reducing capabilities.

We must achieve energy security and sustainability in all we do. We will continue to drive efficiencies across the enterprise, and we will build resilience through renewable and alternative energy.

It has been said that the American Soldier's ability to succeed is dictated by the energy choices at hand. In the words of GEN Odierno, "We must be conscious of energy in all areas, across all we do. We know what we have to do; now we have to do it. Key to this is a change of culture."

KATHERINE HAMMACK is Assistant Secretary of the Army for Installations, Energy, and Environment, a position to which she was appointed by President Obama on June 28, 2010. She serves as the primary advisor to the Secretary of the Army and the Chief of Staff of the Army on installation policy, oversight, and coordination of energy security and management. Hammack has more than 30 years' experience in energy and sustainability advisory services, as well as in evaluating energy conservation projects. She holds a B.S. in mechanical engineering from Oregon State University and an M.B.A. from the University of Hartford. Hammack is a Certified Energy Manager, a LEED Accredited Professional, and a Certified Indoor Air Quality Manager. She is a founding member of the U.S. Green Building Council in Washington, DC.

KNOWLEDGE BUILDING

Lessons learned from a contracting intern's
developmental assignment to Kuwait and Italy

by David M. Hampton



As an intern from U.S. Army Contracting Command (ACC) – National Capital Region, I had the unique experience of accompanying my agency’s Executive Director, Michael R. Hutchison, and Gregory Moore, Kuwait/Qatar Reachback Branch Chief for ACC – Rock Island, IL, on a two-week developmental assignment to Camp Arifjan, Kuwait, and Vicenza, Italy. Although my assignment was only 12 days long, I learned important lessons that would have taken years to understand had I not spent time OCONUS, especially in a contingency environment.

Three especially valuable observations, related to both the pre-award and post-award phases of the acquisition cycle, stand out from my assignment. These “lessons learned” represent three different facets of contracting, the understanding of which is essential to our continuous development as acquisition professionals.

First, acquisition professionals must work with the requiring activity to better define the contract requirements. Second, we must acknowledge the importance of contracting officer’s representatives (CORs). Finally, we must understand the significance of collaboration among the requiring activity, contracting office, and contractor. Increased focus and development in these areas will result in higher-quality contract performance, at a lower price to the government.

THE COR’S RESPONSIBILITIES

The importance of contracting officer’s representatives (CORs) in accurately monitoring contractor performance and evaluating contractors fairly is often overlooked. Here, SFC Paul Carroll (left), Service Contracts Manager for the Directorate of Resource Management, 196th Maneuver Enhancement Brigade, South Dakota Army National Guard, and MSG Richard Albertson, COR with the 196th, talk with an Afghan contractor about forklift services and maintenance Dec. 16, 2010, at Camp Phoenix in Kabul, Afghanistan. (Photo by CPT Anthony Deiss.)

CLEAR REQUIREMENTS

Writing encompassing requirements documents, especially the Performance Work Statement (PWS), gives a clear picture of what the government requires and allows contractors to adequately prepare to accomplish the government’s goals. Failure to properly establish the government’s requirements, however, will lead to problems down the line.

While on assignment, I attended a meeting regarding a contract that had been in place for a significant period of time but was having “scope” issues. At this meeting, the meanings of some of the key terms, as written in the PWS, were debated for nearly an hour. Since the PWS was not clearly written initially, the government had been unable to reach a consensus on what work was within or outside its scope. When the contractor argued that work was outside the scope of the contract, the government spent weeks debating whether or not the contractor was correct.

Mission progress essentially stopped until a resolution was reached. Had the PWS been written clearly in the pre-award phase, this meeting of 20-plus people (from quality assurance personnel, to contract specialists, to legal counsel) could have been avoided.

COR’S CRITICAL ROLE

In order for the government to conduct post-award actions effectively, it must first realize the importance of CORs. While the COR has many different responsibilities, his or her primary function is

to ensure that the government is receiving the goods and services for which it is paying. Unfortunately, the COR’s importance is often overlooked. Contrary to DoD policy, a number of service contracts do not have CORs.

Many CORs, because of other pressing duties in a contingency environment, are compelled to treat their COR roles as a secondary duty. This relegation of COR duties to a place of secondary importance was evident in one meeting where we learned that a previous COR had rarely been to a work site and had not kept any records of progress. There had been issues with contractor performance, but when it came time to determine what had gone wrong, it was impossible to assign responsibility to anyone because there was no documentation.

When it comes to establishing award fees, the COR provides the required feedback to determine the appropriate fee amount. In a Performance Evaluation Board meeting, we learned that a COR had been working for about a month but had never conducted an audit because he did not feel he had the proper training. As a result, the government was unable to evaluate the contractor on its performance under certain task areas of the contract.

A second COR giving feedback about a contractor’s performance considered the fact that a contractor had attended all the mandatory meetings as a strength. The contractor should not have received any additional award fee for this, however, because attendance at meetings



KEEPING THINGS WORKING

Contractors are vital in contingency environments to keep bases and outposts working safely, efficiently, and effectively. Here, contractors for the U.S. Army Corps of Engineers Afghanistan Engineer District – South line a drainage culvert on Kandahar Airfield, Afghanistan as part of a construction project, June 30, 2011. (Photo by Karla Marshall.)

was a contractual requirement. Until the acquisition community realizes the importance of CORs and acts accordingly, the government will be unable to accurately monitor contractor performance and evaluate contractors fairly.

TEAMING WITH CONTRACTORS

It is very important to have a strong relationship involving the customer, contracting office, and contractor, regardless of where work is being performed. Collaboration becomes even more

essential in the contingency environment because of sudden schedule changes and external factors that influence how work must be done.

Camp Arifjan, like many U.S. bases OCONUS, is government-owned and contractor-operated. Contractors perform virtually all functions that make it possible to live on base, from food preparation to force protection services. Although contractors do not take the oath of office like government employees do, it is important to understand that they also care about accomplishing the mission, and not just the money. The Armed Forces are responsible for fighting our Nation's wars, but we need to remember that it takes contractors to win wars as well.

Contractors who transport supplies in hostile territories are in constant danger. They share the sacrifice. In fact, according to the U.S. Department of Labor, more than 2,871 contractors have been killed and more than 74,000 have been injured overseas since Sept. 11, 2001. Contracting office personnel and customers must respect this sacrifice and treat contractors with fairness.

A NECESSARY SEPARATION

Some line of separation between the government and contractor must still exist, however. One commander found this difficult because he worked on a team with a contracted employee every day but was unable to reward the employee with a coin, as he could with his government teammates.

While this is an example of government-contractor separation influencing the growth of a team environment, there are other missions in which separation between the government and contractor is necessary.

One example I encountered was a contract that involved the harvesting and distribution of medical equipment and supplies. Since medication was inventoried and distributed, the government had to know who was accountable for the medication for liability reasons. If a contractor and a government employee were each inventorying the same box of medicine and some appeared to be stolen, it would not be possible to determine who was responsible. As a result, medical theft could become a serious issue.

Regardless of the assignment of accountability, it was still evident to me that a weak relationship among the requiring activity, contracting office, and contractor jeopardizes contract success. Failure to correct preventable issues like these may lead to contract failure.

MISSION FIRST

Possibly the most important lesson I learned from my trip was that although the contract can fail, the mission cannot. When this was mentioned, it was a specific reference to the movement of large numbers of armored vehicles off the base in a very small window of time. If there were a need for these vehicles in a neighboring country, they had to get there whether or not contractors were moving other things.

Consider this example, too: In the contingency environment, an expired contract may result in the loss of force protection services. Since it is impossible to win a war without force protection, the Armed Forces must fulfill the requirement with their own staff, mainly Soldiers.

The primary issue here is that resources cannot be shifted at will, because there will always be a lack of manpower somewhere else. Second, it is not a Soldier's responsibility to know everything



QUALITY CONTROL

Ongoing monitoring of contractors is critical to meeting contract requirements and ensuring high-quality performance. Here, Darrell Gay, an Engineering Technician with the U.S. Army Corps of Engineers Afghanistan Engineer District – South, explains how to conduct quality assurance inspections to (from left) Willie Fouche, Safety Manager with Highland Al-Hujaz Co.; Stephen Baxter, Group Construction Manager for Jetspark Specialist Support Services; and Erigh Els, Electrical Engineer with Highland Al-Hujaz, during a construction quality management training seminar Sept. 21, 2011, at Forward Operating Base Lindsey near Kandahar Airfield. (Photo by Karla Marshall.)

about contracting, especially if he or she is serving in another specialty. In order to accomplish the mission, the Soldier may inadvertently break procedure and violate *Federal Acquisition Regulation (FAR)* principles.

These hazards are all avoidable, however, if acquisition professionals constantly work to stay on schedule, maintain awareness of deadlines, and take measures to prevent contract failure.

CONCLUSION

After going on this developmental assignment, I understand the importance of contracting properly in the

contingency environment. It is certainly not easy, and it takes a high level of skills that aren't always taught in the CONUS learning environment.


Just because someone is *Defense Acquisition Workforce Improvement Act* Level III certified does not necessarily mean that person will thrive in a contingency environment. Good interpersonal skills are highly important in order to resolve the conflicts inherent in such an environment. A person must have the willpower and stamina to work 14-hour days, at least six days a week, in order to contract for critical supplies and services.

Finally, a person must have a high level of personal character and integrity to ensure that the principles of the *FAR* are being followed, even when under internal and external pressures that come with the environment.

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CONFERENCE CALL



CPL Kevin Dehaven, a Sniper Team Leader with 2nd Battalion, 27th Infantry Regiment, 3rd Brigade Combat Team, 25th Infantry Division, provides security at Observation Post Mangol, Feb. 8, in the Nari District of Kunar Province, Afghanistan. (U.S. Army photo.)

As the Army enters a fiscally constrained period of transition, the focus will be on harnessing key lessons learned from the past 10 years of combat while properly balancing end strength, readiness, and modernization to maintain the world's best-trained, best-equipped force. Moving from “an Army at war to an Army that prepares to go to war,” as MG Anthony G. Crutchfield put it, will require the Acquisition, Logistics, and Technology Workforce to continue searching for efficiencies while preserving the priorities necessary to ensure that Soldiers remain the decisive edge.

In this issue's Conference Call section, *Army AL&T Magazine* provides coverage of these topics from the Association of the United States Army's Institute of Land Warfare (AUSA ILW) Aviation Symposium and Exposition, held Jan. 11-13, and the AUSA ILW Winter Symposium and Exposition, held Feb. 22-24. We hope this section provides useful insights and information on the successes that Army acquisition has achieved and its challenges for the future.



ADAPTING THE ARMY

Top leaders emphasize modernization,
balance, and efficiencies at AUSA Winter Symposium

by Kris Osborn

ALWAYS IMPROVING

Chief of Staff of the Army GEN Raymond T. Odierno called the M1 Abrams tank “the best tank in the world” because of continuous modernization of the vehicle. Here, Soldiers from 2nd Battalion, 8th Cavalry Regiment, 1st Brigade Combat Team, 1st Cavalry Division offload M1A2 Abrams tanks at Camp Arifjan, Kuwait, Jan. 20. (Photo by SSG Ravel Tirado.)



Shaping and modernizing the “Army of 2020,” continuing to harvest emerging technologies through focused science and technology (S&T) research, and sharpening the focus on ongoing efforts to streamline, refine, and improve the acquisition process all figured prominently in the discussion among senior Army and defense industry leaders at the Association of the United States Army’s Institute of Land Warfare Winter Symposium and Exhibition, held Feb. 22-24 in Fort Lauderdale, FL.

First and foremost, Army leaders praised the performance and resolve of Soldiers as the service adjusts to a new budget environment and Defense Strategic Guidance, which calls upon the Army to serve as a vital component of an agile, deployable, technologically superior Joint force.

“The Army is a flexible, adaptable organization. We can respond anywhere, anytime, to support any operation. As the Chief of Staff of the Army, it is an honor to represent such dignified heroes who continue to raise their right hand

and say, ‘I’m selfless; I put my country first,’” said GEN Raymond T. Odierno.

Odierno went on to explain how the Army is pivoting and transitioning in light of the new Defense Strategic Guidance and President Obama’s FY13 budget, indicating that the Army will harness key lessons learned from the past 10 years of combat while striving to properly balance end strength, readiness, and modernization in order to maintain the “best-trained, best-equipped force in the world today.”

IMPLEMENTING THE AGILE PROCESS

Network Integration Evaluations (NIEs) are aiding in streamlining the development and procurement of new systems through the Agile Process. Here, SPC Allison Ferrone, a Signal Support Systems Specialist with 2nd Brigade Combat Team, 1st Armored Division, explains the Common Remotely Operated Weapon Station to Chief of Staff of the Army GEN Raymond T. Odierno during a tour of equipment during NIE 12.1 at White Sands Missile Range, NM, Nov. 18, 2011. (Photo by SGT Jonathan Thomas.)





TRAINING THE FORCE

The U.S. Army Training and Doctrine Command (TRADOC) is focused on preparing and modernizing the Army to meet current and future challenges. Here, Soldiers test their accuracy at the Weapons Qualification Range at Fort Eustis, VA, during the Advanced Individual Training Platoon Sergeant of the Year competition, Aug. 23, 2011. (Photo courtesy of TRADOC.)

In concert with a detailed description of the Army's plans to bring the active-duty force down to 490,000 Soldiers gradually over the next five years or so, Odierno emphasized that the Army will make better business deals, preserve its ability to develop new systems, respond to a host of potential contingencies, balance the force's future and current needs, and pursue an affordable equipping strategy.

"The Army made some difficult decisions. However, in this year's budget, we did not lose any major programs. Our modernization priorities were preserved—the network, Ground Combat Vehicle [GCV], and Joint Light Tactical Vehicle [JLTV]," he said.

Army Acquisition is a key part of this equation, emphasized Heidi Shyu, Acting Assistant Secretary of the Army for Acquisition, Logistics, and

Technology (ASAALT). Shyu explained how ASAALT is immersed in a variety of ongoing efforts to find fiscal efficiencies in today's more constrained budget environment; instill more rigor in the acquisition process; synchronize requirements with resources and technologically mature solutions throughout the procurement process; and harness needed innovation that in many cases can deliver lifesaving technologies to Soldiers in Afghanistan.

"The Army has utilized this process as an opportunity to strategically refine, adjust, and adapt to the continuing future demands of our national security. This does not only mean a smaller, leaner force structure. It means that the Army will take this moment to do what it does best—adapt to changing conditions and demands as we simultaneously support *the* decisive land force in the world," Shyu said.

SEEKING EFFICIENCIES

In a manner similar to Odierno's remarks, the themes, priorities, and specifics that Shyu cited were closely aligned with the Pentagon's recently released Defense Strategic Guidance, which, among other things, calls for a continued effort to identify efficiencies in a more constrained fiscal environment while preserving the U.S. military's global superiority with a leaner, more agile, technologically advanced force.

Speaking enthusiastically about the need to "seize the moment," Shyu described the new defense strategy and resulting budget as an opportunity for Army acquisition to build on its successes and further codify vital improvements to the acquisition process, such as continuing to work with industry, academic, and laboratory partners to keep pace with commercial innovation through the

Agile Process, an approach designed to blend programs of record with promising emerging technologies and, in some cases, commercial-off-the-shelf products.

“There’s no question that we have entered a new era, presenting both difficult choices and tremendous opportunities. We’ve reviewed our ongoing programs to mitigate risk by embracing competition. The Army is also adopting sensible acquisition strategies that reflect more realistic assessments of what a program will cost and address technological maturity,” Shyu told the audience.

While emphasizing the top priority of identifying, developing, and leveraging emerging technologies that can provide essential equipment, gear, and services to Soldiers, Shyu also cited the Army’s role in assisting the Pentagon effort to save \$487 billion across DoD over the next 10 years.

Along these lines, Shyu said the Army’s procurement strategy is engineered to align with the “cost-conscious” culture described by Pentagon leaders such as Frank Kendall, Under Secretary of Defense for Acquisition, Technology, and Logistics. With this cost-conscious approach, ASAALT continues to institute contract incentives; identify areas of cost savings and cost avoidance in managing and tracking programs; establish clear schedule and affordability targets; and make progress with efforts to manage programs according to “should cost” goals, Shyu said.

GETTING RESULTS

Shyu cited several examples of ongoing acquisition programs that have benefited recently from the Army’s new procurement approaches, such as GCV and JLTV.

“On the requirements side [of GCV], we took a critical look at the planned



AGILE NETWORKING

Despite constrained resources, the Army is still committed to modernizing the network. Here, the Army’s efforts to network the Soldier through the Agile Process were on display during the Association of the United States Army’s Institute of Land Warfare Winter Symposium and Exposition, Feb. 22-24 in Fort Lauderdale, FL. (U.S. Army photo.)

vehicle capabilities to prioritize them with an eye on performance and affordability. The goal was to meet cost and schedule targets by giving industry the necessary trade space to meet Army needs,” Shyu said.

Odierno also cited the importance of the GCV program, emphasizing the need for a new Infantry Carrier Vehicle that, among other things, improves upon current force systems by increasing protected mobility, survivability, networking capacity, and the capacity for incremental growth as new technologies emerge.

In particular, Odierno cited the Army’s three-pronged acquisition strategy, which encompasses several contractors currently working on a GCV technology development phase, an ongoing analysis of alternatives, and an exploration of current force, nondevelopmental, or off-the-shelf options.

“This is about survivability and mobility and the trade-off between the two. I want a system that we can incrementally improve, incrementally add technology as we go forward, like we did with the M1 Abrams tank in 1970; it is still the best tank in the world because of the improvements we have made,” Odierno said.

INVENTORY MANAGEMENT

Properly managing the Army’s inventory of equipment, depots, and industrial base capacity is another significant aspect of the services’ overall effort to adjust to the new budget environment, said GEN Ann E. Dunwoody, Commanding General (CG), U.S. Army Materiel Command. Citing the importance of what she referred to as “institutional adaptation,” Dunwoody emphasized that the Army must manage its drawdown of equipment effectively now that the war in Iraq has ended and



plans to pull out of Afghanistan are moving along.

Dunwoody highlighted the need to learn from history so that the Army doesn't "hollow out" its forces as it has done in previous postwar periods, such as in the drawdown after the Vietnam War.

"Intellectual energy needs to be invested to ensure that the new strategy and new budget priorities help us to get this right. We will still be counted on to respond to full-spectrum operations and win. A drop in the budget will not change this," Dunwoody said.

REASONABLE REQUIREMENTS

With JLTV, the Army took steps to ensure that the program was executable

and affordable by synchronizing requirements with the U.S. Marine Corps and shortening the engineering and manufacturing development phase, resulting in improved capability and substantial cost savings for the program, Shyu said.

Specifically, collaboration among the Army, Marine Corps, and industry to synchronize JLTV requirements resulted in lowering the per-vehicle cost from potentially more than \$500,000 to roughly \$225,000.

"We've acknowledged that the right foundation for success is based on sound planning—we can't succeed unless achievable requirements are matched with stable and well-planned resources under sound program management. This necessary collaboration does

not end when programs are launched," Shyu explained.

In fact, the Army's acquisition strategy for both GCV and JLTV represents an important model for how the service will manage programs in the future; requirements and technological capabilities were properly aligned, in some cases allowing for important trade-offs to preserve key capabilities while adhering to clearly established cost and schedule parameters.

FUTURE THREATS

The U.S. Army Training and Doctrine Command (TRADOC) is an integral part of this process, working closely with ASAALT to streamline the requirements process and ensure that emerging capabilities and technologies meet identified capability gaps for the current and



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MOBILITY PLUS PROTECTION

Chief of Staff of the Army GEN Raymond T. Odierno cited the need for a new Infantry Carrier Vehicle (ICV) to provide increased mobility and protection for Soldiers. Here, SSG Jonathan Laguzza, an ICV driver with 2nd Stryker Brigade Combat Team, 2nd Infantry Division, points out the key safety features and details of his Stryker to GEN David M. Rodriguez, Commanding General, U.S. Army Forces Command, during Rodriguez' visit to Joint Base Lewis-McChord, WA, Jan. 12. (Photo by SSG David Chapman.)

future force, said GEN Robert W. Cone, TRADOC CG.

Cone explained that TRADOC is focused on training, preparing, and modernizing the Army to meet the challenges of current and potential future operating environments. "We must think about the way we design our force and include operational adaptability."

In particular, the Army of 2020 must be prepared to successfully engage and deter hybrid threats, explained as nation-states, groups, or proxy forces that combine insurgency-type, guerrilla-style tactics with some degree of conventional arms and advanced weaponry.

"These forces recognize that conventional conflict with the U.S. is a losing proposition; they use their

capabilities in a designed way to capitalize upon our vulnerabilities and frustrate U.S. operations by turning conflicts into protracted war. Their desire is to preclude the U.S. from executing our way of war and take us off our game," said Cone.

FOSTERING AGILITY

TRADOC, the U.S. Army Test and Evaluation Command, and ASAALT have teamed up to form a "triad" designed to implement a new way of doing business for the Army, a method of testing, developing, integrating, and fielding emerging technologies more rapidly and efficiently.

This Agile Process, which is grounded in a series of biannual exercises at White Sands Missile Range, NM, called Network Integration Evaluations, is helping

to streamline the integration, development, and procurement of promising new systems, Shyu explained.

Shyu also stressed the need to continue investment in S&T in order to harness and deliver crucial next-generation Soldier technologies.

Shyu ended her speech with a story about how technological innovation in the form of Pelvic Protection Systems (PPS) is saving Soldiers' lives in Afghanistan.

The Army is in the process of delivering more than 400,000 individual items of PPS to Soldiers fighting in Afghanistan. The gear was developed and sent to theater in response to a request for increased protection from blast events impacting the pelvis, femoral arteries, and lower abdominal organs.

Recalling a recent visit with wounded warriors at hospitals in Afghanistan, Shyu spoke with great emotion about one Soldier who lost one of his legs in a huge bomb explosion but was grateful to be alive.

"He was alive because of the PPS," Shyu said.

For selected presentations from the AUSA ILW Winter Symposium, go to <http://www.army.mil/professional> and <http://www.ausa.org/meetings/2012/symposia/Winter/Pages/2012Winter.aspx>.

KRIS OSBORN is a Highly Qualified Expert for the Assistant Secretary of the Army for Acquisition, Logistics, and Technology Office of Strategic Communications. He holds a B.A. in English and political science from Kenyon College and an M.A. in comparative literature from Columbia University.



FUTURE FLEET

Army prepares to adjust quantity, types of Tactical Wheeled Vehicles to meet the needs of a changing force

by Kris Osborn

SELECTIVE RETIREMENT

While sustaining, upgrading, and resetting key elements of the tactical truck fleet, the Army also plans to divest a portion of the aging fleet, including unarmored HMMWVs. Here, U.S. service members unload a HMMWV carrying a power generator at Cap Draa, Morocco, May 6, 2011. The Soldiers were part of *African Lion 2011*, a bilateral U.S.-Moroccan exercise. (U.S. Army photo by SPC Cody Campana.)



The Army is refining and advancing a “tailorable” strategy for managing its Tactical Wheeled Vehicle (TWV) fleet. This includes key acquisitions to bring valuable new technologies to the force and divesting aging portions of the fleet to sustain modernization efforts and adjust to anticipated force reductions.

The Army’s decision to bring the number of active-duty Soldiers down to 490,000 in coming years means that the truck fleet must also adapt in a way that preserves key elements of capability and takes a smart approach to divestiture, said Kevin Fahey, Program Executive Officer Combat Support and Combat Service Support (PEO CS&CSS), speaking to reporters at the Association of the United States Army’s Institute of Land Warfare Winter Symposium and Exposition Feb. 22-24.

In total, the Army’s TWV fleet will drop from roughly 260,000 trucks to 235,000 or less in coming years, as part of a strategic effort to acquire, upgrade, and sustain important capability for Soldiers. Exact numbers for the overall TWV fleet and the trucks slated for divestiture are still being determined, Fahey said.

Plans for the TWV fleet, which include key assets such as the Family of Medium Tactical Vehicles (FMTV), up-armored and regular High Mobility Multipurpose Wheeled Vehicles (HMMWVs), and emerging systems such as the new Joint Light Tactical Vehicle (JLTV), also involve resetting war-damaged vehicles, Fahey added.

SMART CHOICES

“We were on a trajectory of growth, and we are now on a trajectory of reducing requirements. As we go through that process, we want to make sure we go about this in a smart way so that we end up



APPROACHING A CROSSROADS

President Obama’s FY13 budget submission calls for funding and production of the Family of Medium Tactical Vehicles to halt after 2014, saving the Army an estimated \$1.9 billion through 2017. (U.S. Army photo.)

with the right models and we continue to focus the investment we have left on managing the fleet size. We want to be really smart about how we divest,” said COL David Bassett, Project Manager Tactical Vehicles within PEO CS&CSS.

Along with sustaining, upgrading, and resetting key elements of the truck fleet, the Army is planning to divest a portion of the aging fleet, such as some early-model FMTVs, legacy five-ton trucks, and unarmored HMMWVs, Bassett and Fahey said. Divestiture will help the Army lower sustainment costs, Bassett noted.

Also, President Obama’s FY13 budget submission calls for FMTV funding and production to halt after 2014, saving the Army an estimated \$1.9 billion through 2017. “After FY14, the only new acquisition is JLTV,” Fahey said, indicating that the focus for most of the TWV fleet will be on sustainment.

CONCERNS FOR INDUSTRY

Along with this effort comes an important need to analyze, observe, and monitor the U.S. industrial base with an eye to preserving production capacities and the ability to surge production if needed.

“We are concerned about our industrial base, because in many cases we have trucks that have been in production in some form for nearly the last 20 to 30 years,” Fahey said. “We have large fleets, so when you are not in production, one of our main challenges is spare and repair parts, depending upon second- and third-tier suppliers. We are working with contractors to determine the critical capabilities that we need to maintain and explore how we can maintain them. Most of what we need to preserve is the intellectual know-how to design and build a truck.”

When it comes to preserving the industrial base, Foreign Military Sales are a key

part of the strategic calculus, Fahey said. For instance, there may be U.S. allies and Coalition partner nations that are interested in investing in U.S.-manufactured truck capabilities.

At the same time, the best way to sustain the industrial base is to have trucks in production, such as the Army's planned manufacture of the JLTV, Fahey said.

MANAGING REQUIREMENTS

Bassett and Fahey said that collaboration with industry throughout the technology development (TD) phase, as

exemplified by several productive and informative industry days, has greatly helped to refine and streamline the requirements for the JLTV. Overall, as a result of requirements trade-offs and progress made during the TD phase, the Army's and Marine Corps' requirements were aligned, the vehicle's core capabilities were preserved, and the per unit cost of the JLTV was lowered to roughly \$225,000.

"Our TD phase did exactly what it was intended to do, which is that it gave us the opportunity to learn about requirements

and learn the relationship between those requirements and costs. This really allowed the user to focus on the core capabilities that had to be satisfied with the JLTV," said Bassett. "We came out of the TD phase with an industrial base that had learned a lot and benefited from a round of competitive prototyping. They learned what the capabilities were and what things would cost."

As a result of this lowering of risks and costs, the Army-led program is poised to conduct a full and open competition for the engineering and manufacturing development (EMD) phase of the program. A formal Request for Proposal (RFP) for the EMD phase was released to industry in January.

"It's important to put the RFP in the context of the full executive summary. What we've said is we want to look at design maturity to satisfy threshold requirements. What we did not want to do is give people credit for advance proposals that have not been built yet. We have well-structured evaluation criteria that are designed to get meaningful competitors through the process. We are going to pick the best value of threshold and objective requirements," Bassett said.

The JLTV will bring key new capability to the force, such as protected mobility, increased payload capacity, and next-generation onboard electronics, he said.

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RESETTING THE FLEET

Resetting war-damaged vehicles is one part of the tactical fleet strategy. Here, SPC Marcus Phelps, a Wheeled Vehicle Mechanic for the 541st Combat Sustainment Support Battalion, replaces an upper ball joint on a HMMWV at Fort Wainwright, AK, in July 2011. (U.S. Army photo by SSG Trish McMurphy, U.S. Army Alaska.)



MISSION COMMAND CAPABILITIES

Common software and mission command applications are a high priority for Army science and technology (S&T). Here, Soldiers from 2nd Brigade, 1st Armored Division collaborate using mission command applications inside a tactical operations center during Network Integration Evaluation 12.1 at White Sands Missile Range, NM. (U.S. Army photo.)





FROM STRATEGY *to* SOLUTIONS

Army S&T builds partnerships with private sector to identify and develop promising answers to high-priority problems

by Kris Osborn

The U.S. Army science and technology (S&T) community has made substantial progress in its ongoing effort to encourage its laboratory, academic, and industry partners to address a host of relevant problem areas and challenges in need of specific solutions, Dr. Marilyn M. Freeman, Deputy Assistant Secretary of the Army for Research and Technology, told an audience of Army and industry attendees Feb. 22 at the Association of the United States Army's Institute of Land Warfare (AUSA ILW) Winter Symposium and Exposition.

The overall strategy, which identified 24 specific challenges aligned with seven major problem areas, is designed to harness and develop solutions that can enhance capability for Soldiers. The seven problem areas are force protection, maneuverability, human cognition, surprise/tactical intelligence, sustainability/logistics, overburdening, and tactical overmatch.

For example, the challenges include creating common software; improving situational awareness, intelligence, and mission command capabilities for small

units on the move; lightening the load that Soldiers carry; and identifying technologies that improve maneuverability, protection, and survivability for Soldiers.

REINVENTING S&T

"We are reinventing Army S&T with plans to change the culture regarding what we need to be successful in the future. These are new processes we're implementing and new opportunities for increased partnership," Freeman told the audience. "It is the Soldier on the ground, working in a small unit, that we need to focus on."

Freeman said the Army hopes that its industry partners might choose to spend some of their research and development (R&D) funds to develop capabilities that can meet the identified challenges, with a focus on the small unit, squad, and dismounted individual Soldier.

"These seven problem areas are what Army S&T is focused on, meaning this is the stuff we are going to need to be able to do, no matter where we fight. Every one of these is a program to be formulated," Freeman said.

In November 2011, the Army released a broad agency announcement [BAA] to industry, leading to the anticipated allocation of money from the congressionally approved Rapid Innovation Fund for small businesses, in amounts up to \$3 million.

"OSD [the Office of the Secretary of Defense] is releasing the rapid innovation funds. In FY12, there will be another BAA coming out against the remaining challenges," Freeman told the audience.

DEMONSTRATING CAPABILITIES

The proposed solutions to the challenges are designed to establish Technology Enabled Capability Demonstrations (TEC-Ds) and efforts to define "bridging" strategies that can determine whether a given technical or material solution can effectively solve a particular challenge and result in a new requirement.

"These are new capability enablers. The indications we are getting from everybody is that the S&T effort is a bridging strategy, so that when we are ready and working in partnership with TRADOC [U.S. Army Training and Doctrine

Command], they can start working those requirements,” Freeman explained.

As part of this strategy, Freeman explained that Army S&T has already received more than 1,000 proposals in response to its rapid BAA soliciting concepts and solutions from industry.

The proposals thus far have been in response to the top 10 identified challenges presented to industry at the AUSA Annual Meeting last fall. Nine of these challenges are being developed as TEC-Ds and were presented to industry as part of an ongoing dialogue, Freeman said.

The TEC-Ds under development include:

- *Force Protection – Basing*, described as a plan to formulate an S&T program to reduce the percentage of Soldiers needed to set up a base and protect against threats, including small arms, indirect fires, air-delivered weapons, and chemical biological explosives in austere, restricted terrains.
- *Force Protection – Soldier and Small Unit*, to improve individual protection for male and female Soldiers at reduced total weight and heat stress, while enabling increased physical and mental agility, particularly over extended periods.
- *Occupant Centric Platform*, to develop technologies and know-how to optimize force protection, crew effectiveness, mobility, and transportability for ground vehicles.
- *Overburden – Physical Burden*, to significantly reduce the weight and volume of all items that individual Soldiers in a small unit must carry to accomplish their missions, while maintaining or increasing the unit’s ability to perform tasks, whether operating dismounted or in vehicles.
- *Surprise/Tactical Intelligence – Mission Command*, to better enable squads to achieve tactical overmatch (increased lethality, protection, mobility, situational awareness, and mission accomplishment).
- *Surprise/Tactical Intelligence – Actionable Intelligence*, to provide small units with tools and training to efficiently collect, process, exploit, and disseminate data to support situational awareness and decision making without adding more Soldiers or significantly increasing the weight or number of devices.
- *Sustainability/Logistics – Basing*, to increase self-sufficiency, reduce supply demands, and reduce waste at combat outposts, patrol bases, and small forward operating bases, and improve the ability to sustain the small unit for the duration of the mission at lower cost and lower risk to suppliers, without adversely impacting Soldiers’ availability for the primary mission (troop-to-task ratio).
- *Human – Individual Training to Tactical Tasks*, to develop adaptive training methods that enhance the ability to monitor and track Soldiers’ learning needs; assess and diagnose problems; guide Soldiers through training events; provide effective performance feedback; select appropriate instructional strate-

TESTING GROUND

Technology Enabled Capability Demonstrations will take place in experimental venues, such as the Army’s Expeditionary Warrior Experiment (AEWE). Here, SGT Byron Arnold of 1st Battalion, 29th Infantry Regiment demonstrates the Nett Warrior system at the McKenna Military Operations in Urban Terrain site, Fort Benning, GA, in preparation for AEWE training, Sept. 22, 2011. (Photo by Kristin Molinaro.)





FOCUS ON FORCE PROTECTION

One of the Army's S&T areas of focus is improving the use of Soldiers for force protection. Here, SPC Cody Brice of 1st Battalion, 501st Infantry Regiment, 4th Airborne Brigade Combat Team, 25th Infantry Division, Task Force Spartan provides security outside of Combat Outpost Bak in Khowst Province, Afghanistan, Jan. 1. (Photo by SPC Phillip McTaggart.)

gies; anticipate and seek out information to tailor the content and approach to the learner's needs; and provide intervention or other assistance as needed.

- **Human – Medical Assessment and Treatment**, to provide more effective assessment and intervention capabilities at the individual, leader, and medical levels to mitigate the effects of combat on brain function.

TEC-Ds, once established, can be assessed and demonstrated at experimental venues such as the Army's Expeditionary Warrior Experiment, Fort Benning, GA, or the Network Integration Evaluation at White Sands Missile Range, NM, Freeman said.

INDUSTRY INPUT

Also at the AUSA ILW Winter Symposium, Freeman led a panel discussion with defense industry leaders and executives to address the new S&T strategy.

Freeman explained that the challenges were not designed to instruct industry on which technological or material solutions to propose, but rather to encourage industry to harness its own considerable ability to innovate.

Several industry panelists welcomed the concepts and strategies contained in the Army's S&T approach to "challenges," indicating that they are consistent with key elements of their companies' own approach to S&T development.

"We'll challenge our engineers with a narrowly defined set of problems and say, 'We want your input on these.' We're getting a lot of good ideas that come out of these. By defining some additional challenges that are narrower in scope, we are nurturing our culture of scientists and engineers," said Bruce Snider, Director of Technology, Network Centric Systems, Raytheon Co.

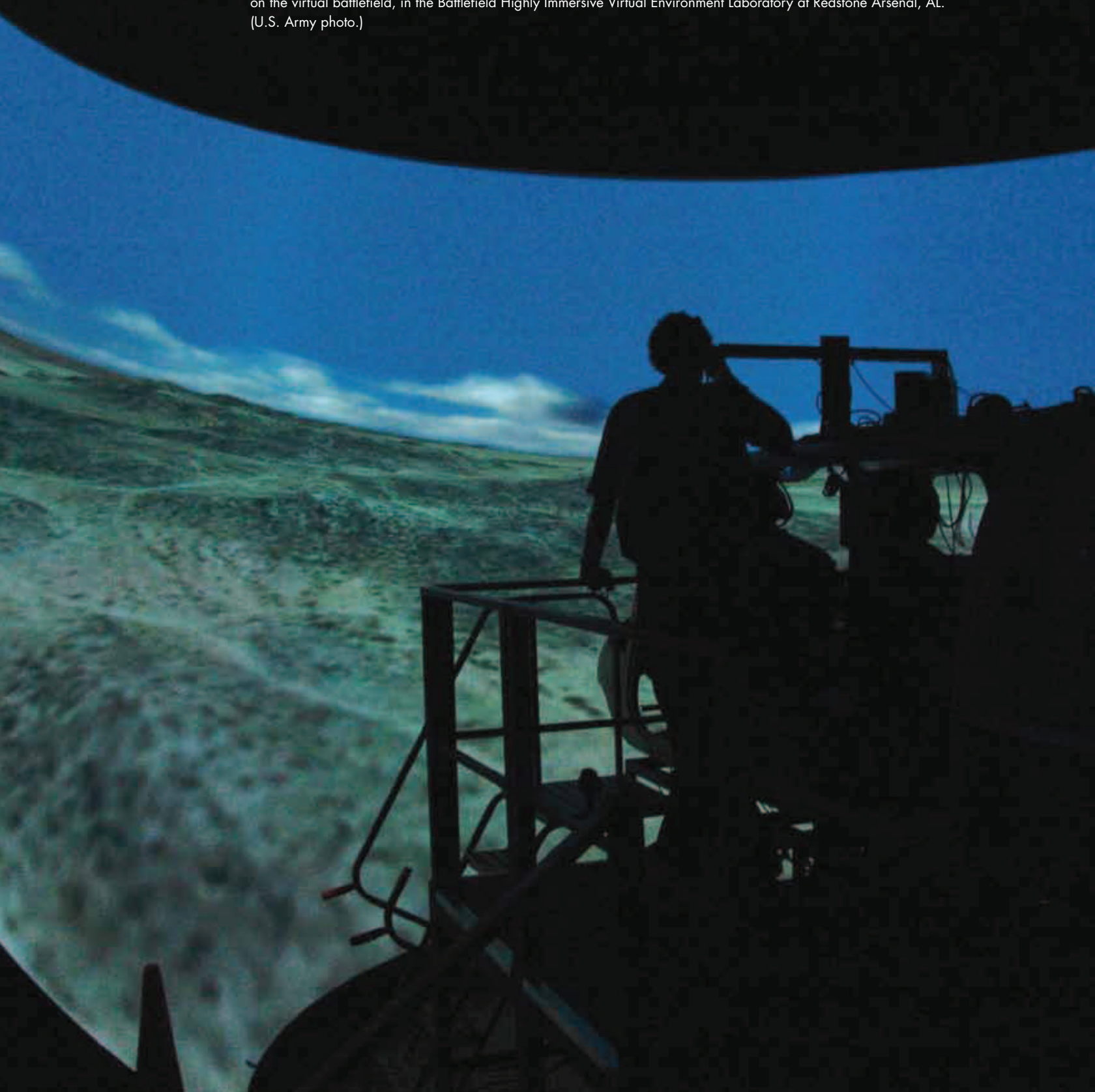
Industry participants also said that different or separately identified R&D efforts could reinforce one another, leading to unanticipated benefits.

"With a balanced R&D portfolio approach, we also try to look for synergies; an investment in one particular product may also prove to be a benefit elsewhere," said Daryl Pelc, Vice President, Engineering and Technology, Phantom Works at Boeing Defense, Space and Security.

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VIRTUAL TRAINING

Army Aviation leaders are looking for more simulation in training aviators, to help reduce fuel costs and wear and tear on the training fleet. Here, technicians prepare crew members in a simulated armed reconnaissance helicopter cockpit before testing on the virtual battlefield, in the Battlefield Highly Immersive Virtual Environment Laboratory at Redstone Arsenal, AL. (U.S. Army photo.)





FLIGHT PATH

AUSA Army Aviation Symposium highlights successes and challenges ahead

by Brittany Ashcroft and Robert E. Coultas

Army Aviation is facing ever-increasing demand for the wealth of capabilities it brings to the fight, and the need for aviation assets will only increase, particularly as the Army deals with constraints on resources.

This was the outlook to emerge from the Association of the United States Army's Institute of Land Warfare Army Aviation Symposium and Exposition, Jan. 11-13 at National Harbor, MD. The symposium examined the ever-growing demand for aviation assets, modernization, fiscal constraints, sustainment and reset, industry's roles, and evolving technologies.

"There's recognition across the Army of the importance of what aviation means for this fight and what it means for the next fight, too," said LTG William N. Phillips, Military Deputy and Director, Acquisition Career Management in the Office of the Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASAALT).

"Since we started the conflict, we have flown over 4.5 million hours of support for operations in Iraq and Afghanistan. And we deployed at a higher rate than anyone else in the Army. The appetite is

huge and growing," said MG Anthony G. Crutchfield, Commanding General, Aviation Center of Excellence and Fort Rucker (AL).

A prime reason for this robust demand for Army Aviation, according to MG William T. Crosby, Program Executive Officer Aviation, is that "it brings so much flexibility to the warfighter on the ground." As defense spending decreases, "our value ... becomes astronomically more important, because as you spread things further on the ground, the responsiveness that Army Aviation brings becomes more important."

THE CHALLENGES

Crutchfield highlighted four major challenges that Army Aviation is facing today. "One, we are going from an Army at war to an Army that prepares to go to war. Two, we know we, Army aviators, have to define what we need and not what we want. Three, the resources are declining. Four, I truly believe that the last 10 years of war are not the blueprint for the next war," he said.

Identifying what is necessary vs. what is desired for Army Aviation affects Army Aviation's processes and the development of solutions, Crutchfield said. "We know that the Army is changing," he said. "It's

changing as we speak, and Army Aviation has to change with it, because Army Aviation doesn't exist for its own worth. It exists to support the United States Army and the goals of our Nation."

Noting the dual challenge of a high operations tempo and an aging fleet, LTG Robert P. Lennox, Deputy Chief of Staff, G-8, said, "We have to figure out how to modernize a fleet that continues to be used at historic rates, and all indications are that this is going to continue for the future," he said.

Lennox noted that the OH-58 Kiowa Warrior helicopter is nearing about 35 years old, while the rest of the fleet has reached the 15- to 20-year mark, on average. "They've been used at incredible rates over the last 10 years," Lennox said. "We've been able to do some remarkable things, but we haven't fixed the age of the fleet."

In order to move forward and address those challenges, Army Aviation must "continue to develop agile and adaptable leaders who can thrive in a complex and uncertain environment," Crutchfield said. "We have to continue to develop and modernize and deliver what our force needs in equipping. We have to determine what the future's going to be,



COMMANDERS' EYE IN THE SKY

There has been a great deal of growth in the use of unmanned aerial vehicles in theater. Here, a Shadow unmanned aerial system is launched by Special Troops Battalion, 3rd Brigade Combat Team, 1st Infantry Division, Task Force Duke at Forward Operating Base Sharana, Afghanistan, Aug. 26, 2011. The Shadow offers commanders intelligence, surveillance, and reconnaissance capabilities. (Photo by SPC Tobey White.)

based on our best analysis. We might not get it all right, but I can tell you we can't afford to get it all wrong."

GROWTH OF UNMANNED SYSTEMS

Unmanned aerial vehicles (UAVs)—with "exponential growth" since the first Raven was sent downrange in 2006—represent some of the major successes of Army Aviation, Phillips said. "The ground brigade commanders, battalion commanders, [and] company commanders have learned how to use UAVs in a most extraordinary way to extend their ability to achieve situational awareness on the battlefield," he said.

The next big step for UAVs is to fly in the national airspace. The Army currently flies UAVs in restricted areas over each major installation, with the exception of Fort Hood, TX, said COL Patrick Tierney, Director of Army Aviation, DA Aviation Directorate.

The Army is working with the Federal Aviation Administration (FAA) to fly

within national airspace, which requires a risk assessment and an FAA certification of authorization. Such authorization would allow for more home station training with UAVs rather than making Soldiers leave home station, Tierney said. The Army is requesting a certificate of authorization for Fort Stewart, GA.

While some may criticize the FAA for moving slowly through the authorization process, Crosby said it is necessary to ensure the population's safety, which is the FAA's main priority.

"This is the first time we're talking about flying unmanned systems over populated areas. We can't afford to get this wrong," Crosby said. "We need to take the time and do the due diligence ... because if we have an incident because we rushed to do this so we could be more efficient and faster, we could really set ourselves back."

THE FUTURE

"Most Army helicopters will be outdated by 2040 regardless of how many upgrades or how much money is

brought into existing platforms," Crutchfield noted.

Drawing on the past 10 years of conflict to set a path for the next 20 years, Army Aviation is outlining requirements for future vertical lift (FVL) and the Armed Aerial Scout.

Crutchfield said that his goal was to have a more refined list of attributes for FVL in time for the Army Aviation Association of America Professional Forum and Exposition in Nashville, TN, April 1-4, where the release of the Army Aviation 2030 Vision Paper was also scheduled to take place. He said the desired attributes for FVL include range, speed, reduced logistical footprint, improved maintainability, and lower cost. (See related article on Page 34.)

In terms of the Armed Aerial Scout, "this is our chance to get this right," Phillips said. "We do have choices, and there haven't been any decisions that have been made at this point. The Army's keeping its options open as it looks at what

industry can come forward with and provide to the Army in terms of capability. ... We're going to do this right, and we need your [industry's] feedback and help."

From the materiel development side, Crosby is looking for "technologies that will enhance our ability to be responsive with the right amount of firepower, the right kind of support, at the right time, as required by the support of that Soldier on the ground."

With the development of a new system, Crutchfield encouraged industry to keep training in mind. "Let's not forget about the training simulator for the future vertical lift," he said.

Crutchfield sees simulation playing a larger role in training Army aviators, particularly because of the cost of fuel and maintainability of the training fleet. "I believe there's going to be a greater need for simulation in the future," Crutchfield said. "I also believe that, although we have some of the greatest aircraft simulators in the world, we're not where I think we need to be as far as utilization of those simulators."

INDUSTRY PERSPECTIVES

The past 10 years of conflict have been instructive for industry as well, in terms of how the Armed Forces and industry can work together most effectively. Industry speakers at the aviation symposium offered a number of lessons learned:

- Support the battlefield commander—"He has a lot of options based on his mission parameters," said Tim Randich, Director of Product Support, Lockheed Martin Missiles and Fire Control. "It's really important to figure out what the best solution is, and we as contractors need to listen to the battlefield commander and provide the right

services. ... Whatever skills they need augmented, whatever tools they need, that's what we need to provide."

- Be the experts—Steven E. Reid, Senior Vice President and General Manager, Unmanned Aircraft Systems, AAI Corp./Textron Systems, said that contracting personnel should be experts on the product technical data that they provide to Soldiers. "Our customers look at those personnel and expect them to know everything about the product. It's a very reasonable expectation. We're also potentially upgrading our products, so we have to keep our personnel in theater current on the latest configuration of all those schematics and specifications," he said.
- Have a good working relationship with the contracting officer's representative (COR)—"We are very proactive in supporting the customer. Sometimes we have to be careful, if we are asked to do something, that we at least tell the COR before we do it, because otherwise you get yourself in real trouble," said LTG John M. (Mark) Curran (USA Ret.), Corporate Vice President, Army Programs and Huntsville Operations, L-3 Communications Corp. "We make sure the COR knows before we do anything."

CONCLUSION

Army Aviation's adaptability is critical both today and in the future, particularly in a constrained environment. "The focus ... is to be adaptive. We, in the acquisition community, sometimes are criticized for being slow and not adaptive [or] not responsive," Crosby said. "I think what we have proven this last 10 years is that we are pretty adaptive and responsive."

"I believe we're at a tipping point for vertical aviation," said Philip J. Dunford, Boeing Vice President/General Manager

and Operating Executive. "We all recognize it. We must collectively do something about it. The Army and industry must work together toward a solution. ... Industry must define the art of the possible so R&D [research and development] dollars can be spent on our relevant technologies for the next airplane. Success depends on a realistic plan by all the stakeholders.

While Army Aviation's strategy going forward will not be final until budget decisions are made, Crutchfield assured that the branch is strong. "As far as the mission is concerned ... Army Aviation remains enduring. We will still provide the Army and the Nation with attack, reconnaissance, [and] logistical support, whether it's manned or unmanned," he said. "Today, Army Aviation remains strong and prosperous."

For more information, go to <http://www.ausa.org/meetings/2012/symposia/2012AviationSymposium/Pages/2012AviationSymposiumExposition.aspx> for presentations from some of the sessions.

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CHINOOK: 50 YEARS AND COUNTING

The Chinook celebrated the 50th anniversary of its first flight in 2011. Here, a CH-47F Chinook helicopter from the 1st Air Cavalry Brigade, 1st Cavalry Division lands on the flight line after a maintenance test flight Feb. 9 at Camp Marmal, Afghanistan. (Photo by SGT Felix Acevedo.)





BUILDING A BETTER ROTORCRAFT

Industry examines the state of the art,
and the art of the possible

by Margaret C. Roth

As the Army and DoD look ahead to the next generation of vertical lift aircraft, industry participants in the Association of the United States Army's Institute of Land Warfare Army Aviation Symposium and Exposition Jan. 11-13 offered an in-depth look at the state of rotorcraft technology and where it could go from here.

The consensus was that, given the necessary investment in science and technology (S&T), multiple solutions are available or within reach to replace the third-generation vertical lift platforms in heavy use today. Just as the Army embarked on its next generation of helicopters at the end of the Vietnam conflict, it is now looking at the next generation of Army rotorcraft at a time of draw-down from Iraq and, by 2014, from Afghanistan.

"We have the best equipment in the world today," said Michael J. Hirschberg, Executive Director of the American Helicopter Society International, composed of engineers, scientists, and others working on vertical flight technology. However, he added, "The V-22 [Osprey] is the only combat rotorcraft that's been fielded in the past 25 years."

The Chinook celebrated the 50th anniversary of its first flight in 2011. The prototype Black Hawk

first flew in 1974, the Apache in 1975. S&T technology initiatives in the 1960s supported those efforts, Hirschberg noted.

Now the military and the rotorcraft industry are working together on future vertical lift (FVL) capabilities, and DoD has identified 55 significant gaps between what is desired and what exists today.

What happens next will require collaboration and a shared commitment, Hirschberg said. "If we can have a strategic plan and set a strategy for the department, I think that industry can get behind that. ... We've seen what industry can do when they invest their own money and work together with government. So I think there are huge benefits to be had."

COMMITMENT IS KEY

Strategic planning and action are separate things, and DoD's emerging strategic plan for FVL "is more of an overarching vision," Hirschberg said. "Unfortunately the bureaucracy of government doesn't move as quickly as industry would like."

A strong leadership commitment to systems development will be key to making the vision a reality, he said. "The S&T budgets have been starved for

the past two decades. ... So rotor-wing operations have been doing God's work in theater. But they haven't been the priority for investments for future capabilities."

Philip J. Dunford, Vice President/General Manager and Operating Executive of Boeing Co., had a similar perspective: "I think industry is all ears, but what we need is some velocity, which means we need speed and direction in where we're going."

The Vertical Lift Consortium, established by DoD and industry to improve the long-term state of the military's vertical lift aircraft and the vertical lift sector of industry, is concerned "about having a program ready when the Army is ready, that there will be a design team available to design an aircraft," said James R. Moran, Boeing's Vice President, Army Systems.

The consortium, composed of manufacturers, members of academia, suppliers, and others involved in the vertical lift industry, aims to be a single resource for DoD to leverage the best approach and technological solutions to FVL needs.

DESIGN CONSIDERATIONS

Looking at innovations in vertical lift for the next-generation aim point of 2030, panelists in a session titled "Evolving Technology for the Future of Army Aviation" focused on desired capabilities in power, speed, noise, lethality, autonomous flight, and systems architecture.

Christopher Van Buiten, Vice President, Sikorsky Innovations, Research and Engineering at Sikorsky Aircraft Corp., presented the company's concept of a next-generation aircraft with two engines developed through the ongoing Improved Turbine Engine Program (ITEP) flying at 250 knots (see related article on Page 54).

"This vehicle will traverse the battlefield with half the noise, will have 3G maneuver instead of 1.5. It will do climbing turns. "It will be optional to fly with two people, one, and sometimes none," Van Buiten said. "Sometimes two crew members ... will guide a pack of five of these and other UAVs [unmanned aerial vehicles] into the fight; two crew members will do the work of 10. It will incorporate autonomy technology such that the vehicle will not enable controlled flight into terrain, the leading cause of death and fatalities in current wars." Autonomous platform technology and crew platform technology are not separate and distinct, he noted. "They go together."

The panelists cited a number of key capabilities to be addressed, including:

- **Less noise**—The Aviation Applied Technology Directorate (AATD) of the U.S. Army Aviation and Missile Research Development and Engineering Center,

and the Defense Advanced Research Projects Agency are pursuing integrated active rotor technology to drive down rotorcraft signatures by at least half.

- **Open architectures**—"We absolutely have to get to where applications are being developed that are usable across the fleet and across the services. ... You could have a common architecture that replaces many systems across DoD," Van Buiten said.
- **Propulsion technology**—The challenge is to produce 50 percent more shaft horsepower while improving fuel consumption by 25 percent and fitting in the same space as today's engine, said Jerry W. Wheeler, Vice President, Advanced Turbine Engine Co. The ITEP effort is addressing these capability targets as well as the need for increased range.

"The ITEP engine is the engine of choice for future vertical lift initiatives," Wheeler said. "Assuming this engine is

OSPREY FILLS A VOID

The V-22 Osprey is the only combat rotorcraft fielded in the past quarter-century. Here, Soldiers with 4th Battalion, 10th Special Forces Group fast-rope from a CV-22 Osprey tiltrotor aircraft during exercise *Emerald Warrior 2011* at Cannon Air Force Base, NM, on March 1, 2011. (DoD photo by TSgt DeNoris Mickle.)



installed in the entire fleet on Day 1, it is projected to save approximately 50 million gallons of fuel a year,” he said. “With that magnitude of fuel savings, you can reduce the requirement for forward ops, reduce deliveries to those forward locations, and reduce convoy deliveries and security requirements as well. All of those things translate into freeing up assets and lessen the people you put in harm’s way.”

- **Mission equipment**—Integrated mission equipment with maximum effectiveness in the battlespace calls for multifunctional solutions, said Naveen N. Murarka, Program Manager, Advanced Concepts and Technologies Division, Northrop Grumman Electronic Systems Sector. In developing the hardware and the software architecture, modularity and the ability to enhance capabilities in the future are important, he said. This includes processing, he noted. “Every single system that we provide typically comes with a separate process. What we need to do is engage the warfighter early on in the process.

“As our technology and our sensor systems improve, we’re going to see an exponential rise of data getting into the cockpits, getting to the UAS [Unmanned Aircraft System] stations, and moving across the battlespace. What we need to be able to do is take that data and apply smart processes” to reduce workflow for the crew, Murarka said. “We’ve got to sift through that data and provide the actual intelligence that the pilot or the crew need.”

Open architecture standards should not get in the way of innovation, he said. “We need to ensure that we allow ourselves to have the eventual upgrades to those existing standards that really

enable us to add capabilities to the existing systems. ... We need to be able to work collaboratively with government and industry partners to develop solutions, and really look at the best ways to prevent the government from getting locked in.”

The Army’s series of Network Integration Evaluations will provide opportunities to demonstrate and enhance interoperability, Murarka said.

Looking at the capabilities that Army Aviation will need in 2030, diagnostics will be critical, said Tim Randich, Director of Product Support, Lockheed Martin Missiles and Fire Control, in a separate session titled “Contractor Support for Army Aviation on the Battlefield and Kuwait.” “If you provide the communication design that makes it able for the Soldiers and maintainers to quickly make repairs, turn times are shorter, and it gets the unit back in the fight as quickly as possible,” he said.

INVESTMENT ISSUES

One of the issues discussed at the symposium was whether industry could sustain research and development funding for new technology with no guarantee of production, especially as the military draws down and overall defense spending is less.

No clear answer to that question emerged, but industry representatives were skeptical.

Offering a Northrop Grumman perspective, Murarka said, “I think in the short term, we can certainly do that, but as we move toward ... actually building future platforms, there’s a large investment required to do that. And there is a challenge with how we can survive, say

in the next 5 to 10 years, as a business to support that.

“I think we still need to work on it as a business model and work with the government to see how we can sustain,” he said.

“I would say that it will be a factor of how the government reacts to some of those investments and how they treat them,” said Sikorsky’s Van Buiten. “There are decisions in front of us that would potentially stifle further industry investment, or accelerate it.”

CONCLUSION

“Next-generation vertical flight capabilities are critically important, and we can’t afford another Comanche,” said Hirschberg of the American Helicopter Society International, referring to the Army’s decision in 2004 to cancel development of the RAH-66 Comanche helicopter after spending \$6.9 billion and more than 20 years to develop the surveillance and attack aircraft.

To succeed, FVL development will have to place “equal focus on affordability, availability and capability,” Boeing’s Dunford said. “And any new technology that comes along must support reducing support costs as well as advancing the capability.”

“We have to succeed this time and sustain leadership from the Army and other services,” Hirschberg concluded. “We can’t afford to fail.”

MARGARET C. ROTH is the Senior Editor of Army AL&T Magazine. She holds a B.A. in Russian language and linguistics from the University of Virginia. Roth has more than a decade of experience in writing about the Army and more than two decades’ experience in journalism and public relations.



OPERATIONS CHECK

The Army Aviation fleet is experiencing high levels of wear and tear because of multiple deployments. Here, CW3 Jerald Jastillama, a Maintenance Test Pilot with 3rd Battalion, 25th Aviation Regiment, 25th Combat Aviation Brigade, performs a maintenance operational run-up of a UH-60 Black Hawk on Kandahar Airfield, Afghanistan, Feb. 28. (Photo by SGT Daniel Schroeder.)



HOVER PATTERN

Fiscal prospects cloud improvements
in sustainment and reset

by Margaret C. Roth

Ten years of conflict have taken a marked toll on the Army Aviation fleet, but better maintenance and repair programs bode well for the future, if they can survive budget cuts.

That was the prognosis for Army aircraft sustainment and reset at the Association of the United States Army's Institute of Land Warfare Army Aviation Symposium and Exposition Jan. 11-13.

In a panel discussion titled "Sustaining and Resetting Army Aviation," participants reviewed progress in maintenance and repair programs, prospects for future improvements in processes and technology, and how these may fare as DoD and the Army look for ways to reduce spending.

"Wear and tear on these aircraft are continuing," said MG Jim R. Myles (USA Ret.), Vice President, Aviation Operations for DynCorp International, which provides reset and aviation support to eight of the 12 Army Aviation brigades. The high operations tempo in Afghanistan is, in fact, accelerating wear and tear, he said. UH-60M

Black Hawks and CH-47F Chinooks, for example, "have gone into the fight two times and some cases three times," Myles noted.

"There's a lot happening that's going right" to keep the aircraft in ready condition, he said. Nonetheless, "We've got to be smart about what we're doing."

'PEELING BACK'

Myles gave high marks to the overall Army Aviation Enterprise for proactively tracking needed repairs and replacements. The Corpus Christi Army Depot (CCAD), TX (<http://www.ccad.army.mil/whatwedo.html>), the world's largest rotary-wing repair facility, "is more effective every day," he said.

Experience with the Airframe Inspection and Maintenance (AIM) program, in which the Army conducts in-depth inspection and maintenance of an aircraft, has shown that "there are some significant repairs that need to be done. We're seeing some of the cracks in areas that you wouldn't know about until you actually peel it back," Myles said.

“What we are seeing is repairs on top of repairs ... tail booms that are cracking in places that we don’t normally see.” Temporary repairs are done in theater, “and you come back and you find ... cracks inside of temporary repairs.” It all adds up to increased timelines for repair, he said.

AIM needs to continue to be supported at all levels, both in theater and stateside, he said.

IMPROVING PROCESSES

In the current climate of fiscal austerity, “it’s all the more important to do things in a more concise fashion, to generate some sort of efficiencies and come to a solution,” said Robert L. Smith, Senior Vice President, Booz Allen Hamilton, which advises the Army and the other services on how to take advantage of

available technology to make repair and reset cheaper.

Condition-based maintenance (CBM), a strategy that establishes integrated, predictive maintenance approaches to minimize unscheduled maintenance, eliminate unnecessary maintenance, and deploy the most cost-effective approaches, does not seek to fix every fault, Smith noted. “What we have to do is prioritize which faults are the ones that are the most important to those three priorities: the troops, the safety of the mission, and the financial safety—and then move forward with those.

“We want to reduce the total cost of the mission, and this can be done through process improvements—some engineering improvements, changes in policy, doctrine, [and] investment strategies.”

Information gained from CBM, the Army’s Logistics Modernization Program (LMP), and other sources needs to be synchronized with budget cycles to understand when an aircraft is starting to have an issue with a particular part and to support purchasing decisions now and in the future, said MG Fred D. (Doug) Robinson (USA Ret.), Defense Group Account Executive with CSC, which helped launch LMP in 2003 to improve supply chain management, maintenance, and the planning and execution of repair and overhaul.

“That’s what most large businesses do,” Robinson said. “The Army will continue dealing with an annual budget. Business processes generally don’t like annual budgets.” But with the proper monitoring, “The parts of the aircraft are known, and now that drives decisions to supply

FLIGHT PREP

Corpus Christi Army Depot (CCAD), TX, is the world’s largest rotary-wing repair facility. Here, Soldiers and a civilian conduct a preflight inspection of a UH-60 Black Hawk, Nov. 28, 2011. CCAD completed a record 48 Black Hawk recapitalizations in 2011. (U.S. Army photo by Jaclyn Nix.)



purchases for today that are going to [have an] effect 10 years from now. To me, that's a change. That's where you can actually start saving money."

Configuration management also plays a role in efficiencies, Robinson said. "Now you're able to understand what's on that aircraft. As aircraft qualifications change and you replace a part with a new part, you're actually able to take that [old part] off the supply chain," reducing the quantity needed. "And you really start saving money."

CBM can help the Army identify efficiencies across the fleet by showing where maintenance can be less intensive, Myles said. "This is about being smart," he said, "making sure that we fully use the condition-based maintenance and other technical tools that are out there that allow us to manage this enterprise."

BETTER METRICS

The vast quantity of information now available to the Army on the condition of various components of its helicopter fleet, through onboard sensors and other technology, poses challenges in and of itself, the panelists said.

"There's more information known about these aircraft now than ever before because of condition-based maintenance," Myles noted. "We're measuring frequency, temperature, pressures of all the aircraft, the whole frame itself, to the point where you've got so much data that you've got to figure out how to manage it, how to prioritize it."

"You have to have the right metrics," Smith said—indicators that can predict a problem, as opposed to reacting to it—in order to know where best to apply limited resources, and when. "Some tough calls are going to have to be made in respect to



MAKING ADJUSTMENTS

The high operations tempo in Afghanistan is accelerating wear and tear on Army aircraft. Here, PFC James Dennis, a Crew Chief assigned to Task Force Lobos, 1st Air Cavalry Brigade, 1st Cavalry Division, performs a torque check on the main rotor head of a UH-60 Black Hawk helicopter Feb. 7 at Camp Marmal, Afghanistan. (Photo by SSG Joe Armas.)

what's important enough to send, how to send it, the frequency—is it [in] real time, is it near-real time."

"The Army is doing a fantastic job with sensors," Smith said. Analysis of the data is a "very complex" equation, involving not only the raw information but also "being able to connect that to a lot of other databases and being able to connect the dots and derive from that what you do with it" to benefit decision makers at both the tactical and strategic levels.

Meanwhile, he said, "Technology is evolving faster than our ability to use it. As a result, we're playing catch-up all the time. Sensor technology is rapidly advancing. Computer capacity, microprocessors are evolving so quickly. There's now available to us just a wide array of tools, capabilities that can be used to help make our jobs better." Industry has a vital role in helping the Army "try to figure out ... how to get more bang for the buck," Smith said.

CONCLUSION

With the military drawing down and defense spending heading downward,

about the only certainty is uncertainty, panelists indicated.

"Industry is going to react to uncertainty by being cautious. So we know ... we have to right-size the supply chain. But we are a little uncertain what that's going to mean," said John Cerreta, General Manager, Operations, Sikorsky Aircraft Corp., one of the manufacturers that supplies CCAD.

"Now more than ever, we need that collaboration to move forward, specifically with the Army," he said. "If the depot is affected [by reduced spending], it would take time for industry to be able to step up ... we built ourselves knowing Corpus Christi exists and will remain.

"Can it step up? Would it? Yes, it would. But I think we have to be a partner."

MARGARET C. ROTH is the Senior Editor of Army AL&T Magazine. She holds a B.A. in Russian language and linguistics from the University of Virginia. Roth has more than a decade of experience in writing about the Army and more than two decades' experience in journalism and public relations.

USAASC PERSPECTIVE

FROM THE DIRECTOR,
U.S. ARMY ACQUISITION SUPPORT CENTER

EMPLOYEE SATISFACTION IS AN ORGANIZATIONAL EFFICIENCY

Studies have shown that employee satisfaction and commitment drive organization performance with increased efficiencies and better outcomes. The U.S. Army Acquisition Support Center (USAASC) has consistently rated high in the Partnership for Public Service's "Best Places to Work in the Federal Government" report (online at <http://bestplacetowork.org/BPTW/rankings>), an analysis first released in 2003 that ranks federal employee satisfaction. In 2011, the sixth year of the rankings' publication, USAASC rated 31 out of 240 federal subcomponent agencies for overall employee satisfaction—with high scores in employee skills/mission match, teamwork, effective leadership, training and development, and work/life balance. These results further demonstrate USAASC's rising standards for organizational success and dedication to its employees.

EMPLOYEE TRUST

I believe that the most valuable asset an organization can have is trust. A key component in developing this trust is to ensure that the organization's leadership listens to its employees regularly.

At USAASC, consistent communication with all employees is accomplished through several avenues, including monthly Director Q&A sessions, where personnel can address issues or ask questions both publicly and privately; quarterly All-Hands briefings, an opportunity to recognize employees' outstanding achievements, communicate strategic guidance and "big picture" ideas, and provide a forum for organization-wide discussion; and the Annual Climate Survey, which gives employees an opportunity to comment anonymously about their well-being and morale.



Craig A. Spisak
*Director, U.S. Army
Acquisition Support Center*

Through these events and others, we constantly maintain a leadership climate that fosters trust, teamwork, and high morale. That climate improves our employees' ability to go beyond the set requirements for fulfilling their critical roles in achieving our mission and responsibility to the Army, DoD, and the taxpayer. These communication venues offer employees a sense of purpose and pride in their accomplishments, which leads to job satisfaction and improves efficiencies and results in our organization.

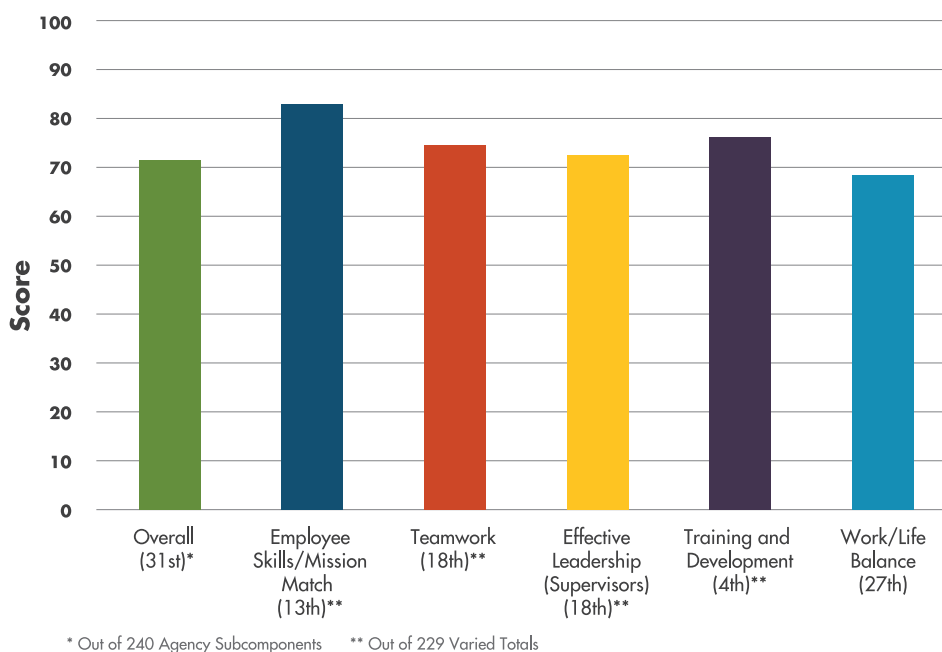
'PEOPLE FIRST'

At USAASC, we firmly believe the people accomplishing the mission every day are the critical link between the success and failure of our organization. We ensure our success by valuing our people, letting them know they matter, and caring about their quality of life. We offer alternate work schedules and the telework program, which can strike a balance between work and the individual's personal time. This "people first" mentality and reputation are one way USAASC attracts talented people who all play a role in making the organization successful and efficient.

Over the years, some USAASC employees have moved on to positions within other organizations. Our reputation goes with them. Former employees speak of the organization in terms of fair, respectful listeners and opportunities for myriad experiences and learning that can lead to promotions and other professional advances. When this information is shared beyond our organization, it helps attract new talent and also brings "happy returns" back to our group. In some cases, employees who have left us come back later because they know us as a people-first organization.



USAASC Rankings in 2011 ‘Best Places to Work in the Federal Government’



SOURCE: ‘Best Places to work in the Federal Government’
(<http://www.bestplacetowork.org/BPTW/rankings>)

ACHIEVING EFFICIENCIES

There is a saying that “a happy employee is a productive employee.” Numerous analyses link job satisfaction with organizational performance, turning that saying into a reality. When a job is interesting, energizing, and challenging at a workplace where respect is a mutual concept, employees enjoy going to work every day, which leads to increased productivity throughout the organization.

I continually stress that work is not necessarily about how much an employee does, but more about the results of that work and discovering ways for individual employees to make productive and efficient decisions. For the past several years, one of USAASC’s strategic objectives has focused on a Continuous Process Improvement approach to finding


and sharing ways to increase organizational productivity.

No one knows the job better than the individual doing it. If there is a better way for you to do your job or for your team to accomplish a project, speak up. This feedback increases productivity, fosters a pride in “ownership” of your job, and encourages teamwork and camaraderie in your division or branch and the organization as a whole.

We also nurture greater productivity at USAASC by building a range of knowledge. We strive to retain our best and brightest employees to keep that experience and corporate knowledge within the organization. This allows seasoned employees to share their expertise with newer employees who are just entering the organization. This sharing of

knowledge also creates a positive mentoring relationship between employees and can cross divisions and branches.

By providing a welcoming environment that encourages employees to continue learning throughout their professional life, the organization improves its ability to meet and exceed mission requirements and goals, and more effectively supports the Army, DoD, and our Nation.

My advice to anyone striving to improve an organization’s efficiency is to value your people through increased responsibility and authority to perform their jobs. Teach, coach, and mentor them, and recognize there are sometimes many paths to solving a problem. This creates a sense of pride, facilitates productivity, and increases the organization’s efficiency. 



EDUCATION and TRAINING UPDATE

EDUCATION AND TRAINING OPPORTUNITIES

The School of Choice announcement is open through May 7 to full-time career civilian Army Acquisition, Logistics, and Technology Workforce members in GS-11 through -15 and equivalent pay bands within a demonstration project who have met their position certification requirements. The announcement, at <http://live.usaasc.info/career-development/programs/school-of-choice>, provides additional information on how to apply for this opportunity.

The Naval Postgraduate School Master of Science in Program Management announcement is open through May 21 to all eligible personnel in GS-11 through -15 and equivalent pay bands who have met their current position certification requirements. For more information, go to <http://live.usaasc.info/career-development/programs/naval-postgraduate-school-master-of-science-in-program-management/announcements>.

DEFENSE ACQUISITION UNIVERSITY HIGHLIGHTS

The FY13 Defense Acquisition University (DAU) class schedule will be available

for registration on May 17. Students are encouraged to plan for DAU training and apply as soon as the schedule opens. Applying early will afford a better opportunity to obtain a class in the timeframe requested. Students should also encourage their supervisors to approve training requests as soon as they apply. Applications cannot be processed by the Army registrar until the training has the supervisor's approval. Please apply through the Army Training Requirements and Resources (ATRRS) Internet Training Application System (AITAS) at <https://www.atrrs.army.mil/channels/aitas>.

For more information on DAU training, including systematic instructions, training priority definition, and frequently asked questions, go to <http://live.usaasc.info/career-development/civilian/dau-certification-training>. After receiving a confirmed reservation, students should ensure that they attend the class as scheduled.

The contracting curriculum in FY12 entails significant *Defense Acquisition Workforce Improvement Act (DAWIA)* certification changes for acquisition workforce members in contracting-coded positions. CON 170, Fundamentals of Cost and Price Analysis, is a new course

required for Level I contracting certification and a required prerequisite to the Level II contracting course CON 270. Both CON 170 and CON 270 are two-week resident courses.

Because of a bottleneck in obtaining CON 170, DAU released CON 170E, the Equivalency Examination Test Out for CON 170. Successful completion of CON 170E satisfies all course requirements for CON 170—prerequisites as well as all associated *DAWIA* certification standards for which CON 170 is required.

Students planning or wanting to take the exam should be well-prepared, as the exam is difficult. Before taking the CON 170E exam should review the *Contract Pricing Reference Guides* at <https://acc.dau.mil/cprg>, especially Volumes 1 and 3, *Price Analysis* and *Cost Analysis*, respectively; the Volume 2 chapters on price index numbers, net present value, cost estimating relationships, and cost-volume-profit analysis; and the Volume 4 chapter on financial analyses. DAU course CLC 058 is a prerequisite for entry to the exam. For more information on the exam, go to http://icatalog.dau.mil/onlinecatalog/courses.aspx?crs_id=1898.



ARIZONA STATE UNIVERSITY JOINS WITH ARMY TO OFFER SUSTAINABILITY CURRICULUM

The Army and Arizona State University (ASU) have partnered to offer a five-course online graduate program in sustainability leadership. The program is offered through ASU's School of Sustainability, the first institution in the nation to offer comprehensive undergraduate and graduate degree programs in sustainability science.

The courses in the Sustainability Leadership Graduate Certificate program (<http://schoolofsustainability.asu.edu/graduate/graduate-certificate.php>), which may also be applied toward a master's degree in sustainability, are:

- *SOS 501*, Foundations of Sustainability
- *SOS 502*, Tools and Techniques for Sustainability.
- *SOS 503*, Operationalizing Sustainability.
- *SOS 505*, Sustainable Acquisition and Logistics.

The courses are delivered entirely online. SOS 501 and SOS 502 are prerequisites to the final three courses.

"Sustainability is key to the Army's future, and Net Zero strategies are the centerpiece of the Army sustainability initiative," said Richard G. Kidd IV, Deputy Assistant Secretary of the Army for Energy and Sustainability, during a signing ceremony Jan. 6 to recognize the collaboration that led to the certificate program.



SEEKING SUSTAINABILITY

Arizona State University's new Army-centric sustainability curriculum grew out of an Army National Guard (ARNG) idea to prepare Soldiers to achieve future readiness requirements with increasingly limited resources. Here, SGT John Shyne, 196th Maneuver Enhancement Brigade (MEB), South Dakota ARNG, removes a "fuel donut" from a compression cylinder in January 2011 at Camp Phoenix in Kabul, Afghanistan. Made from recycled paper and saw dust, the fuel donuts provide an alternative heat source for Afghan families who live in homes without modern heating conveniences. (Photo courtesy of 196th MEB.)

"As supply lines changed due to operational vulnerabilities in Afghanistan, our fuel expenses increased significantly. Sustainability factors into everything we do, and that's why this new education program is so important," Kidd said.

Also participating in the signing event at Army National Guard (ARNG) Bureau headquarters in Arlington, VA, were BG Daniel J. Nelan, Operational Support Assistant to the Director, ARNG, and ASU President Michael M. Crow.

The ARNG approached ASU with an idea to collaborate in developing a sustainability program that would prepare Soldiers to achieve future readiness requirements in a changing military with increasingly limited resources. The ARNG provided a team of trainers, energy managers, logisticians, and environmental specialists to work with ASU's School of Sustainability

faculty in developing the specialized, Army-centric curriculum.

"The Army National Guard today faces unprecedented demands on its Soldiers, communities, natural resources, and various other assets. ... We will meet these obligations by becoming a more sustainable organization, starting with ensuring that our Soldiers and civilians receive the highest-quality training and education in sustainable practices and principals," Nelan said.

The graduate certificate curriculum is tailored specifically to be relevant to missions and operations of the Army, ARNG, and the U.S. Army Reserve with contemporary examples of sustainability challenges and opportunities. It is designed to help Soldiers and Army civilians fulfill the goals of the 2010 Army Sustainability Campaign Plan

“AS SUPPLY LINES CHANGED DUE TO OPERATIONAL VULNERABILITIES IN AFGHANISTAN, OUR FUEL EXPENSES INCREASED SIGNIFICANTLY. SUSTAINABILITY FACTORS INTO EVERYTHING WE DO, AND THAT’S WHY THIS NEW EDUCATION PROGRAM IS SO IMPORTANT.”

(http://aec.army.mil/usaec/sustainability/campaign-plan_2010.pdf).

“The men and women who participate in this program will learn to apply sustainability tools, techniques, and concepts to meet standards for operational efficiencies, energy and water conservation, use of renewable energy sources, and waste minimization, all of which will enhance mission readiness and cost-effectiveness,” Crow said. For example, the course Sustainable Acquisition and Logistics provides practical ways to apply sustainability

principles to procurement, transportation, and materiel. Energy and the Built Environment relates sustainability principles and practices to public works activities, housing, facilities operations and management, military construction, master planning, and energy management.

A growing number of colleges and universities offer undergraduate and graduate curriculums in sustainability, according to the Association for the Advancement of Sustainability in Higher Education (<http://www.aashe.org>).

ASU’s Sustainability Leadership Graduate Certificate is one of a small number of graduate programs geared specifically to sustainability challenges facing the military. Another program, geared to military land management, is the Certificate in Military Sustainability offered online by Texas A&M University’s Institute of Renewable Natural Resources (<http://military.tamu.edu/Education/ProgramOverview.aspx>).

—Margaret C. Roth



Did You Know the Army Acquisition Corp has approved growth of 315 Officers and NCOs in FY13?

MOS 51C-Contracting

Opportunity for NCOs E5-E6 (Sergeant to Staff Sergeant)

- The U.S. Army Acquisition Support Center is seeking NCOs from all MOS backgrounds with diverse experience to fill these positions through MOS 51C-Contracting. NCOs must meet the qualifications for reclassification.
- With the drawdown completed in Iraq, NCOs with experience in theater offer valuable expertise and insight principally suited for MOS 51C-Contracting.

Career Benefits

- Have promotion potential to E9 (Sergeant Major).
- Receive college-level course work at the U.S. Army Acquisition Center of Excellence in Huntsville, AL.
- Receive a \$2,000 reclassification bonus.

FA51-Contracting/Program Management

Opportunity for Officers 03-04 (Captain to Major)

- The U.S. Army Acquisition Support Center is seeking Officers from all FA backgrounds with diverse experience to fill these positions through the FA51-Contracting/Program Management program.
- FA51 officers have the vital job of providing forward contracting support to ongoing warzone and humanitarian missions worldwide.

Career Benefits

- Have promotion potential to O9 (Lieutenant General).
- Receive college-level course work at the U.S. Army Acquisition Center of Excellence in Huntsville, AL.
- Career opportunities in five Acquisition Career Fields (worldwide locations):
 - Contracting
 - Program Management
 - Test & Evaluation
 - IT (R)
 - Simulations



For more information, contact 703-805-1048 or visit <http://live.usaasc.info/career-development/military-nco/career-planning-steps>.



ON THE MOVE

SHYU NOMINATED FOR ASAALT POST

President Barack Obama nominated **Heidi Shyu** for the post of Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASAALT) on Feb. 3. She is currently serving as the Acting ASAALT, a position to which she was first named in June 2011.

Shyu also serves as the Army Acquisition Executive and Senior Procurement Executive. She is responsible for all logistics matters in the Department of the Army. Shyu leads the Army's acquisition function and the acquisition management system, providing oversight for life-cycle management and sustainment of Army weapon systems and equipment. She also manages program executive officers, the Army Acquisition Corps, and the Army Acquisition Workforce.

Before joining the Office of the ASAALT (OASAALT) in November 2010 as the Principal Deputy, a title she has continued to hold, Shyu worked for Raytheon Co. from 1997 to 2010 in several leadership roles, including Vice President of Technology Strategy for Space and Airborne Systems, Vice President of Corporate Technology and Research, Vice President and Technical Director of Space and Airborne Systems, and Vice President of Unmanned and Reconnaissance Systems.

Shyu holds a B.S. in mathematics from the University of New Brunswick in Canada, an M.S. in mathematics from the University of Toronto, and an M.S. in system science (electrical engineering) from UCLA.

RETIREMENTS

MG Randolph P. Strong, Commanding General (CG), U.S. Army Communications-Electronics Command (CECOM), retired after more than 34 years of active duty, with a ceremony Feb. 9 at Aberdeen Proving Ground, MD.

Strong successfully led CECOM's base realignment and closure move from Fort Monmouth, NJ, to Aberdeen Proving Ground. He also led the creation of the new C4ISR Center of Excellence.

He has received the Distinguished Service Medal, the Defense Superior Service Medal, the Legion of Merit with Oak Leaf Cluster, and the Defense Meritorious Service Medal with Oak Leaf Cluster, among other awards and honors.

He is succeeded by **MG Robert S. Ferrell**, who previously served as Director, C4 Systems and Chief Information Officer, U.S. Africa Command.

After more than 32 years of active duty, **BG Jesse R. Cross** retired as the Special Assistant to the CG, U.S. Army

Combined Arms Support Command and Sustainment Center of Excellence, Fort Lee, VA, on Dec. 1, 2011.

He previously served as CG, U.S. Army Materiel Command – Southwest Asia/G-4, U.S. Army Central, Kuwait.

Cross has received the Distinguished Service Medal, the Defense Superior Service Medal with Oak Leaf Cluster, and the Legion of Merit with two Oak Leaf Clusters, in addition to other awards and honors.

After 35 years serving the military, both as a civilian and on active duty, **Dr. Nancy A. Moulton** retired as the Director for Business Transformation within OASAALT, with a ceremony Jan. 25 at the Pentagon.

Moulton, a Lean Six Sigma Master Black Belt, helped ASAALT transform processes to reach cost savings and cost avoidance goals, for which she and her team received an HQDA Principal Staff Organizational Deployment Award during a Pentagon Lean Six Sigma Excellence Awards Program ceremony in November 2011.

After 20 years of active duty, **LTC Michael J. Devine III** retired as Product Manager Power Protection Enablers (PM P2E) within Program Executive Office

Enterprise Information Systems, with a ceremony at Fort Belvoir, VA, Feb. 2.

Devine helped develop and organize PM P2E, which was stood up in April 2009. The program is responsible for delivering capabilities that provide full-spectrum network and information services across a globally connected Army.

He is succeeded by **Art Olson**, who will serve as Acting PM. Olson previously served as Deputy PM P2E.

CSM Stephen D. Blake retired after more than 30 years of service, with a ceremony at Rock Island Arsenal, IL, Jan. 18. Blake most recently served as U.S. Army Sustainment Command (ASC) Command Sergeant Major, a position he had held since June 2008.

During the ceremony, Blake received the Distinguished Service Medal. He has also received the Legion of Merit and the Bronze Star Medal with two Oak Leaf Clusters, among other recognitions.

He is succeeded by **CSM James E. Spencer**, who most recently served with the 21st Theater Sustainment Command, Kaiserslautern, Germany.

CSM Hector Marin retired as the Senior NCO for the U.S. Army Research, Development, and Engineering Command (RDECOM) on Jan. 19, after more than 30 years of active duty.

Marin previously served as the 12th Combat Aviation Brigade's CSM. He has received the Defense Meritorious Service Medal, the Bronze Star Medal with two Oak Leaf Clusters, and the Meritorious Service Medal with three Oak Leaf clusters, among other awards and honors.

He is succeeded by **CSM Lebert Beharie**, who recently served as CSM, 101st Combat Aviation Brigade, Fort Campbell, KY.

GENERAL OFFICER NOMINATIONS

Secretary of Defense Leon E. Panetta announced that President Barack Obama has nominated the following Soldiers for promotion.

To general:

- **LTG Dennis L. Via**, currently Deputy CG/Chief of Staff, U.S. Army Materiel Command, Redstone Arsenal, AL.

To lieutenant general:

- **MG David D. Halverson**, currently CG, U.S. Army Fires Center of Excellence and Fort Sill, OK.
- **MG Patricia E. McQuiston**, currently CG, ASC, Rock Island Arsenal, IL.

To major general:

- **BG Karen E. Dyson**, currently Director, Business Operations, Office of Business Transformation, Office of the Secretary of the Army, Washington, DC.
- **BG Harold J. Greene**, currently Program Executive Officer Intelligence, Electronic Warfare, and Sensors, Aberdeen Proving Ground, MD.
- **BG Stephen R. Lyons**, currently Director for Logistics Operations, Readiness, Force Integration, and Strategy (G-4/3/5/7), Office of the Deputy Chief of Staff, G-4, Washington, DC.
- **BG Gustave F. Perna**, currently CG, Joint Munitions Lethality, Life Cycle Management Command/Joint Munitions Command, Rock Island Arsenal.
- **BG Aundre F. Piggee**, currently CG, 21st Theater Sustainment Command, U.S. Army Europe and Seventh Army, Germany.
- **BG Darrell K. Williams**, currently Commander, Defense Logistics Agency Land and Maritime, Columbus, OH.

To brigadier general:

- **COL Duane A. Gamble**, currently Director for Strategy and Integration, Office of the Deputy Chief of Staff, G-4, Washington, DC.
- **COL James E. Simpson**, currently Senior Contracting Official – Iraq, Joint Theater Support Contracting Command, *Operation New Dawn*.

RDECOM CHANGE OF RESPONSIBILITY


Dale A. Ormond became Director of RDECOM during a ceremony Feb. 10 at Aberdeen Proving Ground. He is the first civilian executive to lead the organization since its activation in 2004. Ormond previously served as Deputy to the CG of the U.S. Army Combined Arms Center, Fort Leavenworth, KS, a post he had held since 2008.

Ormond is a 1985 graduate of the U.S. Naval Academy and holds an M.S. in environmental systems engineering from Clemson University. He was selected for the Senior Executive Service in July 2004.

He succeeds **MG Nickolas G. Justice**, RDECOM CG and Aberdeen Proving Ground Installation Commander since December 2009, who is serving as Special Assistant to the Military Deputy/Director, U.S. Army Acquisition Corps, OASAALT.

CMA NAMES ACTING DIRECTOR

Don E. Barclay became Acting Director of the U.S. Army Chemical Materials Agency (CMA) on Feb. 26. He previously served as CMA's Deputy Director, a position he had held since February 2008.

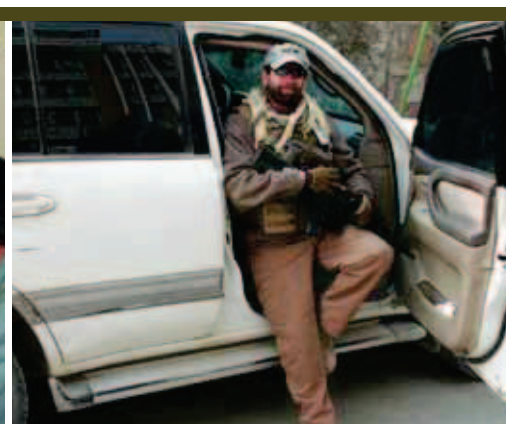
He replaces **Conrad F. Whyne**, who was assigned as Program Executive Officer Assembled Chemical Weapons Alternatives, Aberdeen Proving Ground. 



SPOTLIGHT

LOU HAMILTON

by Margaret C. Roth



As a Marine, Lou Hamilton was trained to destroy things. Now, as a civilian advisor to the Afghan Ministry of Interior, his mission is to build—specifically to build the Afghans’ capacity for self-governance, in preparation for the eventual drawdown of U.S. forces from their country.

Hamilton is on a year-long assignment as the Senior Civilian Advisor to the Finance Chief of the Afghan Uniform Police in the Ministry of Interior, through the Ministry of Defense Advisors (MoDA) program.

MoDA, which aims to guide and advise the Afghan Ministries of Defense and Interior to self-sufficiency, was developed in response to operational requirements in Afghanistan and Iraq, where defense capacity-building efforts focused heavily on improving the tactical proficiency of security forces. MoDA, by contrast, provides ministerial capacity building to sustain Coalition Forces’ hard-won tactical gains. The MoDA program deployed its first group of advisors to Afghanistan in July 2010.

Hamilton has been in the capital city of Kabul since June 2011. The 41-year-old, a native of Orange City, FL, is the youngest member of his MoDA advisory team. He brings to the job 16 years in the Marines—six years on active duty and 10 in the Marine Corps Reserve—and 15 years as a DoD civilian, the past seven working for the Army; his parent command is Program Executive Office Simulation, Training, and Instrumentation (PEO STRI). As a Marine, Hamilton deployed to Iraq for *Operation Desert Storm*, but this is the first time he has deployed to Afghanistan and his first deployment as a civilian.

ANSWERING THE CALL

It took only one phone call to persuade Hamilton that he wanted to be working in theater, supporting the U.S. military operations.

“I was listening to a conference call with Under Secretary of Defense (Comptroller) Robert [F.] Hale in 2010, when he said there was a shortage of acquisition types in theater, specifically contract specialists and financial analysts. I knew then I wanted to get involved. I was tired of sitting at my desk and hearing about things ‘over there.’ I thought my time as a Marine and my experience as an acquisition professional could do a lot of good. Plus, I wasn’t getting any younger.”

Of the 114 résumés, including Hamilton’s, that the MoDA program received for its third class, only 40 people were selected to participate in the preparation activities, and 25 were chosen for deployment.

Hamilton brought to the assignment an understanding of Afghan tactics and language. The intensive, seven-week MoDA training course expanded on his knowledge with classroom briefings from top military, diplomatic, political, and industry experts on topics such as insurgency and counterinsurgency; role-playing exercises in negotiating, advising, and mentoring; practice in using a weapon and responding to roadside bombs; and an introduction to Afghan culture and customs.

“It wasn’t easy transitioning into ‘civilian mode’ when I got here,” Hamilton said. “I am and always will be a Marine, so I had to make the conscious effort to dial things down a bit. Instead of taking the hill myself, I have to ensure my Afghan counterpart understands the strategic importance of the hill: why the hill has

to be taken, figuring out how to properly request the resources to take the hill, and assessing the risk associated with taking the hill.”

‘SHOULDER TO SHOULDER’

Living conditions in Kabul are “very, very austere,” Hamilton said, with equally harsh summers and winters. “But even in our conditions, we are living way better than some of the Marines and Soldiers out there. At least I sleep with a roof over my head every night, and not in a fighting hole somewhere.”

The advisors travel in armored SUVs, he said, and “we are constantly monitoring the threats to us. We are targeted constantly by the Taliban, al-Qaida, and the Haqqani [insurgent network], so we are very, very careful when we conduct movements around the city.”

Tensions escalated in late February in the wake of the accidental burning of Qurans by NATO personnel on Feb. 20. On Feb. 25, an Afghan policeman shot and killed Lt Col John D. Loftis and MAJ Robert J. Marchanti II, who were working at the Ministry of Interior. As a result, the daily routine fundamentally changed for advisors, who were prohibited from being alone with the Afghans they are advising.

The biggest challenge of Hamilton’s new assignment isn’t physical, however. It is bureaucratic, he said. “We impose so many rules and restrictions on ourselves that it sometimes hinders our progress with the Afghans. The ‘good idea fairy’ is rampant, and most of the people implementing policy aren’t on the ground with us. It’s frustrating because once you build rapport with your Afghan counterpart, and you see the struggles they go through every day, it’s hard to tell them you can’t meet with them because of a piece of paper.”

“THIS IS A MARATHON, NOT A SPRINT. THIS MISSION WILL CONTINUE LONG AFTER I HAVE DEPARTED. MY GOAL IS TO CARRY THE BATON AS FAR AS I CAN, SO I CAN HAND IT OFF TO THE NEXT ADVISOR WHO REPLACES ME.”

Hamilton invoked the Dari phrase “Shohna ba shohna”—shoulder to shoulder—which the NATO Training Mission – Afghanistan/Combined Security Transition Command – Afghanistan has adopted as a motto. “Sometimes I think we forget that,” he said.

There are tremendous rewards in supporting the Afghans’ progress toward self-sufficiency, he said, and camaraderie among the advisors is strong. “The Afghans truly want a better country. They don’t want the Taliban back in power; they just don’t have the means to keep them out. Hopefully with our mentoring, advising, and training, they will gain the self-sufficiency needed to ensure the Taliban stays out forever, and they can progress as a country and live in peace.”

His advisory team, composed of U.S. and Canadian military personnel, Royal Canadian Mounted Police, and a variety of contractors, works well together, Hamilton said. “It has truly been an honor working with, and getting to know, these professionals.”

MOTIVATED FOR MORE

For Hamilton, the rewards of advising the Afghans outweigh the obstacles, and now he is hoping to extend his assignment beyond his scheduled departure in

June. “PEO STRI has been nothing but supportive of my deployment and possible extension. It’s great working for a command with leadership that supports their employees 100 percent,” he said.

There is simply more work to be done, he said. “This is a marathon, not a sprint. This mission will continue long after I have departed. My goal is to carry the baton as far as I can, so I can hand it off to the next advisor who replaces me.” Having formed strong friendships with his Afghan counterparts, Hamilton said, “I will not leave this country unless I feel I’ve done everything in my power to help them get them ready for a full transition, ensuring they have the enduring institutional capacity to enable accountable, Afghan-led security.”

To others who might want to join the MoDA program, he had these words of advice: “You need to be in relatively good health and understand that, regardless of your rank and position back home, you will be an advisor on the ground out here.” Of the many different ages, types, and backgrounds represented in the MoDA program, “what unites us all is that we are strong-willed and truly want to make a difference. ... They are true patriots who are sacrificing their safety to help others.”

Heightened tensions in Afghanistan will make it harder for the capacity-building efforts to move forward, Hamilton said. “But we won’t be scared off by the threats and attacks by the Taliban. We will stay and complete the mission. ... The more civilians who answer the call, the quicker the military can get home to their families.”

The MoDA program has trained five classes of advisors to date, with two more classes scheduled for training and deployment in 2012. Currently there are more than 60 civilians on the ground in Afghanistan. Deployments are for a year, with the possibility of extending for another year. Participants are in grades GS-13 and higher and bring with them 20 years of experience, on average. They receive Post Differential Pay and Danger Pay. For more information, go to http://www.defense.gov/home/features/2011/0211_moda and <http://moda-training.com>.

MARGARET C. ROTH is the Senior Editor of Army AL&T Magazine. She holds a B.A. in Russian language and linguistics from the University of Virginia. Roth has more than a decade of experience in writing about the Army and more than two decades’ experience in journalism and public relations.



FOR THE RECORD

CONGRESSIONAL UPDATE

FY13 BUDGET CYCLE KICKS OFF IN CONGRESS

With the federal deficit higher than ever and the drawdown of forces from Iraq and soon from Afghanistan, DoD has been tasked with slashing billions of dollars from its budgets for FY13 to FY21 without diminishing the military's ability to protect the Nation. As expected, when DoD leaders unveiled their first crack at a budget-constrained Pentagon, the backlash on Capitol Hill was immediate, varied, and vehement.

In the FY10 *Department of Defense Appropriations Act* passed by Congress Oct. 6, 2009, the military received a record-high \$671 billion for the coming year. That number included \$528 billion for the Pentagon's base budget and another \$162 billion for overseas contingency operations (OCO), plus another \$1 billion in a supplemental appropriations bill passed in 2010. Over the next two fiscal years (FY11 and FY12), the base budget rose incrementally, while the OCO budget dropped by nearly \$50 billion as active combat operations in Iraq came to a close. Lawmakers applauded outgoing Secretary of Defense Dr. Robert M. Gates and his successor, Leon E. Panetta, for making hard choices and finding efficiencies in DoD's budget.

That steady, rational decline in military funding was fundamentally derailed last August when Congress passed the *Budget Control Act (BCA) of 2011*. In lieu of a proper FY12 Budget Resolution, the *BCA* set spending caps for all federal discretionary spending in order to cut the federal deficit by \$917 billion over the next decade. The *BCA* also mandated the creation of a Joint Select Committee on Deficit Reduction (JSCDR), popularly known as the "super committee," to draft broader deficit reduction legislation. The panel was tasked with cutting at least \$1.2 trillion from the national debt over the next 10 years through a possible combination of entitlement reforms, discretionary spending cuts, and revenue increases via taxes, levies, and tariffs.

The "super committee" failed. The Nov. 23, 2011 deadline set by the *BCA* came and went without any proposals from the JSCDR. The committee's lack of action automatically triggered a process known as sequestration. Under sequestration, mandatory and discretionary federal spending will be cut by \$1.2 trillion over the next decade. The cuts will be split evenly between security and non-security spending, costing the DoD anywhere from \$400 billion to \$600 billion if sequestration comes to pass.

The sequestration will take effect in January 2013 unless Congress acts before then to undo the *BCA*. President Barack Obama has said that he will veto any bill that seeks to reverse any part of sequestration without putting forward a comprehensive deficit reduction plan that includes revenue raisers as well as spending cuts. Thus the onus is on Congress to debate high-level fiscal issues during a presidential election year. Observers both within

FOUR ISSUES THAT MAY DOMINATE DEBATE ON FY13 DEFENSE BILLS

While Members of Congress have expressed a wide variety of concerns with the DoD FY13 budget request, four main areas seem poised to dominate the debate going forward. While the defense committees have expressed a desire to complete action on the FY13 *National Defense Authorization Act (NDAA)* and the FY13 September 30 *Department of Defense Appropriations Act* before the end of FY12 on Sept. 30, the following issues may slow the debate down considerably.

1. BRAC

Panetta has called for another two rounds of the Base Realignment and Closure (BRAC) process. Members of Congress have questioned the actual savings generated by past BRAC rounds.

2. Personnel Programs

The FY13 DoD budget plan includes measures to "slow the growth in compensation costs" by lowering pay raises and recalculating the basic housing and subsistence allowances. The plan also includes TRICARE benefit cost sharing proposals and a new Military Health System strategy.

3. The Nuclear Arsenal

Expect HASC Republicans to push for a provision in the FY13 *NDAA* to prevent the administration from taking the nuclear arsenal below the 1,500 level. That provision will likely not be mirrored in the SASC bill, forcing a difficult conference.

4. Shipbuilding

The New England contingents of the congressional defense committees will push for additional shipbuilding funding even at the expense of other procurement programs.

and outside Congress are nearly unanimous in their belief that Congress will not pass any such legislation before the November election, leaving very little room for error.

This series of events led to a FY13 DoD budget (<http://comptroller.defense.gov/budget2013.html>) that is approximately \$46 billion less than the military planned in its FY12 budget submission. “We were handed a number for deficit reductions [by the BCA,]” Panetta said. “We stepped up to the plate.”

The week of the budget submission on Feb. 13 saw Panetta and GEN Martin E. Dempsey, Chairman of the Joint Chiefs of Staff, spend more than 10 hours testifying before congressional defense committees in a series of three hearings. “I’ve been in hearings for the last three days,” Panetta told a group of airmen at Barksdale Air Force Base, LA. “I think I should get some kind of award going through that crap ... I need a new combat badge for going to Capitol Hill—with clusters.” Panetta and Dempsey testified twice more since then, appearing before the House and Senate Budget Committees at the end of February.

Panetta and Dempsey stepped into a figurative minefield as they addressed members’ concerns on the President’s FY13 budget request. Their first hearing, a session with the Senate Armed Services Committee (SASC) less than 24 hours after the request was submitted, lasted for nearly five hours. A significant portion of that session saw Panetta and Dempsey under criticism from committee members.

“We’re told that these proposed cuts are not budget-driven but based on a thorough strategic review of our defense priorities,” said SASC Ranking Member John McCain (R-AZ). “Respectfully,

this doesn’t add up. Unfortunately, this defense budget continues the administration’s habit of putting short-term political considerations over our long-term national security interests.”

Panetta and Dempsey heard more of the same from Republicans on the House Armed Services Committee (HASC) and House Appropriations Defense Subcommittee (HAC-D) in hearings later that week.

“Although the strategy is framed as making the military more nimble and flexible, it’s not clear how slashing the armed forces by over 100,000 during a time of war, shedding force structure and postponing the modernization makes that so,” said HASC Chairman Buck McKeon (R-CA). “An honest and valid strategy for national defense can’t be founded on the premise that we must do more with less or even less, with less.”

“I’m concerned, as I look at this budget, that money is being taken away from national security and being placed on other priorities of this administration,” said HAC Chairman Emeritus Jerry Lewis (R-CA). “We must not go down this path.”

HEARING TESTIMONY

Feb. 14, Senate Armed Services Committee

http://armed-services.senate.gov/e_witnesslist.cfm?id=5266

Feb. 15, House Armed Services Committee

http://armedservices.house.gov/index.cfm/hearings-display?ContentRecord_id=c9cd49ce-b677-429c-9a9e-aaab326942a1

Feb. 16, House Appropriations Defense Subcommittee

<http://appropriations.house.gov/Calendar/EventSingle.aspx?EventID=278756>

Feb. 28, Senate Budget Committee

http://budget.senate.gov/democratic/index.cfm/committeehearings?ContentRecord_id=8a6325ce-b3b6-493b-8a04-37062ef2b0da&ContentType_id=14f995b9-dfa5-407a-9d35-56cc7152a7ed&Group_id=d68d31c2-2e75-49fb-a03a-be915cb4550b

Feb. 29, House Budget Committee

<http://budget.house.gov/HearingSchedule/hearing2292012.htm>

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OFF THE SHELF

RECOMMENDED READING LIST

Numerous Army leaders over the years have commended the practice of reading to their Soldiers. Even—especially—in this age of information overload, the pursuit of knowledge through books is essential to gain a fuller understanding of acquisition, logistics, and technology. In the words of GEN Raymond T. Odierno, Chief of Staff of the Army, “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, *Army AL&T* Magazine publishes *Off the Shelf* as a regular feature to bring you recommendations for reading from Army AL&T professionals.

Two of this issue’s books are from GEN Odierno’s professional reading list. Readers can view his entire list in the March issue of *ARMY Magazine* (online at http://www.USA.army.mil/publications/armymagazine/archive/2012/03/Documents/FC_Odierno_0312.pdf). The list reflects, in part, numerous comments and suggestions that GEN Odierno received on his preliminary reading recommendations in December 2011 (online at <http://armylive.dodlive.mil/index.php/2011/12/professional-reading-recommendations-from-the-chief>.)

Is there a book you’d like to recommend for this column? Send us an email at usarmy.belvoir.usaasc.list.usaascweb-army-altmagazine@mail.mil. Please include your name and daytime contact information.

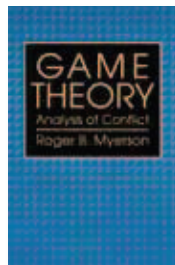


SUPPLYING WAR: LOGISTICS FROM WALLENSTEIN TO PATTON

by Martin van
Creveld
(New York, New

York: Cambridge University Press, 1977
(1st edition) and 2004 (2nd edition),
326 pages)

First published in 1977 and released in an updated second edition in 2004, Martin van Creveld’s *Supplying War: Logistics from Wallenstein to Patton*, recommended by Chief of Staff of the Army GEN Raymond T. Odierno, examines the “nuts and bolts” of war, using a variety of sources that were previously unpublished. The author, one of the world’s leading writers on military history and strategy, focuses *Supplying War* on logistics as opposed to the traditional strategy focus of other texts, to consider the full range of implications, from problems of supply, movement, and transportation to administration. The second edition includes a new postscript with commentary on the role of logistics in high-tech modern warfare.

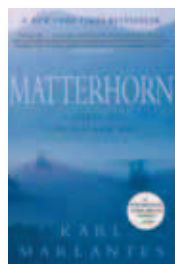


GAME THEORY: ANALYSIS OF CONFLICT

by Roger B. Myerson

(Cambridge, MA: Harvard University Press, 1991, 600 pages)

Packaged as an introductory text for graduate students in economics, political science, operations research, and applied mathematics, *Game Theory: Analysis of Conflict* examines noncooperative and cooperative game theory through models, solution concepts, and methodological principles. Roger B. Myerson, the Glen A. Lloyd Distinguished Service Professor of Economics at the University of Chicago and one of three recipients of the 2007 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel for his contributions to mechanism design theory, presents an overview of decision theory with a comprehensive review of games in extensive and strategic forms, and Bayesian games with incomplete information. Myerson’s text is a key resource for anyone who uses game theory in research.



MATTERHORN: A NOVEL OF THE VIETNAM WAR

by Karl Marlantes

(New York, New York: Atlantic Monthly Press, 2010, 592 pages)

A novel more than 30 years in the making and recommended by LTG Robert P. Lennox, Deputy Chief of Staff, G-8, *Matterhorn: A Novel of the Vietnam War* follows the story of young Marine Second Lieutenant Waino Mellas and his fellow Marines in Bravo Company, who are dropped into the jungle of Vietnam. The Marines must deal with the hostile environment—from monsoons and mud to tigers and an intense conflict with the enemy—while also facing obstacles within their own company, including racial tensions and competing ambitions. Written by decorated Vietnam veteran and former Marine Karl Marlantes, *Matterhorn* combines the very real situation of the Vietnam War with the fictional story of one Marine company to present the courage, sacrifice, camaraderie, and conflicts of war.

RECOMMENDED READING LIST

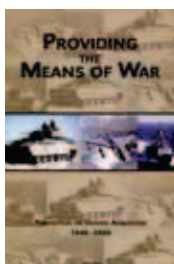


THE NEW COOL: A VISIONARY TEACHER, HIS FIRST ROBOTICS TEAM, AND THE ULTIMATE BATTLE OF SMARTS

by Neal Bascomb

(New York, New York: Crown Publishers, 2011, 352 pages)

The New Cool: A Visionary Teacher, His FIRST Robotics Team, and the Ultimate Battle of Smarts follows FIRST Robotics Competition (FRC) Team 1717 “D’Penguineers” and their mentor, physics teacher Amir Abo-Shaeer. The first public school teacher to receive the John D. and Catherine T. MacArthur Foundation “Genius” Fellowship, Abo-Shaeer sought to create a new “cool” at Dos Pueblos High School in Goleta, CA—a “cool” focused not on sports glory, but lauding science, technology, engineering, and mathematics (STEM) education—and led the creation of the Dos Pueblos Engineering Academy within the high school. Bestselling author Neal Bascomb follows Abo-Shaeer’s journey as he uses the competition, started by inventor Dean Kamen, to get students excited about STEM subjects. The Engineering Academy made the construction of an FRC robot and competition a senior class project, reflecting FIRST’s ultimate vision of a Nation filled with similar academies and enthusiasm for STEM. (For more on Kamen, see Critical Thinking, Page 84.)



PROVIDING THE MEANS OF WAR: HISTORICAL PERSPECTIVES ON DEFENSE ACQUISITION, 1945-2000

Edited by Shannon A. Brown

(U.S. Government Printing Office, 2005, 411 pages)

Providing the Means of War: Historical Perspectives on Defense Acquisition, 1945-2000 is an anthology of papers by former acquisition officials, federal historians, and defense acquisition history scholars. Recommended by the U.S. Army Logistics University Library, this compilation showcases 15 papers offering lessons and observations from the Acquisition History Symposium in Washington, DC, Sept. 10-12, 2001. Selections include: the full transcript of the roundtable discussion, “Acquisition in DoD—Past, Present, and Future,” on connections between national security strategy and resource management; Harvard Business School Professor J. Ronald Fox’s symposium keynote address on acquisition-related issues; and Industrial College of the Armed Forces Professor B.F. Cooling’s closing remarks, focused on the Defense Acquisition History Project.



SWITCH: HOW TO CHANGE THINGS WHEN CHANGE IS HARD

by Chip Heath and Dan Heath

(New York, New York: Crown Publishing Group, 2010, 320 pages)

Recommended by GEN Odierno, *Switch: How to Change Things When Change is Hard* explores the question: “Why is it so hard to make lasting changes in our companies, in our communities, and in our own lives?” For co-authors and brothers Chip and Dan Heath, the answer lies in an internal conflict in the brain between the rational mind and the emotional mind. For example, the rational mind wants to lose weight, while the emotional mind wants a cookie. In this *New York Times* bestseller, the Heaths use a story-driven narrative—with examples from employees and managers, parents, and nurses—combined with psychological and sociological research to illustrate how individuals can unite both sides of the brain to achieve transformative change by using the pattern that exists in successful changes.

Using the Joint Precision Airdrop System (JPADS), a parachute bundle is dropped from a C-130J Hercules in Afghanistan Nov. 27, 2011. JPADS uses a GPS navigation system to guide parachute bundles to precise drop zones, minimizing collateral damage, troops' ground travel, and the aircraft's vulnerability. (Photo by SrA Tyler Placie.)

THEN & NOW

1960 & 2012

In June 1961, *Army Research and Development Newsmagazine* (now *Army AL&T Magazine*) reported on a test flight program then underway that converted a child's "high-performance, tailless toy kite" into a man-carrying aerial vehicle with a paraglider wing. The planned applications included air-dropping loads onto a specific target and air-towing equipment to a drop area.

Today, the Joint Precision Airdrop System (JPADS) makes those applications a reality. The JPADS family of systems uses a GPS and autonomously guided navigation and control systems to steer parachutes to precise landing coordinates.

JPADS' precision capability allows for fewer Soldiers and vehicles on resupply roads and reduces the risk for Soldiers

retrieving the dropped supplies. A single aircraft can deliver supplies to multiple forward operating bases during one pass. The currently fielded version can support payload weights up to 2,000 pounds, while a version in development can support up to 10,000 pounds.

The JPADS program is managed by Product Manager Force Sustainment Systems (PM FSS), within the office of Project Manager Force Projection in Program Executive Office Combat Support & Combat Service Support.

For more information on JPADS, visit the PM FSS website <https://pmfss.natick.army.mil>. For a historical tour of AL&T over the past 50 years, visit the *Army AL&T Magazine* archives at <http://live.usaasc.info/magazine/alt-magazine-archive>.

Paraglider Rises From Toy to Mobility Device

A test flight program then underway that converted a child's "high-performance, tailless toy kite" into a man-carrying aerial vehicle with a paraglider wing.

David Dil Settles, High DOD Civilian

David Dil Settles, High DOD Civilian, is a former member of the DOD Civilian workforce.





U.S. Army Acquisition Corps (AAC) Annual Awards 2012 Call for Nominations

It is time for the U.S. Army Call for Nominations for the following awards. The winners of these awards (excluding the Packard Award and Workforce Achievement Award) will be presented at the 2012 AAC Annual Awards Ceremony on October 21, 2012.

- The **Army Acquisition Excellence Awards** recognize an Army acquisition workforce member and/or team whose performance and contributions set them apart from their peers. The awards directly reflect the outstanding achievements in support of the Army's Soldiers and the Army's transformation initiatives. The Call for Nominations for these awards is **February 29 to April 25**.
- The **Secretary of the Army Project and Product Manager (PM) and Acquisition Director (AcqDir) Awards** applaud the PM and AcqDir whose outstanding contributions and achievements merit special recognition and provide a forum to showcase exceptional leadership within the AAC. The Call for Nominations for these awards is **March 14 to May 9**.
- The **David Packard Excellence in Acquisition Award** recognizes Department of Defense (DOD) civilian and/or military organizations, groups, or teams, who have made highly significant contributions that demonstrated exemplary innovation and best acquisition practices, reflecting achievements that exemplify goals and objectives established for furthering life-cycle cost reduction and/or acquisition excellence in DOD. The U.S. Army Call for Nominations for this award is **March 28 to May 23**.
- The **Under Secretary of Defense for Acquisition, Technology, and Logistics Workforce Achievement Award** has been established to encourage and recognize excellent performance by members of the defense acquisition workforce in the acquisition of products and services for DOD. This program recognizes individuals (military or civilian) who represent the best in the various acquisition workforce disciplines. The U.S. Army Call for Nominations for this award is **March 28 to May 23**.
- The **Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA(ALT)) Contracting Noncommissioned Officer (NCO) Award for Contracting Excellence** applauds the ASA(ALT) Contracting NCO whose outstanding contributions and achievements merit special recognition and provides a forum to showcase exceptional leadership within the AAC. The Call for Nominations for this award is **April 11 to June 6**.
- The **Director, Acquisition Career Management Award** is reserved for the Army Acquisition, Logistics, and Technology Workforce member who has shown outstanding performance and made conspicuous, significant, and long-lasting contributions to the AAC over the course of his/her career. The nominee's career should span a minimum of 20 years of federal government and/or military service. The Call for Nominations for this award is **April 25 to June 20**.

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

Searching for Our Brightest Acquisition Stars!

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“For the next generation of technologies to power the Soldier, we need to think about designing an entire system. A more modular approach for accommodating the individual dismounted Soldier, for instance, is needed to account for a broad range of often-changing power and energy needs.”

Dr. Marilyn Freeman

*Deputy Assistant Secretary of the Army
for Research and Technology*



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