ARMY AL&T
July–September 2009

RESPONDING TO EQUIPMENT TESTING CHALLENGES

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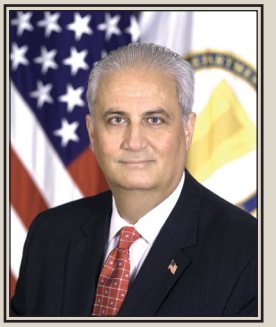
ACQUISITION SUPPORT CENTER

From the Army Acquisition Executive

Test and Evaluation



This edition of *Army AL&T* Magazine highlights the important role of test and evaluation (T&E) in fielding the safest, most reliable weapon systems and equipment to our warfighters based on operational effectiveness, suitability, and survivability on the battlefield. The T&E community is a major stakeholder in providing our warfighters with the equipment they need, when they need it. Also, T&E is an integral part of the process that enables the acquisition community to equip and sustain the world's most capable, powerful, and respected Army.

The acquisition community is indeed fortunate to enjoy a close working relationship with the T&E community, including MG Roger A. Nadeau, Commanding General of the U.S. Army Test and Evaluation Command (ATEC), and James C. Cooke, Director of the U.S. Army Test and Evaluation Office, which directly supports the acquisition process at headquarters. Their dynamic leadership significantly enhances the process of providing world-class capabilities to our warfighters throughout the entire acquisition life cycle.

Because of the need for continuous assessments throughout the life cycle of Army weapon systems and equipment, there are test events taking place at the Army's test ranges within the United States and in Afghanistan and Iraq every single day. T&E provides knowledge to assist decision makers in managing the risks involved in developing, producing, operating, and sustaining weapon systems and equipment. These T&Es provide knowledge of system capabilities and limitations to the acquisition community for use in improving the system performance and to the user community for optimizing system use in operations.

In the Army, T&E has taken on increased importance during the last 7-plus years as we continue to meet the urgent needs of our warfighters in Afghanistan and Iraq. We learned quickly that rapid acquisition could not be accomplished the old-fashioned way. Rapid acquisition requires quick assessments with ATEC's Capability and Limitation (C&L) reports that provide decision makers with a performance analysis of the system or equipment, along with its strengths and weaknesses. For the acquisition community, the C&L data allows us to make procurement and fielding decisions, as well as to pinpoint where further testing is essential. It also allows the user community to better understand where the system or equipment best fits into its mission. Fielding programs rapidly to today's warfighters is our top priority, and ATEC is ready to provide the T&E support to ensure systems are effective, suitable, and survivable.

It is clear that T&E must have a seat at the table from the very beginning of the system life cycle to examine design options, identify potential problems, and eliminate redundancy and duplicative testing. The goal is early identification of technical, operational, and system deficiencies so that appropriate and timely corrective actions can be developed to reduce program risk, developmental timelines, and program costs.

As with all of our endeavors, we find that our people are our most important asset. It is the expertise of our T&E workforce and our acquisition workforce, coupled with their continuous education and training, that allows us to meet the challenges of equipping and sustaining an Army deployed to two theaters and nearly 80 countries worldwide. As we work to test and evaluate weapon systems and equipment for the acquisition and user communities, we are challenged to make better use of modeling and simulation in the T&E process. We are further challenged to integrate developmental testing (DT) and operational testing (OT) when and where appropriate. DT encompasses models, simulation, and engineering-type tests to verify that design risks are minimized, system safety is certified, achievement of system technical performance is substantiated, and readiness for OT is certified. OT is the field test with real users of a system or equipment under realistic operational conditions. Effective integration of DT and OT means use in the evaluation of all available, relevant information and data from both contractor and government sources, as well as the collaborative use of DT and OT resources to learn as much as possible, as early as possible.

There are many significant T&E success stories for the acquisition community. From the test-fix-test cycle of the Mine Resistant Ambush Protected Vehicle; to the CH-47F's standardized reliability, availability, and maintainability data collection methodology and software application from the first flight forward; to T&E of a wide range of improvised explosive device jammers, it is clear that mission capability and operational support were both enhanced by early involvement on these programs.

The continued close cooperation between the T&E community and the acquisition community ensures that our warfighters will always have what they need, when they need it. The adage that "we never want to send our Soldiers into a fair fight" is at the core of our mutual efforts.

Dean G. Popps
Army Acquisition Executive

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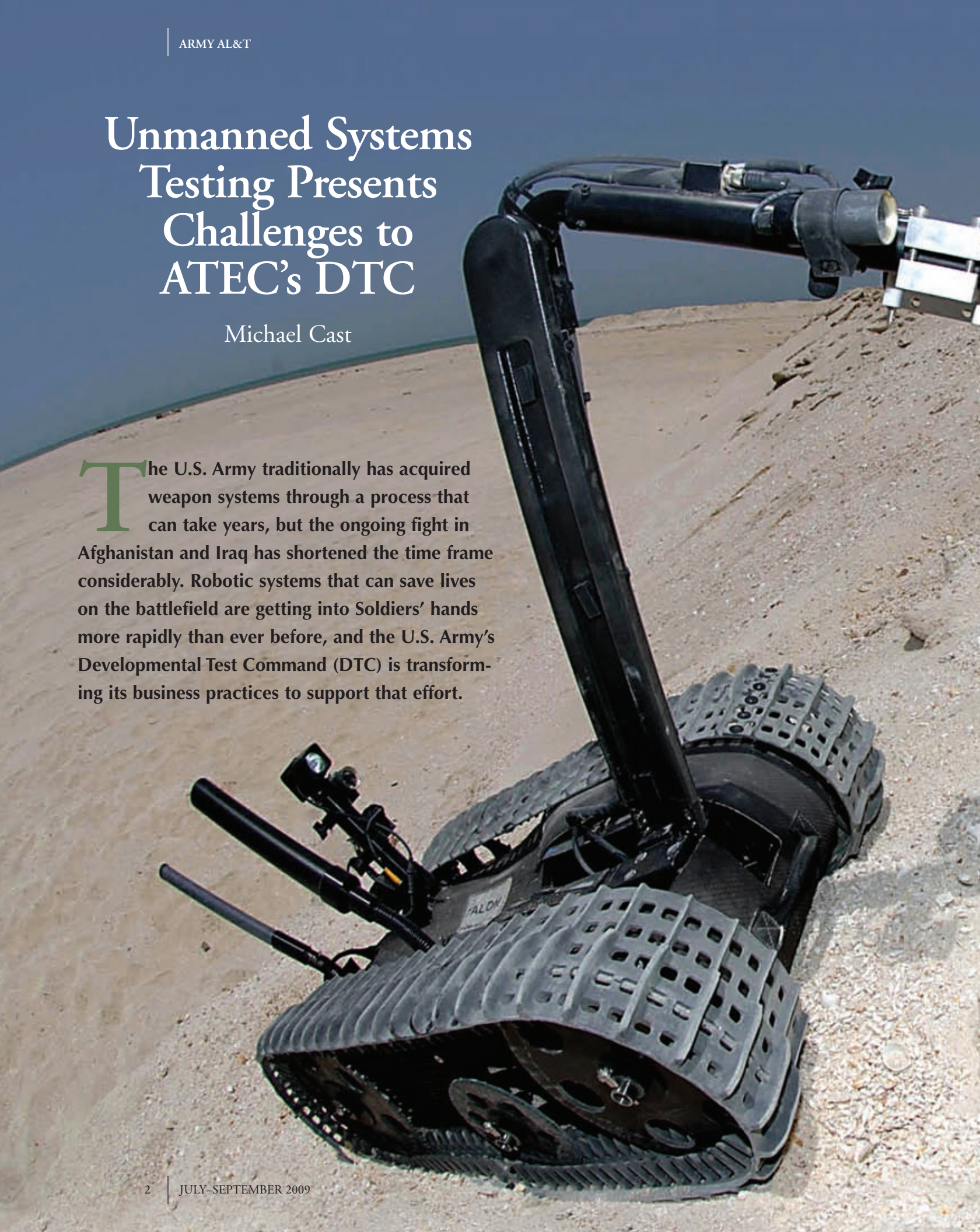
Unmanned Systems Testing Presents Challenges to ATEC's DTC

Michael Cast



The U.S. Army traditionally has acquired weapon systems through a process that can take years, but the ongoing fight in Afghanistan and Iraq has shortened the time frame considerably. Robotic systems that can save lives on the battlefield are getting into Soldiers' hands more rapidly than ever before, and the U.S. Army's Developmental Test Command (DTC) is transforming its business practices to support that effort.


FRONT
TOWARD ENEMY

Soldiers on the battlefield increasingly rely on unmanned systems, including this Tactical Micro Air Vehicle. (Photo by SGT Andre Reynolds.)

advice to the Soldiers who operate that equipment. That is quite different."

Rapid acquisition is not the only issue DTC is working to address. Keeping costs down for test customers is a key objective of the command. Johnson noted that DTC is constantly tackling the challenge of reducing costs to customers. "We've always got to have a reasonable cost, do testing on time, and provide a quality product to the customer," he said. "When you get into these newer commodity areas, such as unmanned ground systems and unmanned aerial systems, it adds to the challenge because we have to learn a new technology, maybe something we've never tested before. We're trying to do that when budgets are tight. We're trying to figure out how we can cut our costs and be more efficient to answer budget challenges."

> Robotic systems that can save lives on the battlefield are getting into Soldiers' hands more rapidly than ever before, and the U.S. Army's DTC is transforming its business practices to support that effort.

DTC has the instrumentation and facilities needed to tackle the challenges associated with testing new unmanned systems, but its test procedures must evolve to be appropriate for both ground and air. "For those new commodities, procedures are being developed and safety concerns arise," said Johnson. "For example, we talk about unmanned aerial vehicles [UAVs] operating in the same airspace as manned aerial vehicles, but we haven't yet fully come to grips with how we can operate in the same airspace. That's something on which we're working with the Federal Aviation Administration. Right now, this is driving many tests out to our western ranges, where there is a lot of airspace and not a concern with UAVs running into a manned aircraft."

The operation of unmanned ground vehicles (UGVs) on DTC ranges also poses procedural challenges for testers. "For example, if you remotely operate a large vehicle such as a High-Mobility Multipurpose Wheeled Vehicle and it goes out of control because the remote operator loses contact with it, it could run over and kill somebody," said Johnson. "So procedurally we're taking a look at how we test those kinds of things. Then, when we go even a step further where we test an unmanned system with missiles or guns, there are safety issues we've got to work out. DTC is charged with completing safety confirmations and safety releases for Soldiers. ... We've got to think through that and have safety mechanisms in place so Soldiers are not placed in a difficult situation where they could get injured or killed when operating these systems."

Operational Tempo

Another significant challenge testers face is the operational tempo that goes with rapid-acquisition programs. "It is not unusual at many of our ranges to see employees working two, sometimes even three, shifts, possibly 6 days a week because there is just so much pressure to get that equipment over to the Soldier as quickly as possible," explained Johnson. "If we've got something that will save lives, we've got to turn that around as quickly as we possibly can. That raises issues of burning

workers out over time, so we're trying to watch out for that. You can drive an employee so hard that he/she will try to find a job elsewhere because the work hours are just so much."

DTC must do what it can to attract and retain workers with the expertise needed to support its customers. As Army organizations undergo relocations under the Base Realignment and Closure process, they seek to hire employees with the kinds of skills testers and evaluators possess, potentially drawing them away from DTC. "There is a competition for people because you've got a lot of jobs moving in, but not necessarily the bodies that go with those jobs," Johnson said. "In the T&E world, as in any other business, we're only as good as the people we've got. Without them, we can lose our expertise and suddenly not offer that great service to the customer anymore."

Secretary of Defense Robert M. Gates, center, operates a UGV during a tour of the FCS facility at Fort Bliss, TX. DTC has been instrumental in testing such systems. (U.S. Army photo by Cherie Cullen.)

DTC Customers and Systems

DTC's test customers for robotic systems include the Army's Rapid Equipping Force (REF) and DOD's Robotic Systems Joint Project Office (RSJPO) and Joint Improvised Explosive Device Defeat Organization (JIEDDO). The customers are involved in the acquisition of various robotic systems intended to enhance warfighting capabilities and prevent casualties from roadside bombs and other threats. The RSJPO is aligned to support, field, and sustain ground robots along three primary mission areas—maneuver, maneuver support, and sustainment.

> DTC must do what it can to attract and retain workers with the expertise needed to support its customers.

Some of the most urgently needed and fielded systems are Soldier-portable UGVs. Among these are the PackBot, TALON, and MARCbot, and their variants—relatively small robotic systems whose payload and configurations depend on the mission for which they are used. Systems such as these are teleoperated, meaning an operator can control them while looking at video feedback for command and control decisions and local situational awareness. The payloads that can be mounted onto system platforms depend on their mission; in the future, some may include weapons.

In the sustainment category, the U.S. Marine Corps is developing a teleoperated front-end loader that resembles a Bobcat tractor. DOD is also looking to field a system called the Saratoga, designed with sensors to detect chemical, biological, radiological, nuclear, and explosive threats.

The Future Combat Systems' (FCS') Multifunctional Utility/Logistics Equipment (MULE) Vehicle is another unmanned platform that will require both developmental and operational testing. The MULE transport variants are designed to carry equipment and supplies in support of dismounted maneuver elements. Other MULE variants include the Armed Robotic Vehicle (ARV)-Assault (Light), and the ARV (Assault) platform, which will be armed to support dismounted infantry in the close assault mission.

"For the robots that we have fielded, the mission application includes surveillance and extended standoff from the Soldier operator to around the corner, into a building, structure, cave tunnel, or dwelling," said Jeffrey Jaczkowski, an unmanned systems acquisition worker at Program Executive Office Ground Combat Systems, Warren, MI. "That basically allows the Soldier or Marine about a kilometer of standoff to do surveillance or interrogation. The systems that we have in that area are MARCbot and xBot. Both of those are Soldier-portable systems. The MARCbot is a wheeled platform that is relatively inexpensive, and the xBot is a PackBot variant primarily used for reconnaissance. TALON, as well as Packbot, variants are used to enhance route-clearance missions. On the larger side, we have the MV-4, a program-of-record system used for area clearance."

The 5-ton MV-4 is a remotely operated tracked vehicle using a flail and hammer to dig up and destroy, or activate, mines. Its small dimensions and low track-ground pressure allow the machine to pass over difficult terrain, including steep slopes. "MV-4 is approaching Milestone C, but we have contingency systems in use for both

Iraq and Afghanistan," Jaczkowski said. Milestone C signifies that a system has gone through system development and demonstration and is ready to enter the production phase of acquisition.

DTC's Success

Both Jaczkowski and James Van Coillie, Product Assurance/Test and Configuration Management Division Chief within the RSJPO, advise that DTC has been successful in facilitating the fielding of unmanned systems through expeditious testing. They see DTC as a reliable partner in the acquisition process and very supportive of fast-track acquisitions. "When we get Operational Needs Statements [ONS] and joint ONS that are funded through an REF or a JIEDDO initiative, it is a very fast acquisition process to meet some very streamlined schedules," Van Coillie explained. "We work together with DTC and ATEC, coordinating the appropriate tests to evaluate these platforms for users, certify their safety, and acknowledge any of their limitations. The capabilities and limitations document highlights any type of dangers associated with these platforms. This works relatively well, but because we deal with commercial-off-the-shelf [COTS] items and fast-track programs for meeting contingencies, it makes our relationship with DTC and ATEC unique.

"We are challenged to perform all necessary tests to determine the system's capabilities and limitations, and meet the Soldiers' needs for urgent fielding. One of the issues currently slowing down our schedule involves the COTS trailer," Van Coillie said. "We've got to make sure the system is adaptable in the environment in which it's going to be used without going through all this environmental-type testing. Basically, we and the Soldiers are aware that this COTS trailer is a temporary measure until we get the long-term solution, the final government-approved trailer."

A robotic vehicle undergoes mobility testing on a bump course at the Cold Regions Test Center, Fort Greely, AK. (Photo courtesy of Yuma Proving Ground, AZ, Public Affairs Office.)

The development of military robotic systems is moving from platforms that are teleoperated to those that have autonomous capabilities, meaning they can sense their environment, adapt to it, and respond without a command from an operator. Properly testing such systems will require a close collaboration between the acquisition community and testers. Redundant controls will be added to ensure system safety during testing.

"The test methodologies that we use for teleoperated systems are going to be quite different from those methodologies that we will need for autonomous or semiautonomous systems," Jaczkowski said. "We need to be able to do processes such as an operational test with the test environment similar to the environment in which these systems will be used. We'll add initial safety systems that would not be on a final product. We have redundant radios. We have an emergency-stop radio and a safety operator. There are challenges to work through that I see in the future, especially with FCS coming. The test community and the PMs need to start thinking about how we are going to test and get through this together."

Because DOD still has a long way to go in developing the capabilities of robotic systems, DTC will continue to adapt to support the testing that future unmanned systems will require. "DOD has not tapped into all the capabilities that these unmanned systems can bring to bear," Jaczkowski said. "DTC has to ensure that we're progressing—in our expertise, capabilities, and instrumentation—along with those unmanned systems, so that as unmanned systems become more and more prevalent, we're going after that business. It's an exciting time to be involved in that kind of commodity."

MICHAEL CAST is an ATEC Public Affairs Specialist. He holds a B.A. in journalism from the College of Public Programs at Arizona State University. Cast has written numerous articles on a wide range of military topics for publication in professional journals, trade magazines, and other military-oriented publications.

Months of Creative Problem Solving Lead to Alaska Missile Test

Chuck Wullenjohn

The Army's Cold Regions Test Center (CRTC) is located in the heart of Alaska's largely unspoiled interior, a rugged land of wild river valleys, stark glaciers, and herds of animals that have made this region their home for thousands of years. Ferocious winter temperatures plunge to well below zero, weather conditions capable of wreaking havoc on unprepared Soldiers, military vehicles, and weapon systems. The CRTC's mission is to thoroughly test military equipment to meet this critical challenge.

A bulldozer, frozen from overnight temperatures hovering around 50 below zero, is ready to operate after the engine warms and lubricants begin to flow. Extreme cold can wreak havoc on equipment that has not been winterized. (U.S. Army photo by Chuck Wullenjohn.)

This past winter, the 50-member CRTC workforce devoted months preparing for the test firing of the Non-Line-of-Sight-Launch System (NLOS-LS), a weapon system under development that offers significant battlefield capabilities to American forces. Reinforced by specialized crews flown in from Arizona's Yuma Proving Ground (YPG) and Alabama's Redstone Technical Test Center, the effort involved innovation and creative problem solving, resulting in unique solutions to daunting challenges.

"The creativity exhibited by the workforce and the vast amount of work they performed gave me a greater sense of pride than almost anything else I witnessed since assuming command," remarked LTC Vincent Malone, CRTC Commander.

Test Preparation Begins

Preparation began in July 2008, coordinated by test director John Viggato, who immediately flew to White Sands Missile Range, NM, where the NLOS-LS was already being tested, to develop expertise on the system. A 5-year CRTC veteran, Viggato had worked on an exceptionally wide variety of test programs over the years, making him an ideal test director. In short order, he identified numerous major challenges. The first, and most obvious, was that a huge safety zone extending over many miles of wilderness would be required. Since extreme cold is known to cause problems to systems, in sometimes unforeseen ways, the safety zone would ensure safety to the public.

The test plan called for the missile impact area to be located far downrange, about 50 miles from the nearest paved road, so a temporary infrastructure of roads, power, communications, and support facilities would have to be created for observers, data collection devices, and much more. Target vehicles would have to be transported from the lower 48 states, and then driven across the treacherous Delta River. With no permanent bridge, a safe, reliable solution would have to be developed.

> The CRTC workforce always goes the extra mile to ensure good mission results. People put in long hours and performed tasks well beyond their normal jobs.

With testing challenges on his mind, Viggato set to work. He participated in several flyovers of the area in late summer and fall, developing a lay of the land and identifying areas for facilities that needed to be established. The land consisted of largely pristine forested wilderness, with large areas of tundra and brush that came alive with dense clouds of ravenous mosquitoes during the relatively brief Alaska summer. He and others forded the Delta River, traveling 26 kilometers to an observation post built by the U.S. Air Force (USAF), a trip taking 5 hours in each direction.

As winter came, temperatures plunged well below freezing and the Delta River froze. Viggato huddled with others to consider a range of options before settling on a solution regarding the untamed Delta—they would build a 1-mile-long ice bridge over the watercourse to solve the transportation dilemma. He handed the task to test officer Dave Hoffman, who boasted long test program experience and is an expert on winter survival, but who had never built an ice bridge. With a smile, Hoffman accepted the challenge and set to work. He learned fast, for construction began in November.

The Ice Bridge

"We provided Dave Hoffman a starting point by handing him a copy of a 1964 Army technical manual about ice bridges," said Viggato with a laugh. "What he accomplished after that was fantastic."

Within weeks, Hoffman and his 3-person team had completed an informal crash course on ice bridge design. They searched Internet sites, plowed through technical manuals and other written documents, and consulted with USAF personnel who had experience building ice bridges in Alaska.

"I wouldn't say I became an ice bridge expert, but I sure learned lots," Hoffman said. An ice bridge, he explained, consists basically of frozen water over a

Dave Sutherland, of CRTC's maintenance shop, makes final alterations to a piece of metalwork he is fabricating for skids used to haul cargo containers behind tractors downrange. (U.S. Army photo by Chuck Wullenjohn.)

riverbed. In the case of the one he designed over the Delta River, the bridge was 70 feet wide and 1 mile long. The road surface was about 12 inches above the river surface. Permanent inspection sites were built along the bridge about every 50 yards to monitor water flow beneath.

The Delta River is a "braided" river, meaning the watercourse divides into several main channels and a number of minor tributaries, with islands between. The exact number of channels varies from year to year. The river has a generally gravel bottom and is fed by glacial streams from nearby mountains, along with rain and groundwater. Though everyone at CRTC referred to it as an ice bridge, and dubbed Hoffman with the moniker "bridge troll," it would more properly be called a combination ice bridge and ice road.

Hoffman says construction was marred by a few accidents, such as a bulldozer crashing through ice in the early weeks, but nothing beyond what was expected. Once the bridge was built, however, it required constant maintenance and Hoffman made a point of inspecting it each day.

The test center's standard operating procedure was for Hoffman to cross the bridge before anyone went across. This policy ensured the maintenance of accountability for everyone using the bridge and allowed him to keep a watchful eye for anything amiss.

"The biggest problem was overflow caused by ice dams upstream that broke and sent torrents of water above and below the bridge," he said. "We sometimes saw 3 feet of water flowing over." After these flows subsided, several inches of new ice would form atop the bridge that had to be groomed. The overflows occurred regularly throughout the winter, occurring several times each month.

A huge truck, traveling to the test site, is carefully maneuvered across the ice bridge over the frozen Delta River. (U.S. Army photo by Mike Kingston.)

By the time January 2009 rolled around, the outside temperature had grown even colder, plunging to a mind-numbing 50 below zero. The river had frozen to a depth of about 55 inches by this time.

The success of the ice bridge proved crucial, for nearly all personnel, supplies, and equipment moved across it. "Without the bridge, we wouldn't have been able to make it out to the area where the test was to be conducted," said Hoffman. "Success hinged on this bridge."

Logistics Prove No Mean Feat

Real-world targets were needed for the missiles and they were located at YPG, where a fleet of more than 100 former Soviet vehicles, both track and wheeled, are maintained for just this sort of project. Two T-72 main battle tanks and four BMPs (Soviet tracked armored vehicles), all operational, were readied and sent on their way, a process that involved a complex itinerary and was an interesting travel feat on its own.

The vehicles traveled by trailer to Seattle, WA, where they were loaded aboard a barge for movement to Alaska. Once offloaded in Anchorage, they were secured aboard railcars bound for Fairbanks, a 360-mile trip, in the state's interior. Once there, crews from YPG met them, transferred each to a trailer for the several hour journey to CRTC, then drove them 50 miles downrange to the target area, crossing the ice bridge on the way.

CRTC planners opened and manned an operations center at Observation Post 26, a USAF facility located atop a remote downrange ridge. Crews of two to four employees at a time stayed overnight at the post, often for stretches lasting four nights. Bunks and a kitchen were located inside the heated building, as was a mission control room featuring several large screens on the wall for video feeds. A wireless communication system was established to allow the actual missile firing to be controlled from within the control room.

Extreme cold weather is dangerously unforgiving to the unprepared, and workers had to be ready for any eventuality. Observation post personnel were outfitted with full arctic survival gear in

case power failed or any other calamity occurred. Although everyone kept an eye on each other and maintained radio communication while outside, significant emergency help would take time to arrive.

Solutions Developed

"The CRTC workforce always goes the extra mile to ensure good mission results, and we really saw it in this case," said Viggato. "People put in long hours and performed tasks well beyond their normal jobs."

CRTC's Allied Trades machine shop, for example, solved the problem of transporting heavy warm-up shelters constructed from large metal transportation containers by fabricating skids, enabling them to be towed through snow and ice. They also constructed a portable cold chamber from 4-inch extruded foam insulation, fastened together with fabric hook and loop (Velcro) straps, to condition the missiles to specific cold temperatures if the weather warmed before firing.

"Warm-up shelters may not sound as important as they are, but when you're working outside in temperatures hovering far below zero, these shelters can be lifesaving," said Malone. "Getting out of the elements for 10 or 15 minutes to warm up and enjoy a few creature comforts can make a world of difference." Each shelter was equipped with a generator for electrical power.

A situation involving CRTC's M88 recovery vehicle, the only such vehicle within the state of Alaska, was overcome through close cooperation between CRTC and its higher headquarters at YPG. "For the test, this vehicle was vital," said Malone, "for each target vehicle had to be recovered and returned." The problem was that the M88 had experienced a recurring mechanical problem for years that caused fuel oil smoke to billow up in clouds. Though mechanics had fussed over it while making repairs, they expressed concern that the M88 would be unable to operate at full power. "And we definitely didn't want it to break down 40 or 50 miles from the nearest road," Malone added.

Mechanics at YPG were contacted. They traveled to CRTC to remove the M88's power pack, correct the problem, and get it back on the road. But there was one more thing. "The property book folks arranged for us to exchange our M88 for a newly reconditioned one and then get an additional M88 sometime in the near future," said Malone with a smile. "YPG really went out of its way for us."

CRTC workers carefully mark the sides of the ice bridge to prevent drivers from mistakenly venturing off the carefully prepared bridge surface. (U.S. Army photo by Mike Kingston.)

One thing that sets CRTC apart from other installations is its tight-knit workforce that sees employees cross-trained in areas other than their specialty. According to technical director Jeff Lipscomb, the CRTC workforce is small and everyone is multifunctional. "We hire specialists for our jobs, just like other installations, but 'other duties as assigned' really means that here," said Lipscomb. When he hires new employees, he makes a point of telling them that there is one thing he won't accept hearing twice from the same person: that something is "not my job."

Test Results

Despite the hard work over many months, the test was postponed shortly before the missiles were scheduled to fire because of system integration problems. Software upgrades and other issues arose that forced the firing date to slip back, to the point where CRTC's coldest weather had passed.

The effort was far from in vain, however, as Viggato pointed out. "The program manager has committed to return next winter," he said. "The test will be identical and we know the full scope of what needs to be done. This year's experience will definitely make it run smoothly."

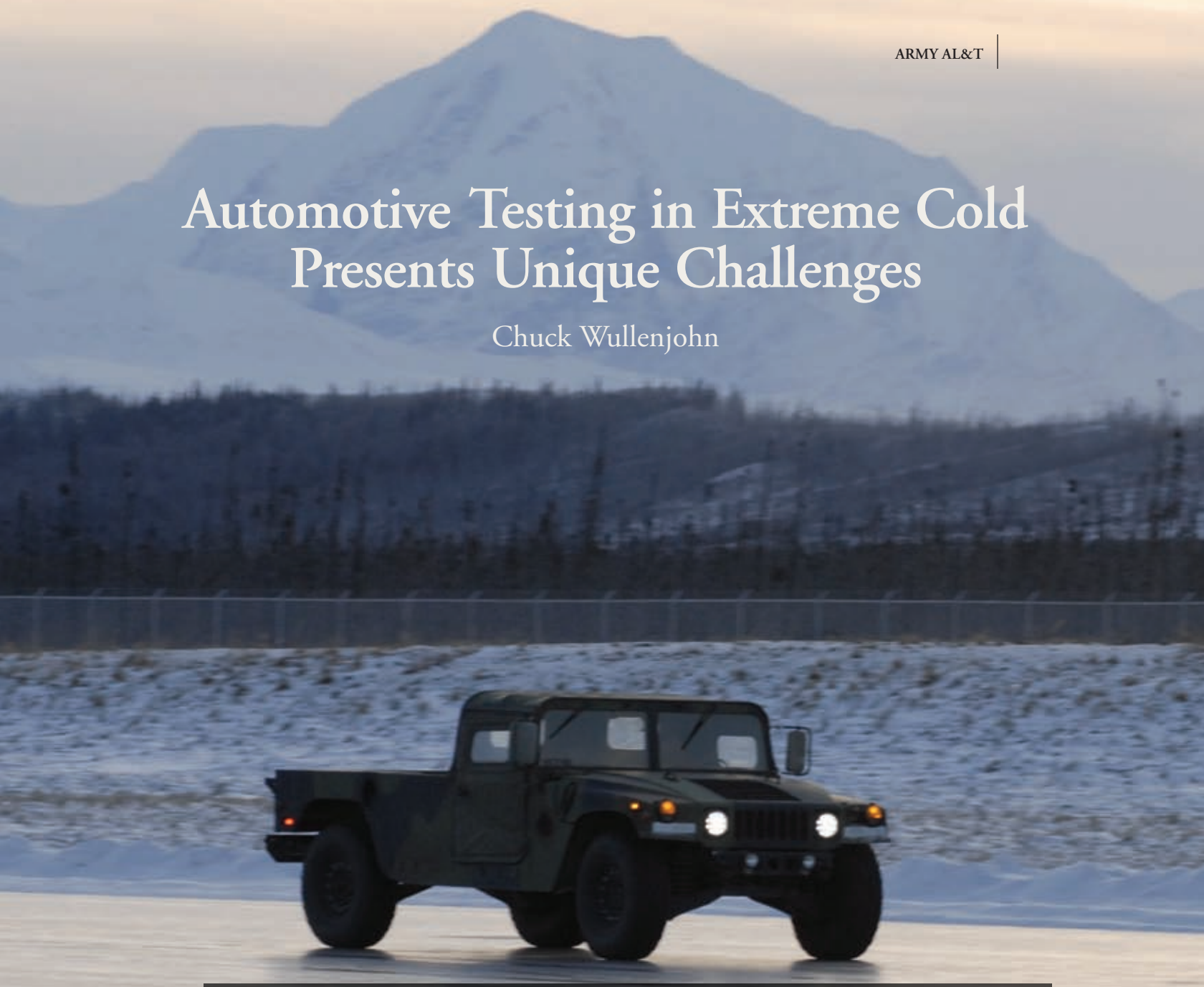
And what of the ice bridge that melted away when summer approached? "It's all part of the cycle of life," mused Hoffman in a soft voice. "The ice bridge is like everything else—you give birth to it but, eventually, it dies. The bridge will be back next year."

One change is probable, though. Army engineer troops from Fort Richardson, AK, are considering taking on the mission of creating and maintaining the bridge throughout the upcoming test effort, which will provide excellent real-world training. "They appear excited at the opportunity," remarked Viggato.

CHUCK WULLENJOHN is the YPG Public Affairs Officer. He holds a B.S. in political science from Humboldt State University.

Automotive Testing in Extreme Cold Presents Unique Challenges

Chuck Wullenjohn



No matter what the weather, automotive testing is critical to assuring Soldiers that the vehicles they use in the field perform properly, are safe, and, above all, operate dependably. In the midst of America's coldest climate, automotive testing specialists at the Army's Cold Regions Test Center (CRTC) in Alaska ensure that America's military vehicles are equipped to achieve military success when temperatures plunge to well below freezing.

A military vehicle is put through its paces on the CRTC's skid pad, which is covered with a thick layer of ice. The vast majority of automotive testing that takes place at the center is for military customers. (U.S. Army photo by Chuck Wullenjohn.)

One of the potentially most deadly environmental extremes for the unprepared, freezing cold weather can bring military operations to a halt within minutes. Starting a vehicle is more difficult since engine oil thickens in the cold; parts, such as those made of rubber, become brittle and frequently break; lubricants and tires harden; and slick, icy roads can make driving a serious problem.

CRTC, established in the days after World War II when the importance of environmental testing was fresh on everyone's mind, is the only test site on U.S. soil that realistically combines the elements of a winter battlefield with a test season long and cold enough to guarantee suitable test conditions.

> One of the recurring challenges they face is the frost that builds over the surface of ice on the test tracks when the temperature falls below 15 degrees.

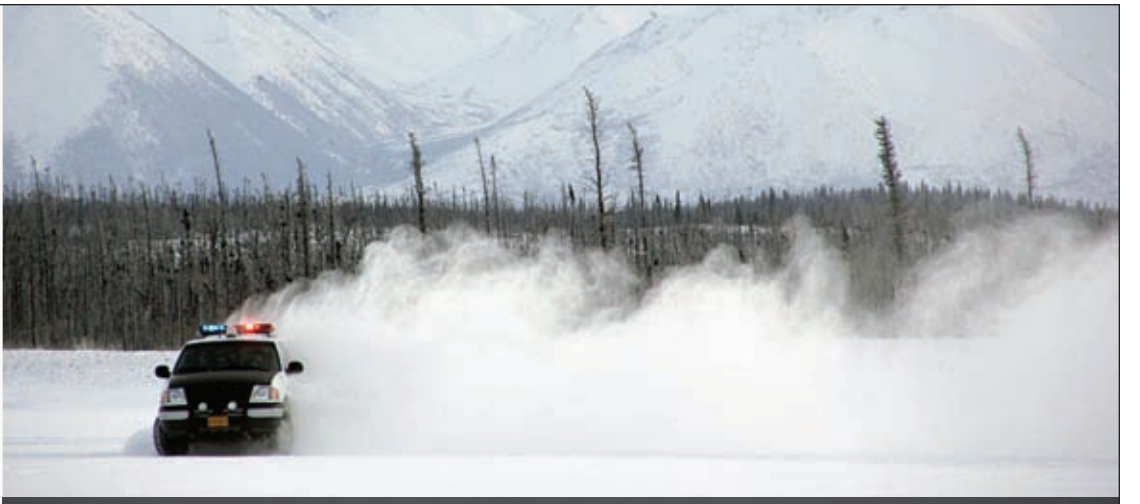
Dan Coakley, CRTC project manager, has worked at the test center for more than 25 years and has become an expert automotive tester. Stationed at CRTC's mobility test complex, on which construction began in 2004, he works with a wide variety of vehicles each year. Although the majority of the vehicles come from the various military services, about 30 percent derive from private firms that travel to the complex to take advantage of the modern facility.

CRTC's mobility test complex concentrates a variety of automotive test functions in a single area. These include a 3.2-mile, 2-lane paved oval track that allows high speeds. Test slopes offer grades from 5 to 60 percent and huge lateral acceleration and skid pads provide an ideal venue for dynamic vehicle control testing. Miles of rugged trails and secondary roads provide real-world test conditions in a private, secure environment. Maintenance and administrative buildings with voice and data connectivity make up part of the complex.

CRTC Civilian Customers

Early this winter, the Ford Motor Co. brought almost two dozen vehicles to the test complex, including assorted sedans, vans, and pickup trucks. Several test surfaces were arranged for them, including an ice circle and a broad snow field. Since natural snow coverage was not sufficient at the time, additional snow was manufactured right at the complex. Although Alaska's interior is extremely cold, with temperatures dipping beyond 50 below zero, it is relatively dry. "Ford tested here in the early winter," said Coakley, "because we have cold temperatures not available anywhere else in the United States.

Dan Coakley, CRTC project manager (left), discusses a cargo area heater undergoing testing with Ben Feilner, test officer, at the mobility test facility. (U.S. Army photo by Chuck Wullenjohn.)



Alaska state troopers make good use of the facility for training each year. The track enables drivers to operate their vehicles in potentially hazardous conditions, garnering excellent experience. (Photo courtesy of CRTC.)

Later, Ford moved its testing back down to the lower 48." This allowed the firm to "extend" its annual test season.

Ford is one of several companies that have recognized the value of CRTC extreme weather testing. Others include General Motors Corp., Chrysler, Toyota, and Cummings. During the Ford testing, TRW (automotive suppliers) came to examine braking systems and suspension components, and tire manufacturers brought along two truckloads of new tires. "This is a world-class facility and customers seem to like it," said Ben Feilner, test officer. "There is a learning curve involved in operating this facility and every year we get better at it."

Challenges

One of the recurring challenges they face is the frost that builds over the surface of ice on the test tracks when the temperature falls below 15 degrees. Any change in the surface is important for testers, who must have valid, repeatable conditions over several days or weeks. If not, test data becomes unreliable.

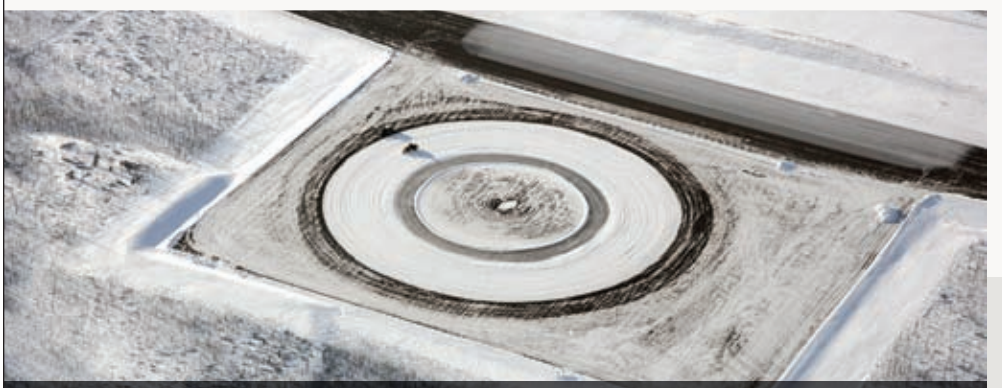
A private firm can test anywhere it wants and has to make a conscious business decision to return to CRTC. But they get great results and excellent customer service, which is what it's all about.

When the ice surface develops frost or rough peaks, a condition automotive testers call "peaky," a new surface must be laid over it. During the test conducted for Ford, the ice field used was quite large, measuring 160 by 950 feet. When the surface had to be recoated with water, it took several hours to freeze.

Challenges like this are a daily occurrence. Both Feilner and Coakley say they enjoy the challenges and find the most enjoyment in the satisfaction they help bring to customers. "It's good to see them depart with a smile on their faces," says Coakley, "and the quality of our testing brings them back." Numerous customers, both civilian and military, have returned over the years.

To Coakley, the return customers that mean the most are the civilian firms. "A private firm can test anywhere it wants and has to make a conscious business decision to return to CRTC," he said with a satisfied smile. "They must accept additional expenses to test here, such as increased transportation costs. But they get great results and excellent customer service, which is what it's all about."

CRTC falls under the management authority of Arizona's U.S. Army Yuma Proving Ground (YPG), a component of the U.S. Army Test and Evaluation Command and the Army's extreme weather testing expert. The proving ground manages testing at Yuma Test Center, AZ; Tropic Regions Test Center facilities in Panama, Honduras, and other tropic locations; and CRTC.



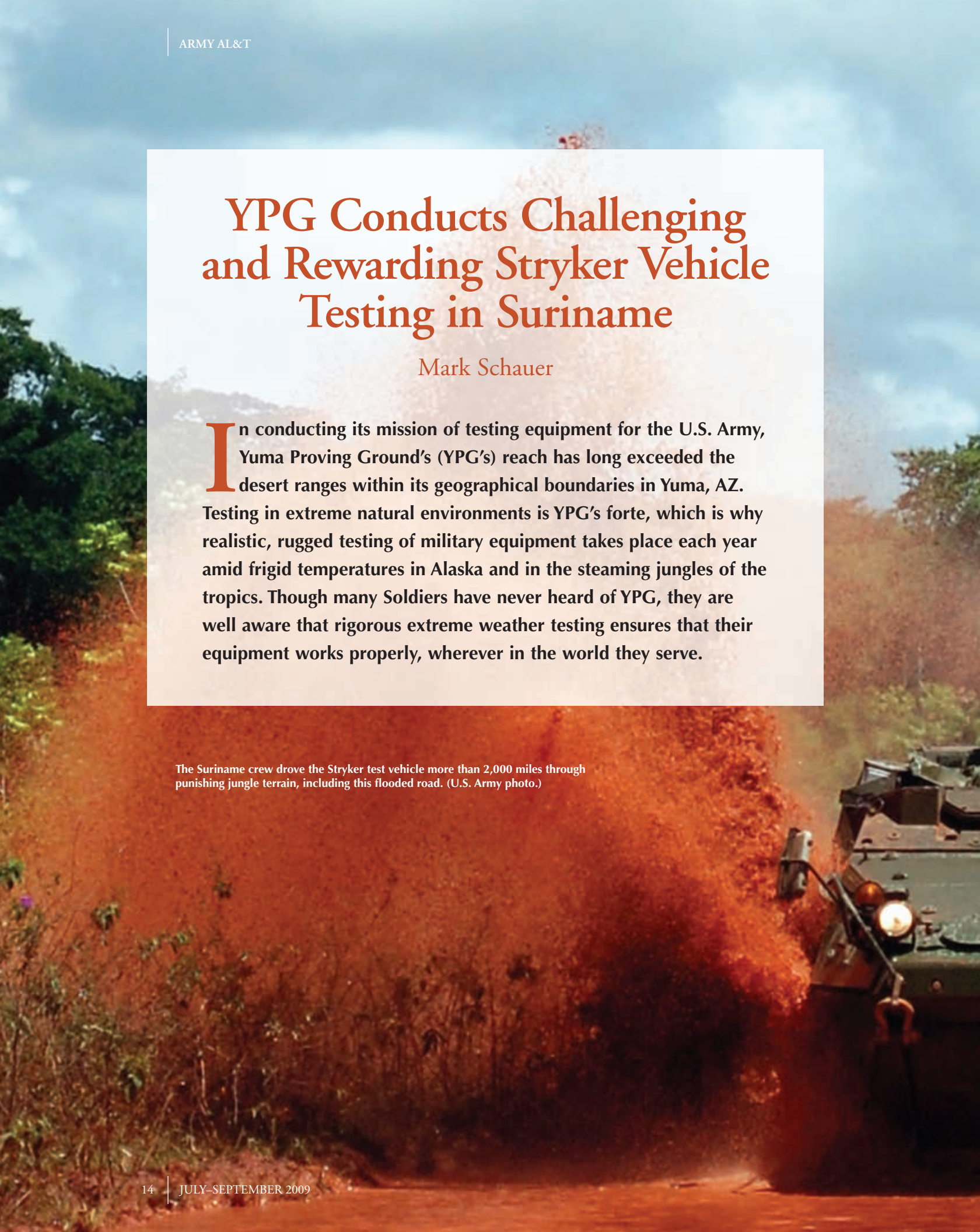
A variety of testing takes place on the CRTC's snow and ice circle, only one of many facilities making up the state-of-the-art test facility. A variety of automotive test data comes from use of the circle regarding suspensions, acceleration, tires, braking systems, traction control, and much more. (Photo courtesy of CRTC.)

CHUCK WULLENJOHN is the YPG Public Affairs Officer. He holds a B.S. in political science from Humboldt State University.

YPG Conducts Challenging and Rewarding Stryker Vehicle Testing in Suriname

Mark Schauer

In conducting its mission of testing equipment for the U.S. Army, Yuma Proving Ground's (YPG's) reach has long exceeded the desert ranges within its geographical boundaries in Yuma, AZ. Testing in extreme natural environments is YPG's forte, which is why realistic, rugged testing of military equipment takes place each year amid frigid temperatures in Alaska and in the steaming jungles of the tropics. Though many Soldiers have never heard of YPG, they are well aware that rigorous extreme weather testing ensures that their equipment works properly, wherever in the world they serve.



The Suriname crew drove the Stryker test vehicle more than 2,000 miles through punishing jungle terrain, including this flooded road. (U.S. Army photo.)

boasts a large bauxite mining presence and a familiarity with heavy equipment. Test planners knew that this knowledge would benefit the mission in the event of a catastrophic test vehicle failure. Through years of effort, senior YPG and Army officials negotiated and secured the required permissions and clearances to begin testing in Suriname on property owned by BHP Billiton, the world's largest mining company.

The challenges the testers faced were immense. Living quarters had to be procured for testers participating in the project. Upon the arrival of advance team members in spring 2008, the proposed test site had no infrastructure, requiring the rapid construction of a compound with security fencing, wiring, and communications networks. Test vehicle operator Jerry Pullen staked 30 miles of existing roads of various conditions for use in the test.

The lack of existing topographical maps required assistance from communications worker Tony Aultman, civil engineer Carlos Mora, and software/hardware engineer Jonathan Gonzalez, who together created a map by taking measurements of more than 1,000 points. "Their competence was very noteworthy," marveled Richard Reiser, lead test officer and second-in-command on the ground.

Local contractors assisted with all phases of construction. Although Suriname is a developing nation, all of the construction, from road and bridge upgrades to the compound's buildings, had to comply with local construction codes. Because of Suriname's history as a Dutch colony, these codes are European-based, and, thus, were unfamiliar to the American crew.

The vehicle was driven in excess of 2,000 miles through punishing jungle terrain and was subjected to extensive stationary testing of its intricate electronic components.

Meanwhile, the test vehicle was trucked from Arizona to Ingleside, TX, where it was placed on a flat-bottom boat bound for Suriname. The trip was scheduled to last 10 days, but, because of a hurricane and other adverse weather, the Stryker didn't arrive until 4 weeks later. The Suriname crew was busy during the delay, though. "We had plenty to do while waiting," said Rolando Ayala, a tester usually based at the Tropic Regions Test Center facility in Panama. "We were starting from scratch."

Testing

The crew convoyed to the test site together each morning, using local drivers and aging vehicles that had been contracted to support the testers. The 10-mile commute took about 30 minutes over dirt roads. Once at work, the testing activities were similar to those that would be conducted on armored vehicles at YPG—namely, the meticulous performance data gathering of every possible facet of the Stryker's operation as it was used at a pace comparable to that of the tropical environment. The vehicle was driven in excess of 2,000 miles through punishing jungle terrain and was subjected to extensive stationary testing of its intricate electronic components. In addition to providing data for possible improvements in the test vehicle, the information gathered may influence the development of entirely new combat vehicle systems in the future.

The heavy vehicle often sank in the clay of the jungle test tracks when they were saturated by frequent tropical rains. According to the Stryker's multivolume operator's manual, lowering the tire pressure is the preferred method of gaining sufficient traction to negotiate muddy terrain. In practice, however, the testers found that deflating the tires could allow jungle biomass to compromise the space between the wheel and the tire. Keeping the tires inflated at highway pressures prevented this while

Muddy roads are typical in tropical environments. Although the Stryker's operating manual suggests deflating the tires to negotiate this type of terrain, the Suriname testers determined that the practice could allow biomass to compromise the space between the wheel and the tire. Insights like these are only generated in real-world test conditions. (U.S. Army photo.)

The Suriname crew, comprised of test personnel from three different test centers under the jurisdiction of YPG, poses in front of the Stryker test vehicle. The test compound was named in honor of Antonius "Foemi" Berika, a local contractor who was instrumental in the compound's construction and died in an off-duty accident during the test activities. (U.S. Army photo.)

still enabling the vehicle to extricate itself from the mud. These types of insights would not have been generated by testing the vehicle in a simulation chamber.

The ability to improvise was another priceless skill in the jungle. As an example, at one point the Stryker's air conditioning system, one of the many components being tested, malfunctioned. The crew had a complete replacement unit packed in a large crate inside a storage container. Removing the heavy box would have required a forklift and lifting out the unit would have necessitated a crane. Rather than spending 2 to 3 days unpacking and installing the entire unit, vehicle maintenance worker Mike Newbourn drilled a hole in the side of the box large enough to remove the necessary replacement component. "Mike had us back on the road in less than an hour," Reiser recalled. Considering the extreme humidity of the jungle climate, the air conditioning system is a critically important system as it dries out moisture that would otherwise corrode metallic components within the vehicle.

Unlike testing at YPG's established centers, the Suriname crew did not have ready access to spare parts. Ordering a replacement from the U.S. could take a month to arrive, and it was unlikely that any specialized equipment would be available on the open market in Suriname. All instrumentation had been trucked to Suriname in four storage trailers. Aside from this, the crew worked long hours following the same procedures they would follow while conducting vehicle tests at their typical duty stations.

Contributing to the General Welfare

In addition to testing, crew members found themselves contributing to the well-being of local society. The most striking example was the construction of a telemedicine link, a sophisticated audio and video system that remotely connects doctors in isolated Moengo with diagnosticians at the university hospital in the capital city of Paramaribo. The construction of this vital piece of infrastructure helped alleviate local concerns about the scope and duration of the test mission, as did a series of town hall meetings with the populace. Eusebio Lopez, a 27-year testing veteran who served as site manager, was the principal liaison between the test crew and the communities in and around Moengo. "He was able to insulate us from and address many minor local problems that had the potential to turn into major problems," said Reiser. "He went above and beyond on a daily basis."

Future

Despite the logistical challenges, delays, and culture shock, the Stryker testing was completed 5 weeks ahead of schedule. "I am very proud of the way our teams interacted and worked together to complete the test early under challenging circumstances," said Ayala. "That is a very satisfying feeling. I look forward to working with these professionals again."

Today, locals in Moengo anticipate that the mining conglomerate BHP Billiton, Moengo's largest employer, will cease local operations in 2010, a development that would significantly hurt the local economy. This prospect, combined with the good rapport the testers established with the local populace, make YPG's potential return eagerly anticipated.

MARK SCHAUER is a YPG Public Affairs Specialist. He is pursuing a B.A. in history from Northern Arizona University.

PEO EIS Delivers Information Dominance to Soldiers in Iraq and Afghanistan

Jill Finnie

In the business world, it is common knowledge that superior information technology (IT) can lead to competitive advantage and successful return-on-investment. The Army's business is conducted on the battlefield and IT systems are key to ensuring that Soldiers, our greatest investment, stay safe and succeed in their missions. Several hundred Program Executive Office Enterprise Information Systems (PEO EIS) staff work side-by-side with Soldiers in Iraq and Afghanistan on a wide range of IT projects that deliver important capabilities. They are not alone: project and product offices in the U.S. partner with the defense industry to develop and deploy systems that deliver identity intelligence, electronic medical information, network connectivity, and computer-based business and logistics tools to ensure troops stay ahead of the technology curve and out of harm's way.

Acting ASAALT Dean G. Popps met with MAJ Robert Ciccolella of PM J-AIT during a visit to Afghanistan in early 2009. (U.S. Army photo by COL Jonathan Maddux.)

Biometric Data Aids Identity Intelligence

U.S. and coalition forces guarding security checkpoints at airports, bases, ports, and mobile locations need to know quickly if a person requesting access is friend or foe. For a rapid identity check at the scene, and to gather crucial intelligence for future use, troops rely on systems developed by Project Manager Department of Defense (PM DOD) Biometrics. Hand-held scanners capture facial features, fingerprints, palm prints, and retina scans and check them against a central repository. The Office of the Assistant Secretary of the Army for Acquisition, Logistics, and Technology (OASAALT) calls these biometric capabilities a "game changer" in identifying and capturing known or suspected terrorists.

PM DOD Biometrics recently upgraded its database to significantly improve matching capabilities and cut down on the time it takes to return match results to the warfighter. The new repository manages more than 3 million biometric records, providing field commanders with responses up to 28 times faster than the previous system. "These improvements enhance the survivability of deployed forces and enable them to apprehend more perpetrators who might otherwise have concealed their true identity and avoided detection," according to PM COL Theodore J. Jennings.

Electronic Medical Information Coordinates and Enhances Patient Care

Continuity of patient care is difficult enough to achieve in the United States. When Soldiers are wounded on the battlefield, the complexity increases significantly—along with the sense of urgency to ensure that patients receive the best medical treatment available—whether they are in theater, a field hospital, or for follow-up care at an Army medical facility at home. PM Medical Communications for Combat Casualty Care (MC4) helps this complicated process along. MC4 integrates, fields, and supports thousands of medical information management systems in hundreds of medical treatment facilities throughout Afghanistan and 13 other countries. To date, military medical personnel have captured more than 10 million electronic patient encounters using MC4.

"Complete implementation of MC4 and the consistent use of the systems in theater are critical to the presidential goals concerning the electronic medical record [EMR], the capture of appropriate health data, and the quality of health care delivered to service members," said LTC Thomas C. Burzynski, Former Medical Command and Control Officer, Combined Joint Task Force-101, Afghanistan.

These improvements enhance the survivability of deployed forces and enable them to apprehend more perpetrators who might otherwise have concealed their true identity and avoided detection.

MC4 mobile training and support teams provide 24-7 assistance to commanders, systems administrators, medical logisticians, and health care professionals who manage critical medical information on the battlefield. As a result of the close coordination between MC4 and medical forces in Afghanistan, system users are making the most of the system by making best business practices the standard, resulting in improved continuity of care and decision making.

Systems Enable Connectivity and Productivity

Soldiers in the war zone have a lot on their minds. There are supplies, weapons, and equipment to be ordered, moved, and tracked. There is infrastructure to be set up and maintained. There are facilities to be managed. And above all is the mission.

Product Director for Defense Communications Systems-Southwest Asia (DCS-SWA), an organization that is part of the PEO EIS Network Service Center Project Management Office, works to ensure that Soldiers have the bandwidth they need to stay connected and access mission-critical tools. In 2008, DCS-SWA implemented more than 90 separate projects to improve IT services in Iraq, Afghanistan, and Kuwait. The team's successful efforts provided as many as 60,000 Soldiers through three troop rotations with increased combat capability at a time when they needed it most—the surge. The team traveled extensively through high-risk areas to upgrade communications capabilities and connect joint forces at multiple locations, supporting every major command in theater. Significant projects modernized network infrastructure at command and operation centers, bringing superior communications capabilities to locations where little or none previously existed.

With everything else deployed Soldiers need to think about day-to-day, figuring out how to share a PowerPoint presentation with a colleague a continent away or securely chat with family back home should be the least of their worries. For secure electronic communications, they log on to Army Knowledge Online (AKO), the Army's enterprise Web portal. AKO serves more than 2.1 million personnel in the Army community and provides secure knowledge management, communications, and collaboration tools anytime, anywhere in the world. Warfighters can, for example, set up an AKO group to communicate with all the members of their unit prior to deployment,

store and access critical forms and documents, share with other troops and units in the AKO forums, and e-mail anyone on the Internet with AKO mail. Warfighters can also create their own Web page, start a blog to let the folks back home know how things are going, or use AKO instant messaging to chat with loved ones and colleagues.

An important new electronic tool being fielded to the Army acquisition community worldwide is Green Force Tracker (GFT) with IBM Sametime Technology. Developed by PM Acquisition Business, the tool allows Soldiers in different geographic locations to collaborate, send, and receive instant messages and maintain presence awareness. "I depend on GFT because of the reliable connection," commented MAJ Robert Ciccolella, who works in Arifjan, Kuwait, for one of the PEO EIS product offices. "I use it to bounce ideas, troubleshoot servers, and send screenshots to my guys in Kuwait," said Chad Cobb, who works with the Expeditionary Contracting Command. GFT operates in low bandwidth environments and provides reachback to the U.S. It is mission critical as phone and e-mail may not always be available.

> Complete implementation of MC4 and the consistent use of the systems in theater are critical to the presidential goals concerning the EMR, the capture of appropriate health data, and the quality of health care delivered to service members.

Securing the Safety of Defense Supplies and Equipment

GEN Dwight D. Eisenhower once said, "You will not find it difficult to prove that battles, campaigns, and even wars have been won or lost primarily because of logistics." The Army has come a long way technologically since World War II, but it will always need supplies, equipment, and vehicles. To track whether items traveling through the war zone are secure, DOD turns to another PEO EIS office, PM Joint-Automated IT (J-AIT).

In early 2009, the Army issued guidance to equip all containers transiting between Afghanistan and Pakistan with a Container Intrusion Detection Device (CIDD), to enhance force protection and to deter theft and pilferage. With many containers destined to travel back to the United States, the use of the CIDD also works toward enhancing homeland security. The CIDD is a

CIDDs in theater enhance force protection by detecting any intrusion into containers, such as those shown here. (U.S. Army photo by MAJ Robert Ciccolella.)

A Soldier from Supply and Transportation Troop, 11th Armored Cavalry Regiment, initializes her MTS and confirms availability of satellite communications prior to deploying from her unit motor pool at the National Training Center, Fort Irwin, CA. (U.S. Army photo by Jim Carver, PM MTS.)

recent capability added to the suite of Radio Frequency In-Transit Visibility (RF-ITV) technologies that is capable of providing environmental condition and security monitoring.

The current CIDD has sensors that can monitor conditions inside the container. Once programmed and set, the CIDD will detect any unauthorized intrusion into the container and provide a breach alert at the next RF identification interrogator that reads the tag. That information is then sent to the RF-ITV system, which will automatically send an e-mail notification of the breach to selected personnel so that appropriate action can be initiated.

PM J-AIT manages the RF-ITV system and worldwide infrastructure that monitors and reports progress of these shipments and provides the breach alert notifications. PM J-AIT also provides CIDD training and oversees the acquisition of the CIDD as well as other automatic identification technology products.

The Movement Tracking System (MTS) tracks vehicle locations and gives commanders visibility of in-transit assets. It links ground-level operators with commanders and staff planners, providing the ability to control transportation movements and mobile logistics elements from anywhere in the world. To date, PM MTS teams have installed more than 7,700 systems in 7 forward operating bases in Iraq. MTS currently has 24 personnel deployed in Kuwait and Iraq who provide technical assistance and post installation support. Additionally, PM MTS is coordinating to provide satellite coverage for operations in Afghanistan and is working with the U.S. Army Central Command to establish the way ahead and identify the number of MTS systems needed to potentially support the theater in the future.

In addition to its existing field service engineers in Iraq and Afghanistan, PM TIS is adding a much-needed server infrastructure to support locations throughout SWA.

PM Transportation Information Systems (TIS) operates an enterprise architecture supporting Soldiers worldwide to move personnel and cargo in deployments, redeployments, and sustainment. In first quarter 2009, PM TIS established a regional office in Kuwait and completed fielding its theater operations (TOPS) product to Afghanistan. In addition to its existing field service engineers in Iraq and Afghanistan, PM TIS is adding a much-needed server infrastructure to support locations throughout SWA. Once installed, the architecture will provide improved connectivity and performance for the Transportation Coordinators'-Automated Information for Movements System II (TC-AIMS II) users.

PM TIS recently opened a new training facility in Kuwait and also plans to open one in Balad, Iraq, offering unit move and TOPS training for TC-AIMS II users. At the request of the 101st Airborne Division (Air Assault) and working with the Rapid Equipping Force, PM TIS is also developing a new capability needed to track air movements.

As Army requirements evolve and technology advances, PEO EIS programs will continue to adapt to Soldiers' needs with projects and products that help them achieve their missions, whatever and wherever they are in the world.

JILL FINNIE works in the PEO EIS Public Affairs Office and has more than 20 years' experience in strategic communications working with government, business, and media organizations. She holds a B.S. from James Madison University in communications and English and is pursuing a master's degree in humanities from American Military University.

Product Manager Defense Wide Transmission Systems (PM DWTS) Provides Multiple Capabilities for Warfighters

Stephen Larsen

On March 6, 2009, at the Armed Forces Communications and Electronics Association Belvoir Industry Days in National Harbor, MD, Gary Winkler, the U.S. Army's Program Executive Officer Enterprise Information Systems (EIS), told an assembled audience of some 1,000 industry partners that Program Executive Office (PEO) EIS had, as of that day, 722 personnel deployed to the war zones of Iraq and Afghanistan —more personnel deployed than any other Army PEO.

A worker watches the digging for the grounding ring outside one of the transportable shelters that make up the Army's first-ever shelterized MCF at Camp Speicher. PM DWTS followed that up with a second shelterized MCF at NKC. (U.S. Army photo by Cory Hanes, PM DWTS contractor.)

TCF from the IZ Republican Palace to another location, providing voice, NIPRNET, and SIPRNET capabilities to personnel in and around the Baghdad area; installed a 500-kilovolt-ampere uninterrupted power supply system at the new TCF; and installed communications infrastructure for multiple buildings at the new embassy compound.

Central Iraq Microwave System (CIMS)

The TCF that PM DWTS relocated from the IZ Republican Palace is part of the CIMS, which PM DWTS provided in 2005 and 2006. "CIMS provides near-real-time point-to-point, point-to-multipoint, and multipoint-to-multipoint data transmission services with multiple layers of redundancy for MNF-I," said Richards.

CIMS includes synchronous optical network communications links across Iraq and provides OC-3 (155 megabytes-per-second) bandwidth to support warfighters' critical C4 and intelligence missions. CIMS allows MNF-I personnel to tap into services including voice, VTC, NIPRNET, SIPRNET, the Combined Enterprise Regional Information Exchange System, and the Joint Worldwide Intelligence Communications System. "Because CIMS is a low-latency, high-speed, high-bandwidth system, it allows MNF-I personnel to transmit near-real-time data," said Richards. "CIMS is a good alternative in providing lower-cost and higher-speed connectivity versus satellite connectivity."

Joint Telemedicine Network (JTMN)

The JTMN, a worldwide, long-haul IP-based telemedicine network used by medical personnel providing care for warfighters in Iraq and Afghanistan, was also provided by PM DWTS. The JTMN includes nine VSATs that provide satellite connectivity and brings VTC, NIPRNET, and VoIP capabilities for medical personnel.

According to Richards, the JTMN was recently upgraded to provide increased bandwidth to JTMN remote sites in Iraq and Afghanistan to allow additional voice and VTC capabilities, plus the ability to use MedWeb—an inpatient clinical system that allows the collection of medical imaging data from diagnostic imaging devices, such as computed tomography (CT), magnetic resonance imaging (MRI), ultrasound, and computed radiography devices. "This upgrade allows medical personnel to send very large medical files, such as CT scans, X-rays, and MRI films, back and forth and consult with specialists to provide the best care possible for our wounded warriors," said Richards.

> We manage diverse worldwide projects that are direct and immediate enablers for combat units and support more than 50,000 warfighters, multi-national forces, and federal agencies in Iraq and Afghanistan.

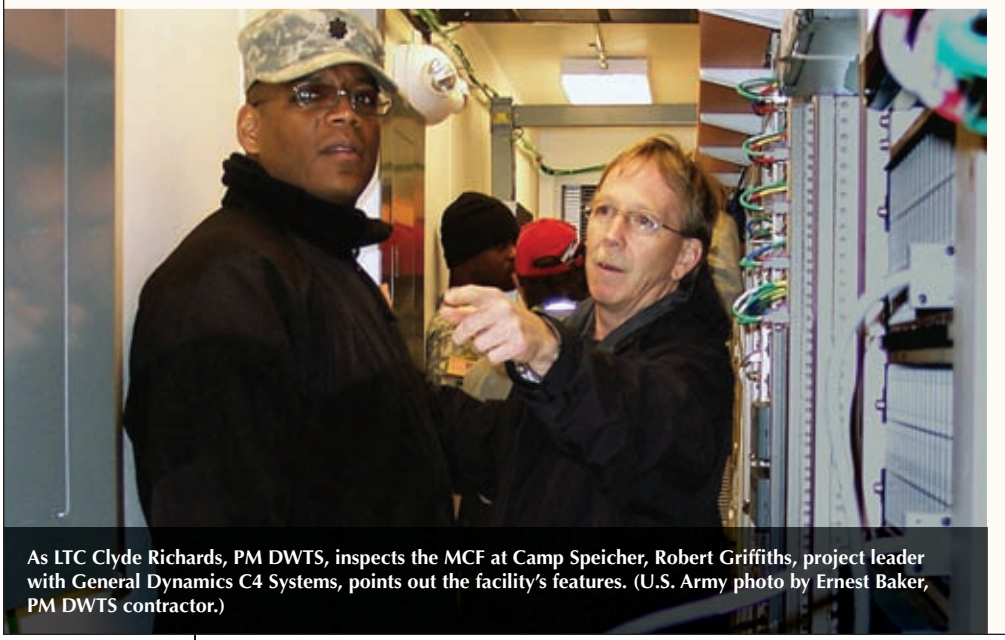
In the first operational use of VTC capabilities provided by PM DWTS, the U.S. Army Surgeon General conducted a 4.5-hour VTC with deployed medical elements in Afghanistan.

Joint Explosive Ordnance Disposal (JEOD) VSAT Network

PM DWTS established a VSAT network, including more than 100 VSATs in remote locations, to provide satellite connectivity for U.S. Central Command JEOD operations in Iraq and Afghanistan. The network brings DSN, VoIP, NIPRNET, SIPRNET, and VTC to JEOD personnel. "We are also supporting CONUS JEOD training sites with remote VSATs that are dispersed throughout the country and we've provided train-the-trainer training to JEOD personnel," said Richards.

Communications System

For the U.S. Army Materiel Command's (AMC's) Army Field Support Command (AFSC), PM DWTS provides the Multi-Media Communications System (MMCS) at numerous sites in Iraq and Afghanistan. MMCS is a modular, rapidly deployable, mobile system that provides forward-deployed logistics elements with DSN, NIPRNET, SIPRNET, VoIP, and secure and non-secure VTC services.



As LTC Clyde Richards, PM DWTS, inspects the MCF at Camp Speicher, Robert Griffiths, project leader with General Dynamics C4 Systems, points out the facility's features. (U.S. Army photo by Ernest Baker, PM DWTS contractor.)

"We previously deployed MMCS to support *Operation Restore Democracy* in Haiti, *Operation Joint Endeavor* in Bosnia, *Operation Allied Force* in Kosovo, and even Hurricane Katrina relief efforts in Louisiana and Mississippi," said Richards. "MMCS is the system we send when a site has absolutely nothing in the way of communications."

MMCS keeps AMC's logisticians deployed to Iraq, Afghanistan, and Kuwait—including Logistics Assistance Representatives (LARs), Soldiers, Department of the Army civilians, and contractors—connected. "Without MMCS, AFSC couldn't support their LARs and Soldiers with the data they need to order equipment and supplies," Richards said. "These logistics personnel can stay connected with e-mail, NIPRNET, SIPRNET, and telephone, and it's all coming off the MMCS network."

Embedded Training Team members in Afghanistan such as SGT Nick Brodaczynsky, shown here providing marksmanship training to Afghan National Auxiliary Police recruits, can stay in touch from remote areas thanks to the communications infrastructure provided in Afghanistan by PM DWTS. (U.S. Navy photo by PO1 Scott Cohen, Combined Security Transition Command, Afghanistan.)

Defense Contract Management Agency (DCMA) VSAT Support

For DCMA, PM DWTS provides satellite connectivity via VSATs that bring services including DSN, NIPRNET, VoIP, and secure and non-secure VTC to seven DCMA locations in Iraq and two in Afghanistan. The DCMA VSAT system is Ku-band and includes connectivity to the DCMA Data Center in Boston, MA.

Logistics Systems That Protect Soldiers

PM DWTS provides two information technology systems that enhance the effectiveness of Combat Service Support (CSS) Soldiers: the CSS Automated Information Systems Interface (CAISI) and the CSS VSATs. CAISI provides secure wireless network connectivity for Soldiers' Standard Army Management Information Systems and CSS VSAT provides NIPRNET access via satellite for the CAISI network, connecting remote users to one of four teleports located strategically around the world.

"The CAISI and CSS VSAT tandem saves Soldiers' lives by eliminating the 'sneaker net'—the need for Soldiers to get in convoys and go in harm's way to place requisitions," said Richards. "Now, Soldiers in Iraq and Afghanistan can stay inside the wire and securely transmit requisitions wirelessly."

Recently, PM DWTS leveraged advanced technologies to refresh the legacy version, CAISI 1.1, with a better, faster, and cheaper solution: CAISI 2.0. "CAISI 2.0 doubled the throughput, increased the range from 3 miles to more than 35 miles, and lowered the unit cost by 40 percent," said Richards.

To date, PM DWTS has fielded 8,000 CAISI 2.0 modules to more than 100 Army units—2,000 of these ahead of the Army Resourcing Priority List schedule—and has fielded more than 2,000 CSS VSAT systems to warfighters worldwide with an Army Acquisition Objective of 3,300. "We field CAISI and CSS VSATs to units and their home stations, and at the same time, we provide New Equipment Training," said Richards. "Those units then deploy with their CAISI and CSS VSAT systems as organic equipment." Currently, PM DWTS is supporting hundreds of CSS VSATs in Iraq and Afghanistan with deployed technical personnel.

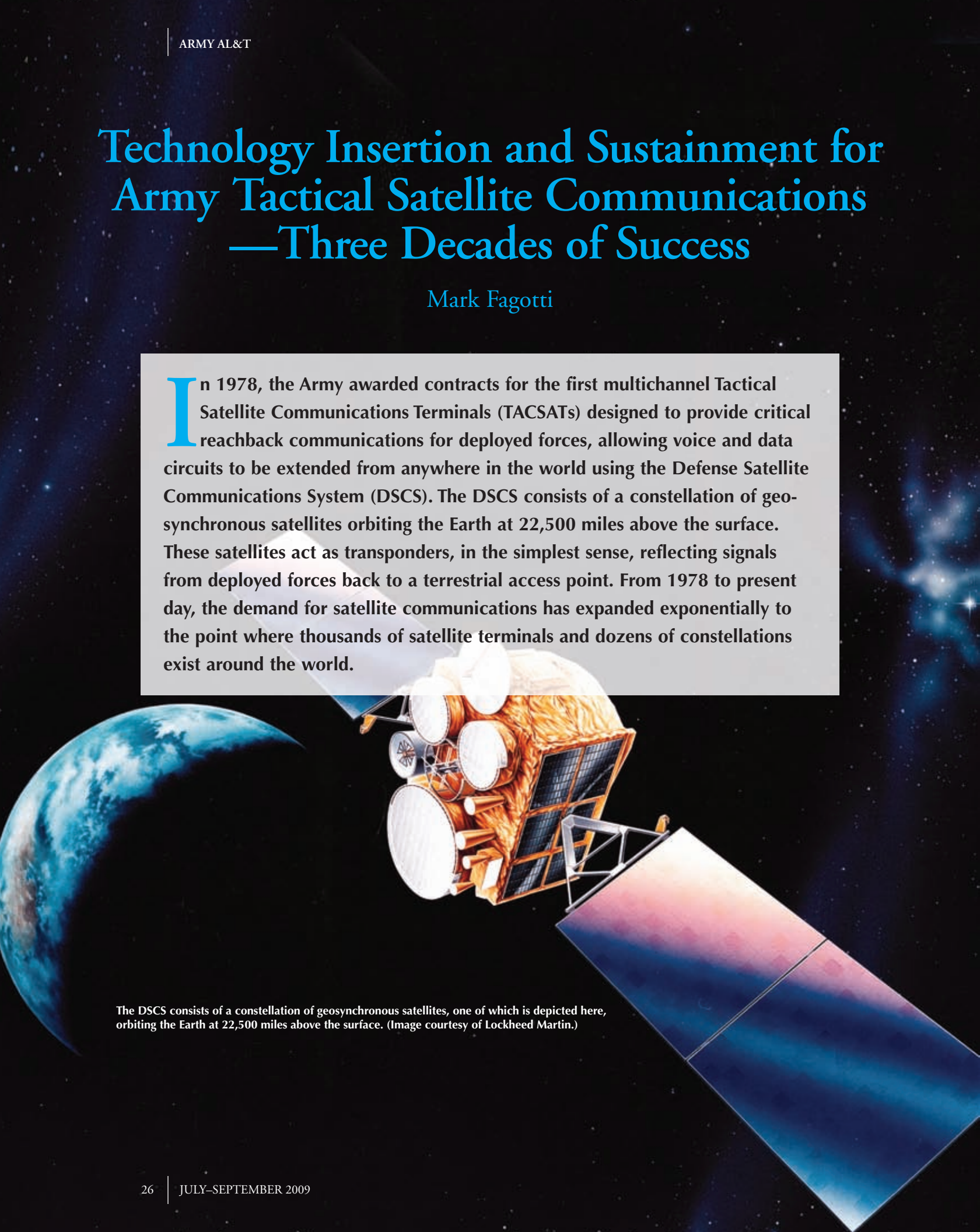
What's on tap for CAISI and CSS VSAT? "We're exporting the CAISI and CSS VSAT solutions to the medical, biometrics, [Department of] Homeland Security, and personnel communities, and we're increasing the bandwidth and the coverage to more areas of Afghanistan," Richards concluded.

STEPHEN LARSEN is the Public Affairs Officer for Team DCATS. He holds a B.A. in American studies from the College of Staten Island of the City University of New York. Larsen has nearly 30 years' experience in public affairs and video production.

Technology Insertion and Sustainment for Army Tactical Satellite Communications —Three Decades of Success

Mark Fagotti

In 1978, the Army awarded contracts for the first multichannel Tactical Satellite Communications Terminals (TACSATs) designed to provide critical reachback communications for deployed forces, allowing voice and data circuits to be extended from anywhere in the world using the Defense Satellite Communications System (DSCS). The DSCS consists of a constellation of geosynchronous satellites orbiting the Earth at 22,500 miles above the surface. These satellites act as transponders, in the simplest sense, reflecting signals from deployed forces back to a terrestrial access point. From 1978 to present day, the demand for satellite communications has expanded exponentially to the point where thousands of satellite terminals and dozens of constellations exist around the world.



The DSCS consists of a constellation of geosynchronous satellites, one of which is depicted here, orbiting the Earth at 22,500 miles above the surface. (Image courtesy of Lockheed Martin.)

The first large-scale, multichannel, high-data rate TACSATs procured by the Army were designated as the AN/TSC-93 and AN/TSC-85. Under the first production contract, these terminals were capable of providing circuit extension for voice and data communications. Since that time, these terminals have undergone four major upgrades designated as the A, B, C, and D models. These terminals are still used by the Army 31 years after they were procured, and they still provide the same mission-delivering, high-data rate critical communications for worldwide deployed forces.

Technology Insertion Versus Sustainment

The most recent upgrade to the AN/TSC-93 and AN/TSC-85 TACSATs was the D model upgrade. This was accomplished through a partnership between Tobyhanna Army Depot (TYAD), Tobyhanna, PA, and the U.S. Army Communications-Electronics Command (CECOM) Life Cycle Management Command (LCMC), Fort Monmouth, NJ. The D model upgrade was accomplished via Modification Work Order, and was termed the TACSAT Service Life Extension Program (SLEP). Under the SLEP concept, these terminals were upgraded using insertion of state-of-the-art technology. This "technology insertion" concept takes advantage of product developments in the private sector and allows the Army to benefit from investments made by commercial industry. Technology insertion saves the Army millions of dollars annually, since procuring new systems is usually more costly than upgrading older ones. The technology insertion process is also usually accomplished in a much shorter time frame than procurement of new systems, allowing the Army to field new technology to Soldiers faster.

> From 1978 to present day, the demand for satellite communications has expanded exponentially to the point where thousands of satellite terminals and dozens of constellations exist around the world.

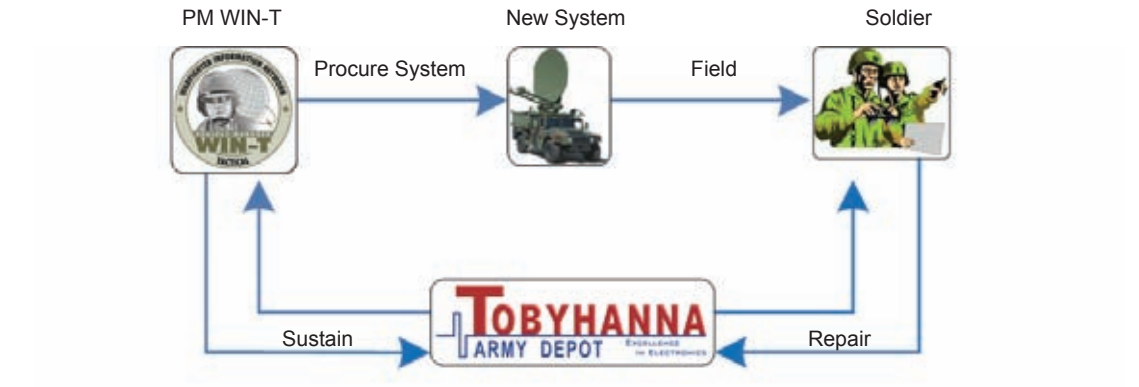
SSG Guy Fuhrman shows PFC Joshua Smith the operation of the orderwire in an AN/TSC-85D TACSAT at Camp Victory, Iraq. (Photo by Donald W. Mumma, CECOM Senior Command Representative, U.S. Army Sustainment Command Headquarters.)

Nearly everyone in the Army military and civilian world is familiar with the term "sustainment." But what does sustainment really mean? In the traditional sense, sustainment of communications electronics systems includes repairing and refurbishing existing electronics. However, sustainment also implies technology insertion. Communications-electronics technology is evolving at a rapid pace in today's world, and sustaining older electronics becomes more costly every year. Cost/capability tradeoff analyses inevitably reveal that inserting new technology costs less than sustaining older technology. Not only does technology insertion reduce sustainment costs, but it also provides the Soldier with enhanced capabilities not available from the older, legacy electronics. This process implies an upgrade, but in today's technological world, there is a gray area between sustainment and upgrade.

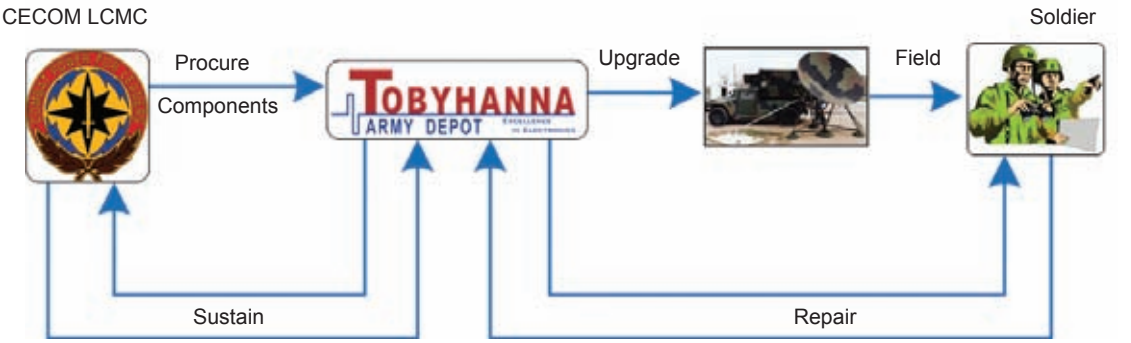
COTS Versus GOTS

The AN/TSC-93 and AN/TSC-85 TACSAT SLEP uses the commercial-off-the-shelf (COTS) and government-off-the-shelf (GOTS) approaches to provide for the sustainment and upgrade of these older legacy systems. The TACSAT SLEP upgraded 178 Army terminals to D models from 2004 to 2008, as well as 19 terminals for the U.S. Marine Corps, resulting in better reliability, upgraded capability, and lower sustainment costs.

COTS implies electronic products that are currently available from the private sector and fully meet the Army's requirements. GOTS refers to products that are readily available from government organizations such as the Army, and are COTS products that are usually modified by the government in some way. The term "modified COTS" means the same thing as GOTS in the TACSAT arena. Typically, the Army contracts a private manufacturer to modify its standard commercial product to meet specific requirements.



Procurement of a new TACSAT



Upgrade of an existing TACSAT

These products are then purchased, stocked, and issued to the Soldier.

Procurement of New Systems Versus Upgrade of Existing Systems

The procurement of new TACSAT systems and the upgrade of existing TACSATs are held in balance by the Army. The older legacy terminals continue to be upgraded and sustained, and the fielding of new systems is always on the horizon. For example, the AN/TSC-93 and AN/TSC-85 terminals were upgraded to a D model during the same time frame that the Program Manager Warfighter Information Network-Tactical (PM WIN-T) procured the new AN/TSC-156 Phoenix TACSAT. Both of these programs serve the Army equally well, ensuring that our Soldiers have the newest, most capable technology needed to win the information war.

John Morelli, a lead electronics technician in the Satellite Communications Systems Directorate's Engineering Design and Development Division, inspects a component of an AN/TSC-85C-Plus Enhanced Tactical Satellite Signal Processor prototype at TYAD. (Photo by Anthony J. Ricchiazzi.)

In 2009, the Army has authorized more upgrades of existing TACSATs as well as the procurement of new systems. The AN/TSC-93, AN/TSC-85, and AN/TSC-156 terminals have been authorized to undergo more upgrades, and new high-capacity communications capability systems are in procurement.

In summary, the Army's balance between the upgrade of existing TACSATs and the procurement of new systems has been working well for our Soldiers for more than 3 decades. The Army is "keeping the TACSAT tradition alive" by diversification of satellite communications assets, therefore maintaining reliability, upgrading capability, and reducing sustainment costs for our Soldiers.

MARK FAGOTTI is an electronics engineer at TYAD. He holds a B.S. in electrical engineering and an M. Eng. in engineering science from Pennsylvania State University. He is Level II certified in systems planning, research, development, and engineering and is a U.S. Army Acquisition Corps member.

The TOW Missile—Precise and Powerful

Bill Ruta and C.L. "Claude" Higginbotham

"If there's one weapon the insurgents don't want to face in this fight, it is the Tube-launched, Optically-tracked, Wire-guided [TOW] antitank missile launcher. Accurate, powerful, and deadly, it is the biggest weapon in our platoon's arsenal. Some say the big wire-guided missile went out of fashion after we stopped confronting enemies with heavy mechanized armor. I say otherwise: when it comes to urban fighting, a TOW is a gift from the Pentagon gods."

—*House to House* by SSG David Bellavia, 2nd Battalion (Bn), 2nd Infantry Regiment, regarding his time in Fallujah, Iraq, with his Bradley Infantry squad.

A Soldier from Delta Co., 2nd Bn, 27th Infantry Regiment, 3rd BCT, 25th Infantry Division, assembles the ITAS TOW missile system in Riyadh, Iraq. (U.S. Air Force photo by TSgt Maria J. Bare.)

Since 1970, more than 650,000 TOW missiles have been produced. In the last 5 years of persistent conflict, the U.S. Army and U.S. Marine Corps (USMC) have fired almost 9,500 TOW missiles. While there have been many weapon systems developed and produced over the last 4 to 5 decades, TOW remains an extremely effective weapon system, especially given today's enemy in Iraq and Afghanistan. Even with its originally intended antitank purpose, TOW's precision and effectiveness with minimum collateral damage make it particularly suitable for the nontank targets of the current theater environment.

> TOW is the world's premier heavy antiarmor and assault weapon system, consisting of crew-portable ground, vehicle-mounted, and helicopter-mounted launcher variants, and 10 missile versions.

TOW is a relatively simple weapon and very reliable. It is also relatively inexpensive compared to many missile systems. This combination of reliability, effectiveness, and affordability has made it a successful weapon system overall. Continuing TOW enhancements provide an affordable path to the future of U.S. precision close combat weapons. Almost 5 decades after it was first fielded, TOW is thriving and remains one of the most effective and most used weapon systems by the U.S. military.

Redstone's Role

In 1958, a small group met at Redstone Arsenal, AL, home to the U.S. Army Aviation and Missile Command, U.S. Army Space and Missile Defense Command, numerous program executive offices (PEOs), and major components of the Defense Intelligence Agency and the Missile Defense Agency, to study the technical feasibility of the emerging heavy antitank/assault weapon system requirements for the Army. In 1964, the first TOW Project Management Office (PMO) was established at Redstone. The first TOW missile was fielded in 1970.

For almost 45 years, Redstone's TOW PMO and its successors have been responsible for managing TOW development, production, and sustainment contracts. Today, the Close Combat Weapons System (CCWS) Project Office, part of PEO Missiles and Space (M&S), is responsible for the Javelin and TOW weapon systems.

TOW's Evolution

TOW is the world's premier heavy anti-armor and assault weapon system,

USMC Cpl Joshua Logsdon, Battle Landing Team 22, Combined Anti-Armor Team, 26th Marine Expeditionary Unit, looks through a sight on a TOW missile mounted on top of a HMMWV during a vehicle and weapons static display at Camp Lemonier, Djibouti. The M220A4 TOW launcher is being replaced with ITAS in both the Army and USMC. (U.S. Air Force photo by A1C Bryan Boyette.)

consisting of crew-portable ground, vehicle-mounted, and helicopter-mounted launcher variants, and 10 missile versions. TOW can effectively employ in all weather conditions to engage tanks, armored and non-armored vehicles, and various point targets such as bunkers and crew-served weapons. TOW is most often used mounted on vehicles including the High-Mobility Multipurpose Wheeled Vehicle (HMMWV), Bradley Fighting Vehicle, Stryker Antitank Guided Missile (ATGM) Vehicle, USMC's Light Armored Vehicle-Antitank and Cobra helicopter, and many foreign vehicles. Its successful evolution has seen many improvements, each adding to the capabilities of the Soldier. (See TOW Evolution sidebar on Page 33.)

Current and Future TOWs

Current TOW missile improvements include a bunker buster (BB) variant and replacement of the obsolete wire guidance link with one that operates via radio frequency (RF). The TOW BB, which is just entering the Army and USMC inventories, is optimized for precision assault capability and features a blast fragmentation warhead that can punch through an 8-inch thick, double-reinforced concrete wall from ranges up to 3,750 meters. The RF guidance link is in production with deliveries beginning in FY10. The RF transmitter is part of the missile case with an RF receiver integrated into the missile's aft section. TOW missiles with the RF guidance link are compatible with existing launchers and stowage racks without any hardware or software modifications.

While the unavailability of wire drove the development of TOW RF, modest inherent improvements were achieved, including the elimination of overwater and power line restrictions, enhanced combined arms applications in urban environments, and greater environmental compliance under training conditions (no recovery of guidance wires needed). The removal of the wire link hardware also creates volume within the airframe that facilitates future technology insertion.

> The ITAS, IBAS, and MITAS have played a leading role by providing precision assault and antitank fires in *OEF*/*OIF* since 2003.

The Improved Target Acquisition System (ITAS), the latest fire control system for the TOW, has integrated optical and second-generation, forward-looking infrared sights and an eye-safe laser range finder (LRF). It is capable of firing all versions of TOW missiles and can be employed mounted on the HMMWV or dismounted on a tripod. Equivalent capabilities are integrated into the Bradley A3 vehicle with the Improved Bradley Acquisition Subsystem (IBAS) and the Stryker ATGM Vehicle with its modified ITAS (MITAS). The ITAS, IBAS, and MITAS have played a leading role by providing precision assault and antitank fires in *Operations Enduring* and *Iraqi Freedom* (*OEF*/*OIF*) since 2003.

> TOW is used primarily against machine gun and mortar positions, snipers, rocket-propelled grenade teams, command and control elements, field fighting positions, caves, and enemy ambush positions in buildings.

The latest upgrade to ITAS incorporates a global positioning satellite-based position attitude determination subsystem (PADS). PADS, when used with the LRF, provides a far target location (FTL) capability that provides gunners with precise 10-digit grid coordinates for their own position and for the selected target. The new capability makes it possible to direct other weapon system fires and to call in close air support (CAS) or indirect artillery fires. The ITAS FTL was introduced into *OEF* in May 2008 with Destiny Co., 2nd Bn, 503rd Infantry (Airborne (AB)), 173rd AB Brigade Combat Team (BCT), who employed it with great success.

Weapon of Choice

TOW is used primarily against machine gun and mortar positions, snipers, rocket-propelled grenade teams, command and control elements, field fighting positions, caves, and enemy ambush positions in buildings. In *OEF*, the Anti-Afghan Forces (AAF) established positions high in the mountains in very rugged terrain that is extremely difficult for U.S. and allied forces to maneuver against; it is also out of range of most small arms. AAF then proceeded to engage, inflict maximum damage, and withdraw before CAS or indirect artillery fires could be achieved, giving U.S. and allied troops only a 3- to 5-minute window in which to find, fix, and destroy the enemy.

TOW ITAS solves this problem by providing a long-range, precision weapon that is organic to the wheeled assault platoon of the Interim BCT. Its ability to quickly engage during that brief time frame is especially important in Afghanistan, since CAS and artillery fires are often not available because of the extensive geographic terrain that forces are trying to control there.

TOW in the Field

TOW gunners are trained on a basic skills simulator to establish and maintain gunner proficiency. The Redstone CCWS Project Office conducts training

ITAS brings long-range, lethal, anti-armor and precision assault fire capabilities to Soldiers by doubling target acquisition ranges and maximum range engagements with TOW missiles, thus significantly enhancing system lethality and Soldier survivability. (U.S. Army photo by Perry Taylor, CCWS Project Office.)

at unit locations in the field upon delivery of new TOW equipment. They also retrain gunners and new personnel concurrent with equipment reset that returns from Iraq or Afghanistan.

TOW's successes in *OEF* were recounted firsthand by the 173rd AB BCT at the Infantry Warfighting Conference in Columbus, GA, in September 2008. In their assigned area, the terrain was remote, rugged, and austere, making maneuverability very difficult. They faced many challenges in accomplishing both their lethal and nonlethal missions. TOW proved invaluable to both of these efforts.

> The Army's current combat strategy is built around the concept of a light, lethal, and deployable force that relies solidly on a family of sensors and precision weapons.

With attacks numbering no less than four times per day in a 1-month period, TOW was indispensable. The enemy was on high ground at all times and not easily identifiable—farmers and fighters looked similar within the population. TOW allowed positive identification (PID) of the enemy beyond the range of their heavy weapons. Using the ITAS was the only solution for Destiny Co. to PID and engage prior to being shot at.

"It's the fastest, most effective weapon system on the battlefield," recounts CPT Josh Harrison, 173rd AB BCT. "It allows you to PID, engage, and destroy the enemy at range with zero collateral damage and immediately conduct battle damage assessment. And TOW has serious psychological effects on the enemy in addition to its devastating lethality."

The fight in Afghanistan is more than a kinetic or lethal fight; it is also about connecting with the population. U.S. forces there have a tremendous nonlethal mission, including collaborating with and training Afghan police, facilitating a weapons turn-in program, providing humanitarian assistance, refurbishing mosques, conducting ceremonies, providing care and support to the population's children, and much more.

With TOW's proven success in winning the fight, insurgent communications were overheard referring to TOW as the "Finger of God" because of its deadly precision and effectiveness on target. When villagers heard this, they gained confidence in U.S. troops and tended to cooperate with them more, making the mission of the 173rd AB BCT perhaps a bit easier.

The 173rd AB BCT made many TOW modifications in the field to adapt to the unique fight in Afghanistan, and has provided the Army with significant input. Some of these modifications include custom turret mounts on vehicles such as up-armored HMMWVs and ground-mounted pedestals in

fortified positions that allow for 360-degree operation for extended periods.

The Army's current combat strategy is built around the concept of a light, lethal, and deployable force that relies solidly on a family of sensors and precision weapons. Within this context, the TOW weapon systems of today, together with forthcoming enhancements, will provide the speed, range, precision, and improved lethality and survivability needed in the field now and far into our military's future.

BILL RUTA is the Project Manager CCWS, PEO M&S. He holds a B.S. in mechanical engineering from the University of Tennessee at Chattanooga and an M.S. in systems engineering from the University of Alabama at Huntsville, and is a graduate of the Defense Acquisition University Senior Service College Fellowship Program. Ruta is Level III certified in program management and systems planning, research, development, and engineering and is an Army Acquisition Corps (AAC) member.

C.L. "CLAUDE" HIGGINBOTHAM is the TOW Weapon Systems Product Director, CCWS, PEO M&S. He holds a B.A. in music education from Texas A&M University-Commerce and an M.S. in contract management from the Florida Institute of Technology. His military education includes the Infantry Officer Basic Course, Air Defense Officer Basic and Advanced Courses, and Ordnance Officer Advanced Course. Higginbotham is Level III certified in program management and is an AAC member.

TOW Evolution

1962 to 1972—Original Basic TOW
- 3,000-meter range.
- First American-made guided missile fired in combat by U.S. Soldiers in May 1972 at Kontum, South Vietnam.

1978—Extended Range TOW
- Increased maximum range to 3,750 meters.

1981—Improved TOW
- Added extendable probe, improved armor penetration.

1983—TOW 2
- Full caliber warhead, extendable probe.
- Redesigned flight motor, 30 percent greater impulse.
- Improved launcher guidance link.

1987—TOW 2A
- Counters armor threat by Explosive Reactive Armor.
- Uses tandem warhead armament system.
- Used in Iraq assault that killed Uday and Qusay Hussein, July 2003.

1991—TOW 2B
- "Fly-over and shoot-down" missile, two explosively formed penetrator warheads.
- Defeats advanced armor.
- Dual-mode sensor, new armament section equipped with two warheads.
- Complementary weapon to TOW 2A.

1992—ITAS
- Improved target detection, recognition, and engagement.
- Integrated second-generation imaging forward-looking infrared with the optical sight, laser rangefinder, automatic tracking.

2003—TOW BB
- Bunker defeat capability, breaches 8-inch double reinforced masonry.
- 500 TOW BB missiles deployed in support of Stryker BCTs in *OIF*.
- Available to all BCTs in 2009.
- TOW's sole source wire vendor exits market.

2004—TOW 2B Aero
- Increased maximum range to 4.5 km by adding wire and aerodynamic nose.

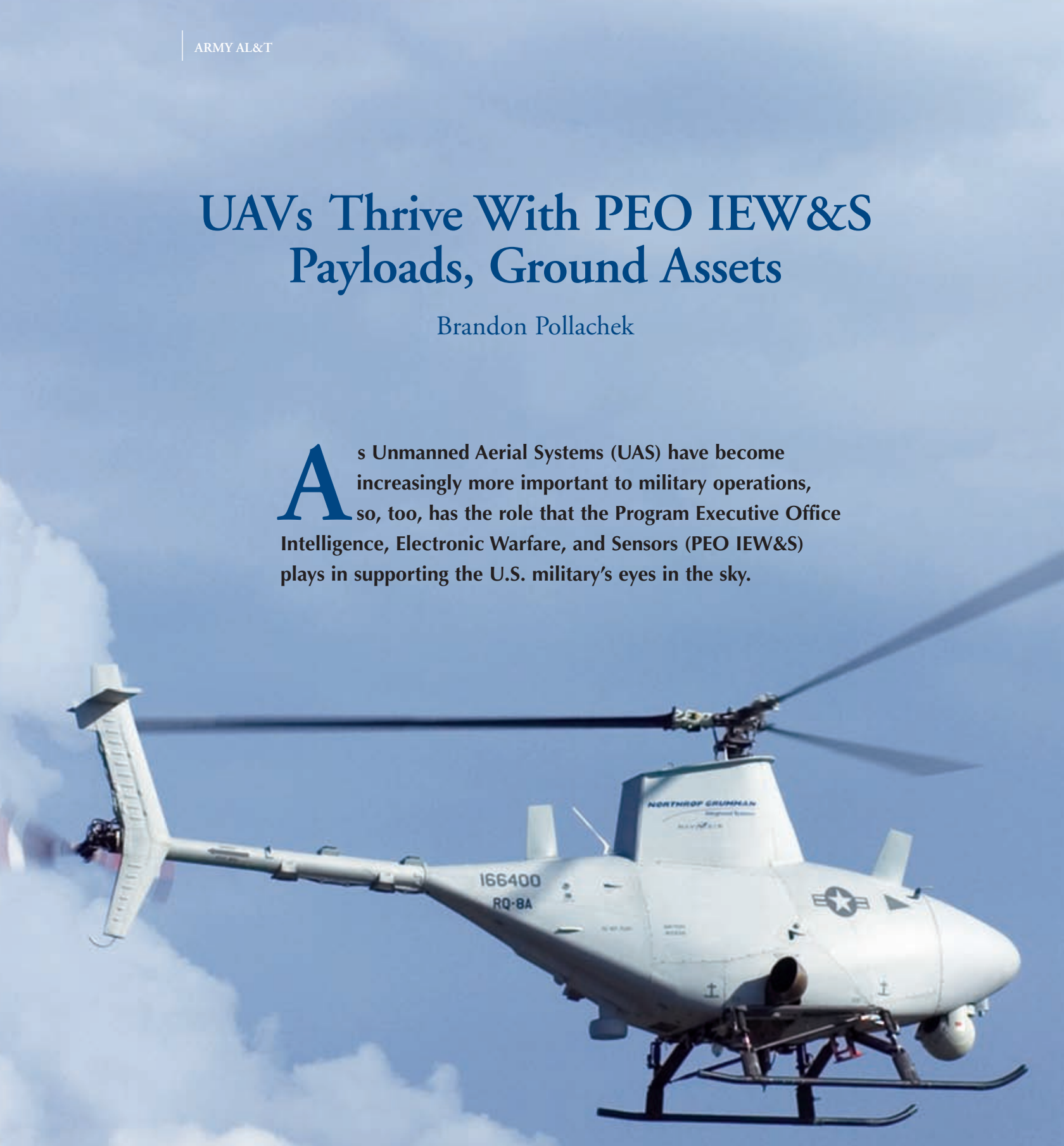
2006—TOW 2B RF
- Army contracted production of new wireless TOW 2B RF missile.
- More than 17,000 TOW missiles with RF guidance link have been placed on contract for U.S. Army, USMC, and allied nations.

2008—Introduction of ITAS with FTL capability
- Four ITAS-FTL fielded to 173rd Infantry AB BCT in Afghanistan.
- Four ITAS-FTL fielded to border patrol to support homeland defense.
- FY08 3rd quarter—official fielding of ITAS-FTL to Army and USMC units begins.

UAVs Thrive With PEO IEW&S Payloads, Ground Assets

Brandon Pollachek

As Unmanned Aerial Systems (UAS) have become increasingly more important to military operations, so, too, has the role that the Program Executive Office Intelligence, Electronic Warfare, and Sensors (PEO IEW&S) plays in supporting the U.S. military's eyes in the sky.



The Fire Scout will carry the TSP as well as STARLite, which will provide the future system with SAR/GMTI. (Photo courtesy of PM FCS.)

The CSP and STARLite will provide the Sky Warrior with a broad spectrum of coverage, allowing the system to be an all-in-one tool for conducting ISR missions. (Photo courtesy of PEO Aviation.)

PEO IEW&S develops, fields, and sustains numerous systems that play a vital role in UAS operations. The PEO, headquartered at Fort Monmouth, NJ, is responsible for systems that are involved in the full cycle of UAS missions. Through its various program managers (PMs), PEO IEW&S touches multiple facets of the UAS world—from payloads to systems—that make sensor information and imagery available for analysts who can, in turn, package information for the commanders who are responsible for cueing an aircraft for additional missions.

The PEO's involvement in UASs includes both airborne and ground-based systems. Ground-based systems that are currently fielded to the warfighter include the Distributed Common Ground System-Army (DCGS-A) and the Base Expeditionary Targeting and Surveillance Systems-Combined (BETSS-C). The Tactical Signal Intelligence (SIGINT) Payload (TSP), Electro-Optic/Infrared/Laser Designator (EO/IR/LD), and the Synthetic Aperture Radar/Ground Moving Target Indicator (SAR/GMTI) represent aerial-based systems that the PEO is producing to complement the bevy of options available for UASs.

SAR/GMTI and EO/IR/LD

Providing the warfighter with a view of the operational environment and an ability to neutralize a threat with UASs is a fundamental portion of the systems provided by Product Manager Robotics and Unmanned Sensors (PdM RUS). SAR/GMTI and EO/IR/LD are payloads found on current UASs with plans to be incorporated on to the future Fire Scout, which RUS manages.

> TSP will provide the warfighter with enhanced SA, emitter mapping, target identification, and electronic intelligence preparation of the battlefield.

Currently housed on the Warrior Alpha is the Lynx I, a SAR/GMTI payload supporting current operations to satisfy a quick-reaction response for our warfighters. STARLite, the SAR/GMTI program of record (POR) production system, will be integrated and fielded in all 10 Army divisions with the Sky Warrior Block 1 and the Fire Scout Class IV Future Combat Systems (FCS). These payloads offer two important capabilities to our warfighting decision makers.

In the GMTI mode, "the radar senses and tracks moving targets on the ground," said LTC Terrence Howard, PdM RUS. As an example, he explained that, "If you have a series of vehicles on the ground, [GMTI] tracks the movement of those targets. Although you cannot positively identify those moving targets, this capability allows for situational awareness [SA] of movement that might be of importance to operations. These systems are especially important on poor visibility days when camera technology does not work as well."

Assisting GMTI in providing an identification of a target is the responsibility of the SAR portion of the payload. "Think of SAR as a single map developed from smaller strip pictures," explained Howard. "SAR takes a picture of a strip of land and the next strip of land and then the next strip of land, tying those strips together to provide a 2-D map of the area of interest. If there is a tank or a truck or something in those strips, the analysis can detect that."

The payload has the flexibility to switch back and forth during a mission between the two capabilities depending on the information needed. The combination of STARLite, Lynx I, and another RUS payload—EO/IR/LD—allows the UAS to be an all-in-one tool for conducting intelligence, surveillance, and reconnaissance (ISR) missions.

The Common Sensor Payload (CSP), the next version of EO/IR/LD, is the primary payload for all Army UAVs.

"Typically, you are going to cue an EO/IR because you can't fire on anything without positive identification," said Howard. The EO portion provides a picture of the area being surveyed by a UAS and the LD gives the UAV the ability to point at a target for the direction of weapons. "Every [UAS] mission is an EO/IR/LD because not only does CSP provide them with the contents for the reconnaissance piece, it also provides a targeting element that is reconnaissance, surveillance, and target acquisition [RSTA]," noted Howard.

CSP offers a broad spectrum of coverage for commanders and analysts with options that include color and black and white TV, image intensified TV, and midwave forward-looking infrared sensors. The CSP and STARLite have both been accepted for the Sky Warrior and will replace the Lynx II and EO/IR/LD.

TSP

Another capability in great demand from the field is SIGINT. The TSP payload, which is slated to reside on the Sky Warrior UAS, will offer an amplified amount of SIGINT coverage to the field. Complementing the existing SIGINT assets currently available, this POR, which used to be a part of PdM Prophet, is managed by PM Aerial Common Sensors.

Regarding the history of the program, Mike Schwartz, Assistant PdM TSP, said, "We were on the MH-60 Black Hawk helicopter and then we went to the Hunter/Fire Scout and now we have a requirement for the Extended Range Multipurpose UAS as that is becoming the new UAS of choice for the Army." Schwartz continued, "TSP will provide the warfighter with enhanced SA, emitter mapping, target identification, and electronic intelligence preparation of the battlefield. Our big thing is emitter mapping, but TSP provides so much more. It is more than just a map; it's all the identification behind the signals it is collecting."

TSP locates emitters on the battlefield and provides that data to a map so that a warfighter or commander can see where these emitters are on the battlefield. "Putting SIGINT on UASs is going to be a big step forward for the Army in terms of adding to the collection and data information that decision makers can get right now," added Schwartz.

BETSS-C

Another capability that PEO IEW&S provides to warfighters is the BETSS-C system. Managed by PM NightVision/RSTA, BETSS-C is currently being fielded to units in the field. The goal of BETSS-C is to rapidly provide the warfighter with a flexible, mobile, adjustable, scalable, and expeditionary surveillance system or integrated system-of-systems for standoff surveillance and persistent ground-targeting capability and force-protection operations.

> DCGS-A is the Army's ground portion of the Joint Intelligence Enterprise, unifying the collection, processing, analysis extraction, query, and visualization capabilities for tactical environments.

BETSS-C serves as a sensor data management architecture that provides information to the intelligence and operations communities. With respect to DCGS-A and UASs, BETSS-C will provide another path for full-motion video (FMV)/imagery ingestion from UASs into the DCGS-A, with further FMV/imagery availability for other intelligence platforms.

DCGS-A

Analyzing and making use of the various types of information that SAR/GMTI, EO/IR/LD, TSP, and BETSS-C currently provide or will provide in the future falls into the world of DCGS-A. "All roads lead to DCGS," said LTC Daniel Cunningham, PdM ISR/RSTA Operations DCGS-A. DCGS-A is the Army's ground portion of the Joint Intelligence Enterprise, unifying the collection, processing, analysis extrac tion, query, and visualization capabilities for tactical environments. This unification is accomplished by fusing the technology of nine existing intelligence systems into one net-centric enterprise capability.

DCGS-A users receive UAS data from other DCGS systems in the enterprise via metadata. The system can receive UAS data using tactical communications. Version 4 of the system will have access to FMV and other direct sensor feeds.

Images or signals relayed from a UAS are available to DCGS-A analysts in near-real-time—"essentially as fast as the sensor can send the data to the ground receiver," said Cunningham. As new payloads are incorporated on future UASs such as TSP and EO/IR, DCGS-A should not be required to add new sensor processing capabilities unless the UAS is carrying a new and unique sensor.

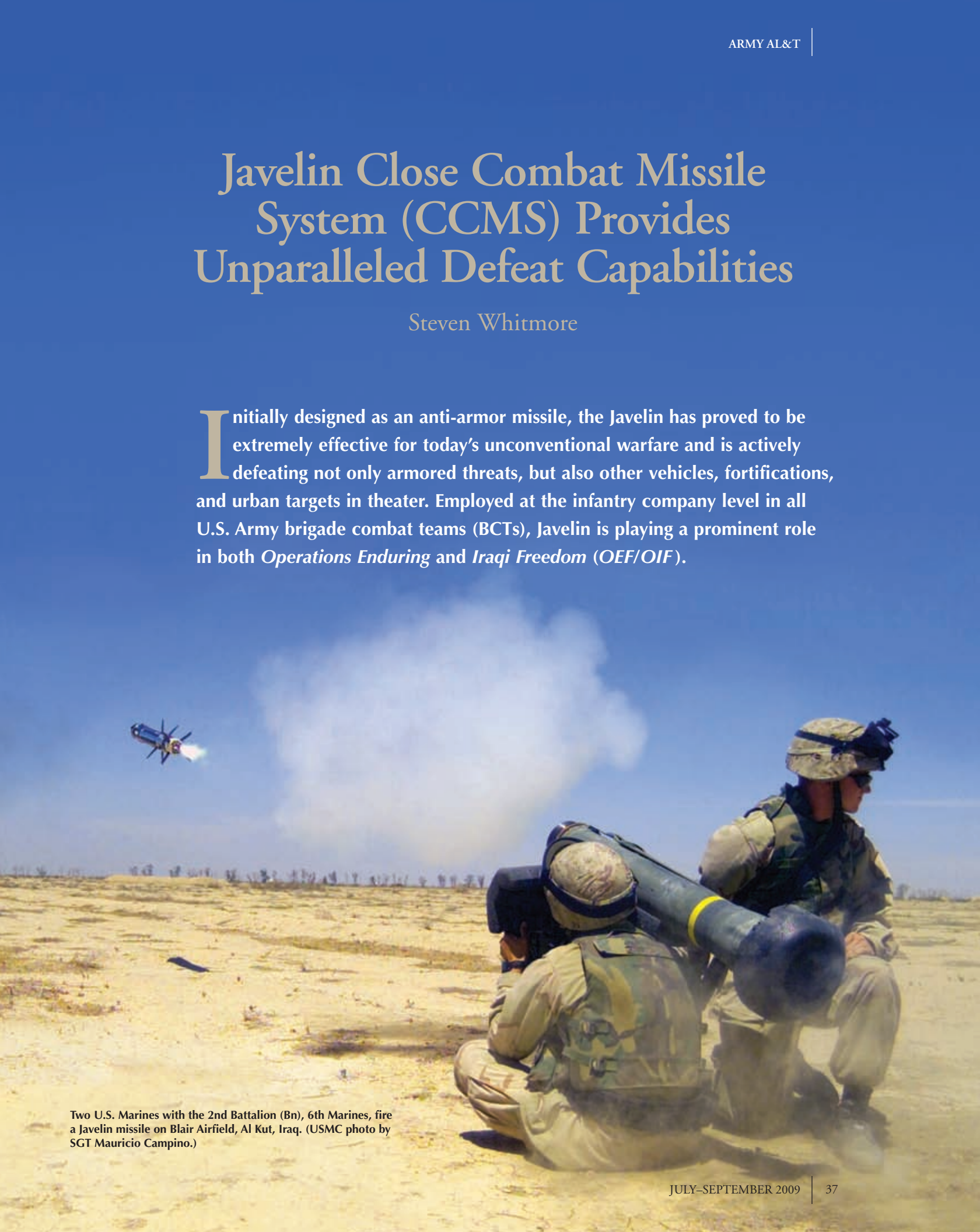
PEO IEW&S will continue to provide proactive support to meet the challenges and demands from the UAS community as America's eyes in the sky continue to evolve.

BRANDON POLLACHEK is the PEO IEW&S Public Affairs Officer at Fort Monmouth. He holds a B.S. in political science from Cazenovia College and has more than 9 years' experience in writing about military systems.

Javelin Close Combat Missile System (CCMS) Provides Unparalleled Defeat Capabilities

Steven Whitmore

Initially designed as an anti-armor missile, the Javelin has proved to be extremely effective for today's unconventional warfare and is actively defeating not only armored threats, but also other vehicles, fortifications, and urban targets in theater. Employed at the infantry company level in all U.S. Army brigade combat teams (BCTs), Javelin is playing a prominent role in both *Operations Enduring* and *Iraqi Freedom* (*OEF/OIF*).



Two U.S. Marines with the 2nd Battalion (Bn), 6th Marines, fire a Javelin missile on Blair Airfield, Al Kut, Iraq. (USMC photo by SGT Mauricio Campino.)

"Javelin is ideal for infantry Soldiers," said LTC Erik Simonson, Deputy Product Director Javelin Missile System, Close Combat Weapon Systems (CCWS), Program Executive Office Missiles and Space (PEO MS). "They can reach out and touch the enemy faster and farther than the enemy can touch them without the need to wait for close air support."

The warfighters agree. "The Javelin missile was an invaluable weapon in defeating enemy armored forces and reinforced positions to include bunkers, buildings, and revetments. There is no other weapon that can support dismounted infantry in fighting against these types of engagements," reads the after action report of the 3rd Infantry Division (Div.) (Mechanized) following the 2003 invasion of Iraq.

Javelin is the first "fire-and-forget" shoulder-launched, anti-tank missile fielded to the Army and U.S. Marine Corps (USMC). Replacing the wire-guided Dragon missile system, Javelin consists of a missile in a disposable launch tube and a reusable Command Launch Unit (CLU) that houses the day sight, night vision sight, and controls. The CLU allows for battlefield surveillance, target acquisition, missile launch, and battle damage assessment. Training is supported by three components that are fielded with the system: the Missile Simulation Round, Field Tactical Trainer, and Basic Skills Trainer.

The Javelin Basic Skills Trainer provides training in field surveillance, target locating and acquisition, and fire mission control in the classroom, garrison, or aboard ship. It features preprogrammed training scenarios that are available through a color liquid crystal display embedded in the simulated CLU. Operational switches and controls perform exactly like the actual equipment.

Javelin offers a top-attack flight mode to defeat armored vehicles, as well as a direct-attack mode for use in urban terrain against buildings or fortifications. The Javelin's fire-and-forget guidance enables the gunner to fire and then immediately take cover, greatly increasing survivability. Additionally, Javelin's soft launch reduces the visual and acoustic signature of the missile, making it difficult for the enemy to identify and locate the gunner. The limited back blast also enables gunners to safely fire from enclosures and covered fighting positions.

A man-portable system, Javelin is the only CCMS that can be operated primarily in a dismounted role. At less than 50 pounds, Javelin is designed to take the fight to the enemy and give dismounted Soldiers the ability to deal with a host of unexpected threats. Its imposing lethality, high reliability, and small logistics tail make Javelin ideally suited to rapid deployment.

Modern History

In 1989, the U.S. Army Aviation and Missile Command awarded a contract to the Javelin Joint Venture (JJV) for the development of Javelin as a replacement for the M47 Dragon antitank missile. The JJV was formed by Texas Instruments (now Raytheon Missile Systems) of Dallas, TX, and Lockheed Martin Electronics and Missiles (now Lockheed Martin Missiles and Fire Control) of Orlando, FL. The CCWS Project Office, part of PEO MS at Redstone Arsenal, AL, is responsible for the Javelin Missile System and its life-cycle management. In 1994, low-rate initial production of Javelin was authorized, and in 1996, the first Javelins were deployed with U.S. Army units. Full-rate production began in May 1997.

More than 25,000 missiles and 6,600 CLUs have been sold to the U.S. Army, USMC, and international customers. Javelin has been selected by the armed forces of 11 allied nations: the United Kingdom, Australia, New Zealand, Ireland, Norway, Lithuania, the Czech Republic, Taiwan, Jordan, United Arab Emirates, and the Sultan of Oman. Another six nations are currently considering the Javelin system.

Production of the Block I missile upgrade began in 2006, with successful qualification firings taking place in January 2007. The Block I missile upgrade features an improved rocket

LCpl Ray Alvarado, a vehicle commander assigned to Weapons Co., Task Force 2nd Bn, 7th Marine Regiment, 1st Marine Div., fires a Javelin missile at enemy targets during an assault on a Taliban-held compound in Now Zad, Helmand, Afghanistan, in August 2008. (USMC photo by LCpl Gene Allen Ainsworth III.)

A British Royal Marine carries a Javelin missile launcher while on patrol as part of a clearance operation of the Nad-e Ali District of Helmand province in southern Afghanistan in December 2008. (Photo by CPL John Rafoss, International Security Assistance Force HQ Public Affairs.)

motor that reduces the missile's time of flight, improved probability of hit/kill at 2,500 meters, and an enhanced performance warhead that increases Javelin's lethality. Full materiel release for the Block I missile was received in 2008 and the first production lots are now in the U.S. Army stockpile.

The Block I CLU upgrade received full materiel release in 2007 and fielding to units began that same year. A significant performance improvement in the Block I CLU is an increase in target identification range through use of a larger afocal lens (12X versus 9X) plus the addition of electronic zoom capability. Surveillance operating time was increased through a combination of longer lasting batteries and CLU power management. Additional improvements include improved software processing, a digital display with menu-driven access to features, the ability for the gunner to select between a "black hot" or "white hot" display, and an RS-170 standard video output to allow remote viewing of the gunner display. Units deploying to theater have priority for being fielded CLUs with Block I upgrades.

> The Javelin's fire-and-forget guidance enables the gunner to fire and then immediately take cover, greatly increasing survivability.

These improvements are geared at maintaining Javelin's lethality against the latest armor, while developing greater effectiveness against irregular threats. Future modifications include a multipurpose warhead (MPWH) featuring shaped charges for armored vehicles and fragmentation for antipersonnel effects. Army laboratories have contributed a significant investment to ready the MPWH for production. The cut-in of the MPWH into the Javelin production line, when funded, will represent a significant increase in capability against the type of irregular targets that our warfighters are currently pitted against and will continue to face in future fights. The MPWH will not only be very effective against bunkers, snipers, insurgents placing improvised explosive devices, and other soft targets, but it will also maintain its lethality against the world's best armored vehicles and tanks.

CCWS is also looking to develop Precision Terminal Guidance, which would allow the gunner to redirect the missile midflight, and advanced networking capability to provide and transmit real-time tactical data for operations or surveillance.

Javelin has been selected as a complementary system for the Army's Future Combat Systems (FCS) program. The Javelin system will be employed both as a dismounted, man-portable missile system and on FCS Armed Robotic Vehicle-Assault (Light) (ARV-A(L)). The ARV-A(L) will employ a powerful suite of sensors and a lethal combination of a machine gun and Javelin missiles on a semi-autonomous wheeled robotic vehicle. These vehicles will support the dismounted infantry's efforts to locate and destroy enemy platforms and positions and can be used in scenarios that would otherwise endanger a Soldier. The platoon's

ability to have a mobile support by fire and reconnaissance asset will increase that unit's lethality, responsiveness, and survivability.

In Theater

A Javelin-equipped commander not only controls the tempo of the battlefield, but also influences its shaping. "A few well-placed shots with the Javelin will bring an enemy's approach to a halt," said MAJ Bill Venable, Assistant U.S. Army Training and Doctrine Command Capability Manager, Infantry BCT. "The enemy commander is forced to reconsider his approach and the array of forces he is presenting to the U.S. force."

Since its fielding, Javelin has changed the way enemy armored forces plan assaults on suspected U.S. infantry areas of operation. "A single Javelin team of two Soldiers can hide in a concealed location more than 1.5 miles away from an approaching tank formation and kill the best tanks in the world with proven effectiveness," said Venable. Battlefield comments from Iraqi soldiers who were in tank formations that were engaged by U.S. Soldiers corroborated that the Iraqis were not able to detect the launch or approach of the missiles. Tanks in the formation started exploding around them before they knew anything was happening. Javelin was also critical in the taking of Baghdad Airport and in the Battle of Debecka Pass, where 30 U.S. Special Forces Soldiers who were pinned down by an advancing Iraqi armored column used Javelin to stop the enemy in its tracks and sustained no casualties.

Following the neutralization of the armored tank threat in the early days of *OIF*, Javelin continues to see extensive use in the unconventional battlefields of Iraq and Afghanistan. The Army, USMC, and British allies are effectively employing Javelin against a wide range of secondary targets, including light-skinned vehicles, bunkers, buildings, and other fortifications, as well as personnel. "The Javelin gunner becomes the most powerful weapon in the entire battalion," according to a certified Javelin gunner who witnessed firsthand the power of the missile during the Second Battle of Fallujah, the site of some of the heaviest urban combat in *OIF*. Soldiers who used Javelin or saw the weapon in action attest to its effectiveness as an urban assault weapon. Man-portable, Javelin can be carried up to the top of a building or fired from inside a small room using its soft-launch feature. With its pinpoint targeting, a Javelin gunner can send the missile through a door or window.

As Javelin continues to receive positive reviews from the front lines of ongoing operations, the lessons learned in theater are actively shaping the program.

British troops, in particular, are having great success using Javelin to defeat irregular targets at extended ranges. Of the more than 1,200 Javelins fired by British troops, none has been used against armored targets.

The CLU, used in the stand-alone mode for battlefield reconnaissance and target detection, has also proven effective in both Afghanistan and Iraq. The most powerful man-portable sensor on the battlefield below battalion level, it provides dominant surveillance capability to the dismounted Soldier. The CLU is employed at the front lines of combat formations and is likely one of the very first sensors to detect an enemy target. Its long-wave infrared sensors can see through today's complex battlefields, characterized by sandstorms, smoke, dust, explosions, fog, and obstructions; and enables night surveillance from more than 2 miles away. The CLU's stand-alone surveillance capability makes the Javelin ideally suited for peacekeeping and stability operations as well.

Proven in combat, Javelin boasts an operational readiness rate of greater than 98 percent. "Our Soldiers report complete confidence in the system's performance. Its reliability, both from a maintenance and lethality perspective, contributes to that sense of confidence," said Venable. "It works when you need it, it hits what you're aiming at, and it kills anything it hits."

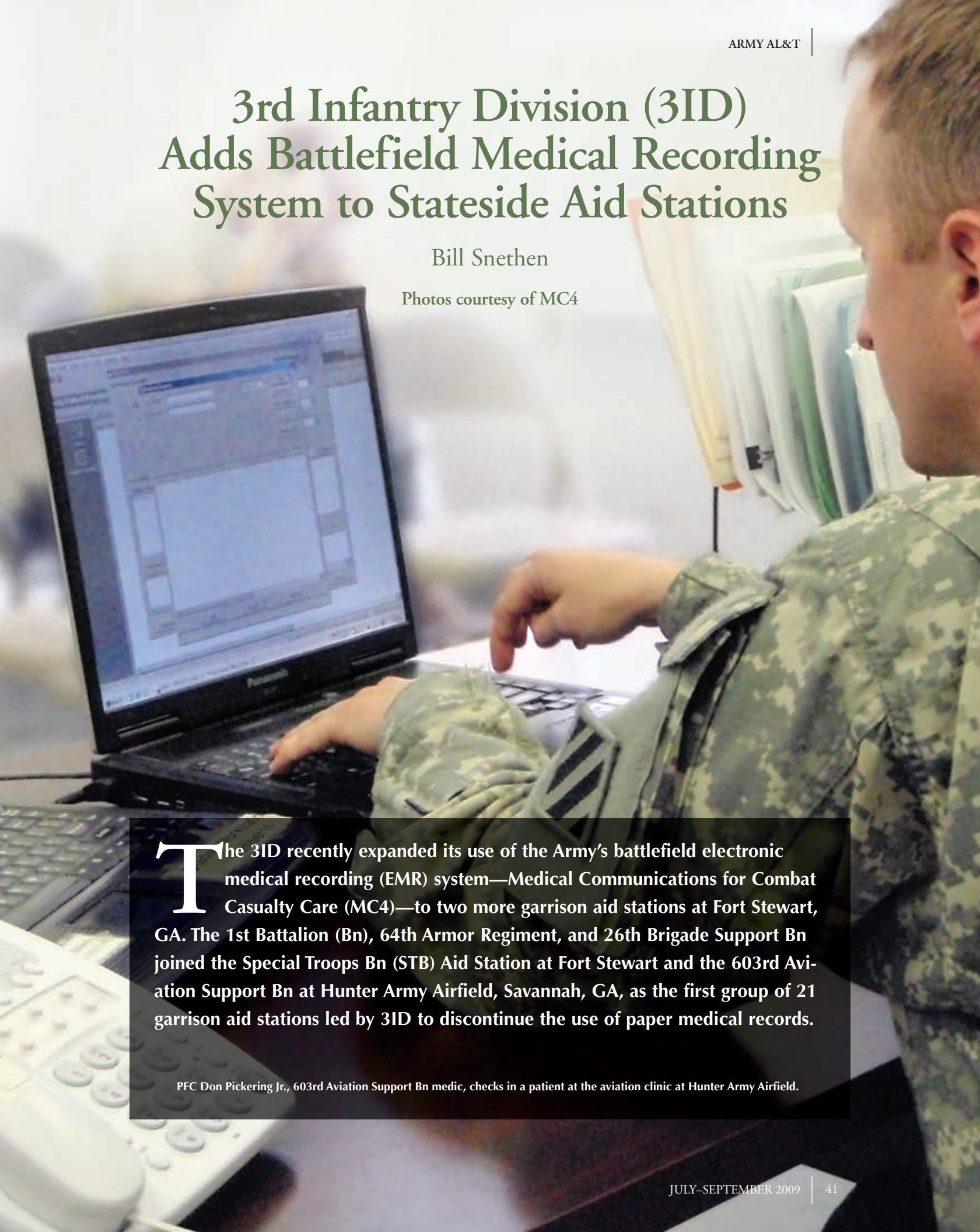
As Javelin continues to receive positive reviews from the front lines of ongoing operations, the lessons learned in theater are actively shaping the program. Javelin offers a strong growth potential because of the system's modular construction, CLU software enhancements, and adaptability to a wide range of platforms. Its combat-proven effectiveness as a precision man-portable system ensures that the Javelin will be a key weapon system for many years to come. Our warfighters will continue to take the weapon forward into the fight wherever it is needed—whether it is the crowded, urban neighborhoods of *OIF* or the remote, austere terrains of *OEF*.

STEVEN WHITMORE is the Product Director Javelin Missile System, CCWS, PEO MS. He holds a B.S. in engineering from the University of Alabama at Huntsville and an M.S. in engineering from Southeastern Institute of Technology. He is a graduate of the Defense Acquisition University Senior Service College Fellowship Program and the Competitive Development Group Program. Whitmore is a U.S. Army Acquisition Corps member and is Level III certified in program management; test and evaluation; and systems planning, research, development, and engineering.

3rd Infantry Division (3ID) Adds Battlefield Medical Recording System to Stateside Aid Stations

Bill Snethen

Photos courtesy of MC4



The 3ID recently expanded its use of the Army's battlefield electronic medical recording (EMR) system—Medical Communications for Combat Casualty Care (MC4)—to two more garrison aid stations at Fort Stewart, GA. The 1st Battalion (Bn), 64th Armor Regiment, and 26th Brigade Support Bn joined the Special Troops Bn (STB) Aid Station at Fort Stewart and the 603rd Aviation Support Bn at Hunter Army Airfield, Savannah, GA, as the first group of 21 garrison aid stations led by 3ID to discontinue the use of paper medical records.

PFC Don Pickering Jr., 603rd Aviation Support Bn medic, checks in a patient at the aviation clinic at Hunter Army Airfield.

The implementation of the digital medical recording system by 3ID, and the 82nd Airborne Division at Fort Bragg, NC, in January, has resulted in capturing 3,000 electronic patient encounters in garrison. The use of MC4 at battalion aid stations in the U.S. not only provides an EMR capability for clinics with low-to-no connectivity, it also supports a new initiative by the Army to "train as you fight" with MC4.

LTC Edward Michaud, 3ID surgeon, ushered in the new business process so that personnel supporting the facilities would gain valuable hands-on experience using the same equipment to electronically document patient care in garrison that is used in theater. The laptops and servers used in the stateside clinics—fielded, trained, and sustained by the MC4 program—are the same used by medical personnel and supported by the technical staff of signal officers (S6) and the Combat Service Support Automation Management Offices (CSSAMOs) in Iraq, Afghanistan, and 12 other countries.

"The primary benefit of this endeavor is the training and habituation that improves through continued use," Michaud said. "Utilizing the EMR system on a daily basis in garrison reduces future training requirements and helps to eliminate any delay service members may experience in receiving medical care. Also, the S6 and CSSAMO are better prepared to efficiently install and support the system, as well as troubleshoot any issues that may arise."

In addition to training, Soldiers who visit the clinics in garrison also benefit from the use of MC4. "The staff is able to provide enhanced care since they now have the ability to quickly access historical information and view previous illnesses and treatments," Michaud said. "Without EMR, aid stations primarily screen patients. Today, 3ID has four aid stations with the ability to electronically capture patient encounters, document notes, and reorder medications. Use of the MC4 system offers a significant benefit to the Soldier and the unit while in garrison that was not previously available."

MC4 System Augmentation to AHLTA Proving Useful

CPT Christina Johnson, 3ID STB Aid Station physician assistant, used the MC4 system in 2008 while deployed to Camp Buehring, Kuwait, as a professional officer filler information system member with the 3rd Armored Cavalry Regiment, Fort Hood, TX.

"MC4 was very effective when we conducted sick call in theater," Johnson said. "We supported a post with approximately 20,000 service members, contractors, and foreign nationals who worked onsite. I saw approximately 30 patients a day and all of the information was collected in the outpatient program. If I had to hand-write the patient information onto paper forms, the process of seeing patients and charting the care would have been very slow."

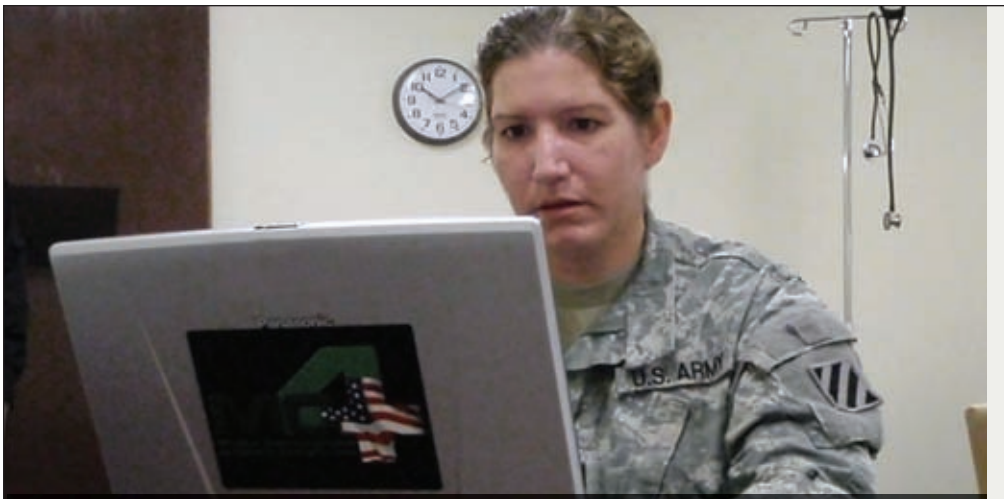
Now using the MC4 system in garrison, Johnson frequently treats Soldiers who report to the STB Aid Station for sick call. She then goes to the Lloyd C. Hawks Troop Medical Clinic (TMC) to administer acute care. The combined TMC is the only facility on Fort Stewart that provides a higher level of care, other than Winn Army Community Hospital. At Hawks TMC Johnson is able to view patient encounters in AHLTA after having initiated the records using MC4 at her aid station.

"When patients arrive at the TMC for additional care, I can go into AHLTA and pull up their medical records and see encounters generated from the STB Aid Station using MC4," Johnson said. "This information allows me to quickly see the treatments that have been performed and what medications a Soldier has been prescribed."

Lessons Learned, Forecasting Technical Hurdles in Theater

CPT Ricardo Swenness, 3ID STB Aid Station physician, deployed to Iraq in 2006. He worked in an aid station that did not use MC4. The problem was not a lack of equipment, but confusion regarding who to contact to install the systems.

LTC Edward Michaud (second from left), 3ID surgeon, meets with the technical support personnel for Forts Stewart and Benning, GA, as well as MC4 personnel, to discuss challenges and hurdles integrating MC4 systems into more garrison aid stations.



CPT Christina Johnson, 3ID STB Aid Station physician assistant, uses the MC4 system to document Soldiers' medical information and review their medical history.

"When I talked with my medics about setting up MC4, they didn't know who to go to," Swenness said. "We didn't know that the CSSAMO staff had the knowledge to help us install the system. If we had used MC4, we would have had better access to information."

Swenness recalled that connectivity was always an issue at the deployed aid station. It is also an issue for garrison aid stations. Traditionally, the buildings that house the aid stations are not wired into the local computer network. This can be a setback when trying to install an EMR system. Connectivity is required to transmit patient data to the central data repository, where it comprises a Soldier's longitudinal health record and becomes immediately available to other medical personnel, regardless of location.

To mitigate technical issues that may derail EMR systems implementation in garrison clinics, Michaud involved the 3ID's S6 and CSSAMO staffs from day one. "The technical staff has worked tirelessly to hammer out technical issues as well as uncover solutions to the networking challenge," Michaud said. "Meetings are held regularly to foster communication between the different organizations and to keep the process moving forward."

As a result of the collaboration, more garrison aid stations have connected to local networks via a secure wireless channel—Combat Service Support Automated Information Systems Interface (CAISI). As 3ID expands MC4 to other locations, alternatives may be required.

"As we work to bring additional aid stations online with MC4, we have discovered that there is a severe lack of CAISIs and very small aperture terminals to establish network connections," Michaud said. "It is important to know this information early in the process so that we understand the hurdles that lie ahead. Many of the problems we experience in garrison are potential problems in theater. By implementing MC4 in our stateside facilities, we can mitigate similar issues when we go downrange."

LTC Larry France, physician assistant consultant, U.S. Army Medical Command, Office of the Surgeon General, recently visited the aid stations using MC4, crediting the close collaboration between the 3ID and others to the success thus far. "I used the MC4 system in 2006 when I worked in the palace in Baghdad, Iraq," France said. "I know the positives and negatives with the system and the 3ID is working through a lot of the negatives now. By having every entity involved throughout the process, it will help make the implementation successful. It also helps prepare every level of the organization with their roles in using the system in future deployments."

More MC4 Stateside Integration to Follow

Michaud is encouraged about the progress that has been made with MC4 use in the aid stations and is looking forward to installing the EMR system into the remaining 3ID clinics. "In light of the successful use of MC4 in the aid stations, I feel comfortable continuing the effort with the other facilities," Michaud said. "We have learned so much during this process that the other sites can benefit from the trials and errors experienced while integrating the systems in the first few locations. More importantly, the use of EMRs gives us a new capability that enhances the care we can provide to our Soldiers."

Michaud acknowledges that in addition to organizational collaboration, user support has been key. "If the providers were not happy with the system, then I would be very hesitant to move forward and continue the effort," he said. "Many are familiar with the system from previous deployments. They see the benefits and understand the importance of its use. We now have the advantage of taking better care of our Soldiers in the states and during future deployments. We also benefit from having the medical staff and technical support personnel practice using the system on a daily basis. This is a win-win for everybody."

For more information and articles about MC4, visit **www.mc4.army.mil**.

BILL SNETHEN provides MC4 program public relations support. He holds a B.S. in communications from William Paterson University.

Camp Bucca encompasses 29 independent compounds that can hold as many as 15,000 detainees at once. Here, SGT Albert Grant, Alpha Troop, 102 Cavalry Squadron, 50th Infantry Brigade Combat Team, New Jersey National Guard, patrols the perimeter of Camp Bucca. (U.S. Army photo by SSG Shawn Morris.)

MC4 Reforms Wire Medicine at Detainee Combat Support Hospital

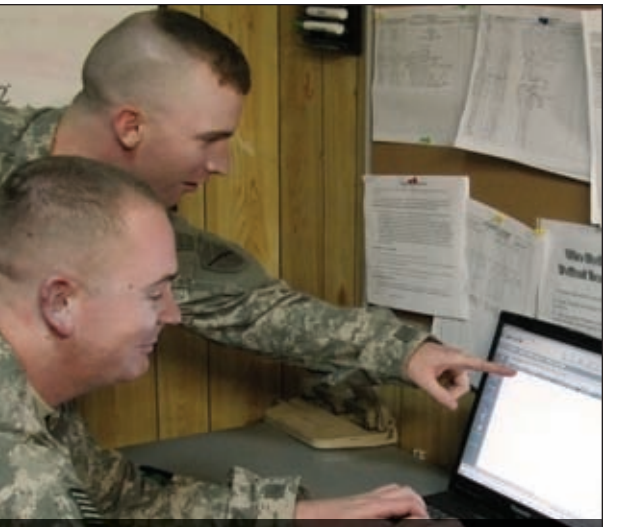
CPT Ken Sturtz

Checkpoints, concertina wire, and guard towers canvas the horizon at the largest internment facility throughout the U.S. Central Command (CENTCOM)—Camp Bucca, Iraq. What has doctors and nurses looking up, however, are 3 miles of newly entrenched fiber-optic cables that save them hours of work at the end of their 12-hour shifts.

Spanning 1 square mile and located at the southern border of Iraq, Camp Bucca encompasses 29 independent compounds that can hold as many as 15,000 detainees at once. Since the beginning of *Operation Iraqi Freedom*, more than 100,000 detainees have been held at this location.

Not apparent from its formidable surroundings, Camp Bucca houses a state-of-the-art medical facility, the 115th Combat Support Hospital (CSH), which provides the highest level of care on a nonstop basis to a diverse detainee population. "Our patients usually do not speak English, so we have to use the services of translators so we can communicate with each other," said SFC Robert Callahan Jr., 115th CSH Noncommissioned Officer-in-Charge of wire medicine. "Our patients are escorted by guards and they also have primary care medical issues. It's not the typical mission our medics are trained to support before they arrive here."

Atypical is an understatement, given the location's layout and history. Each of the 29 compounds has its own primary care facility, known as a compound treatment room. In each of these rooms, medics and primary care providers perform "wire medicine" around the clock. The term was originally coined to describe the medical care administered to insurgents, which included a wire fence separating medical personnel and patients. While a fence no longer exists between patient and medical personnel, additional barriers have made care difficult.



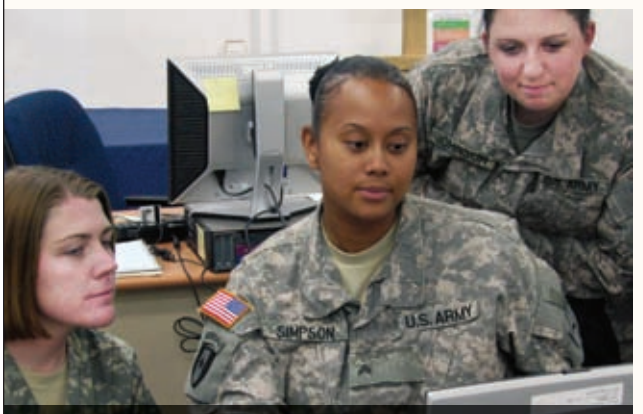
SPC Jeffrey Powers (sitting) and SPC Mark Lefevres, 115th CSH medics, electronically record patient data via MC4 at Camp Bucca. (U.S. Army photo.)

Evolution From Paper to Electronic Records

Originally, wire medicine at Camp Bucca was captured on field medical cards—the same paper forms that were first used on the battlefield during World War II. The problem with any paper medical record, regardless if the patient is a detainee or service member, is that the information can easily be lost while an individual is in transit to another facility for additional care. The lack of information delays the health care process, requiring staff to conduct repeated tests and procedures to determine a patient's malady.

To eliminate this delay, the 31st CSH, the medical unit that immediately preceded the 115th CSH at Camp Bucca from 2007 to 2008, took the first step in moving its medical recording practice into the 21st century. The first solution involved installing laptop computers in the main hospital facility.

Regardless of who received care, the 31st CSH committed to digitally documenting patient data by employing the same system used to chart medical information for U.S. service members in combat—the Army's Medical Communications for Combat Casualty Care (MC4) system. This permitted medics to transcribe handwritten encounter notes onto computers at the end of their shifts. However, the addition of another step tasked to providers, who traverse half-mile walkways from treatment rooms to hospitals several times a day, did not win over new users.



SPC Victoria Krause, CPL Sheri Simpson, and PFC Amanda Johnson, 115th CSH patient administration personnel, use the MC4 system to review patient data at Camp Bucca. (U.S. Army photo.)

To lighten the workload, MC4 hand-held devices were introduced, reducing the amount of typing required by the medical staff. Medics could record information into their personal digital assistants and synch it with an MC4 laptop, transferring records into a centrally available location.

To enhance data transfer from the hand-helds to the MC4 network, the 31st CSH established wireless access points throughout the internment facility to every treatment room. The wireless network then allowed medical personnel to upload patient data from the 29 different compounds, collected via hand-held devices immediately following patient care.

"When we took over the mission at Camp Bucca, we used more than 100 hand-held devices to capture and upload thousands of patient encounters within a few months of our arrival," said Callahan. "We really liked the hand-helds. They're easy to use. We were able to enter the information quickly, and our young Soldiers were familiar with them since the devices are similar to hand-held organizers used in CONUS."

Shift From Wireless Network to Fiber-Optic Cable

While the use of MC4 hand-helds in a wireless network setting bridged the change from paper to computers, the network could not handle the workload and hand-helds posed unforeseen challenges. The 115th CSH accounts for approximately 20 percent of all digital patient encounters (7,000 per month) captured via MC4 in CENTCOM, making it one of the busiest treatment facilities in theater. As such, a growing patient population coupled with a taxed network meant the need for change yet again.

The network was not robust enough to transmit patient encounter tasks in an efficient manner, thus causing delays in detainee care. The hand-held devices would not allow providers to co-sign notes initiated by medics. Additionally, at the end of a long shift, medical personnel were unable to determine if every encounter had transmitted to the network. The 115th CSH realized that the use of the hand-helds and transferring data via the wireless network was not making the grade and the infrastructure needed to be upgraded.

After months of planning and hundreds of hours of hard work, more than three miles of fiber-optic cable was added to the network infrastructure. The 115th CSH coordinated permission to dig and run the cable throughout the internment facility after procuring, configuring, and installing more than 30 fiber switches so that the new network could efficiently carry patient data throughout the facility. Ultimately, a large portion of data that traveled over the Nonclassified Internet Protocol Router Network at Camp Bucca was transitioned over to the MC4 network, improving overall network performance.

Upon switching to a fiber-optic network, the hand-held devices were removed from the compound treatment rooms and replaced with new MC4 laptops. Today, medical personnel throughout Camp Bucca have access to the full suite of medical applications on the MC4 systems without the concern of bandwidth restrictions.

SPC James Scott, S6 staff member with the 1163rd Area Support Medical Co., services an MC4 laptop in one of the 29 treatment rooms at Camp Bucca. (U.S. Army photo.)

"Technology played a central role in the evolution of health care at Camp Bucca," said LTC Stephen Wooldridge, Task Force 115 South Deputy Commander for Administration. "Under the direction of our commander, COL John McGrath, we have transitioned our efforts from paper documentation to electronic records. We took on this role from the moment we assumed this mission."

> Camp Bucca houses a state-of-the-art medical facility, the 115th CSH, which provides the highest level of care on a nonstop basis to a diverse detainee population.

Replacing hand-helds with more MC4 laptops has since provided medical personnel with an unexpected benefit. The 115th CSH is able to track the medical care that detainees receive as they move throughout the numerous compounds, as well as at other medical facilities for follow-on care. By using laptops instead of hand-helds, users have a type of patient visibility not possible with hand-helds.

"It is critical to be able to view the health care administered to our patients, regardless of the location," said CPT Sara Wilson, Task Force 115 South Chief of Patient Administration. "MC4's interface with the Theater Medical Data Store allows each treatment room and internment facility to electronically view patient encounters. Providers can track the medical progress of their patients, as well as the efficacy of the medications dispensed in near-real time. This is an incredibly difficult task to accomplish without the advantage of a robust medical network."

The 115th CSH has overcome a number of changes since taking on the mission at Camp Bucca and, in the process, significantly improved the network infrastructure used to collect patient data. As a result of their efforts, they have enabled the medical team to rapidly treat and diagnose thousands of detainees every month, improving the level of care administered at Camp Bucca.

For more information on how medical information is being captured and shared in theater, visit **www.mc4.army.mil**.

CPT KEN STURTZ is the S6 and Information Management Officer for the 115th CSH at Camp Bucca. He holds a B.S. in biology from the University of Colorado. Sturtz is Level I certified in information management.

From the Acquisition Support Center Director

At the Southeast Medical Command's Noncommissioned Officer (NCO) Symposium in Columbus, GA, Silver Star Medal recipient SFC Jose Blanco shared his account of the gallantry in action that earned him the prestigious award. Blanco, then a sergeant, was a gunner on a Bradley Fighting Vehicle during the initial invasion of Iraq in 2003 when he and his crewmates came under attack. After recovering from the initial blast that had knocked him out of the turret to the bottom of the vehicle, Blanco "shook off the cobwebs," treated his wounded crewmates, and took them out of harm's way.

Seeing that the turret gun had not been damaged, Blanco crawled back into the turret, placed the gun in manual mode, and started to engage the enemy, destroying an enemy recoilless rifle team and four rocket-propelled grenade teams before help arrived. "I didn't go out there to win a Silver Star," Blanco recounted. "I didn't do it to be a hero, I was doing my job—to stay alive and make sure that my battle buddies and crew were well taken care of."

This is just one example of the numerous heroic actions taken by our Soldiers. During this year of the NCO, we must remember as Acquisition, Logistics, and Technology (AL&T) Workforce members that our mission to keep our Soldiers well equipped with the best weapons, technology, and services is a crucial duty that enables our Soldiers to perform extraordinary and heroic actions in our Nation's defense.

Acquisition Reform

In the wake of Congressional concerns regarding DOD acquisition, several hearings were conducted to review and listen to recommendations on overhauling DOD's approach to procurement, acquisition, and contracting. In April 2009, LTG N. Ross Thompson III, Principal Military Deputy to the Acting Assistant Secretary of the Army for AL&T, and Director, Army Acquisition Corps (AAC) and Acquisition Career Management, testified at the U.S. House of Representatives Oversight and Investigations Subcommittee. Thompson discussed the overall state of the AL&T Workforce and plans for its future. "The Army is creating and sustaining a healthy acquisition workforce focused on getting products to the Soldier faster, making good products even better, minimizing life-cycle costs, and enhancing the synergy and effectiveness of the Army AL&T communities, while ensuring proper fiscal stewardship of taxpayer dollars," he said. "Our push toward a more integrated, holistic approach to product development and sustainment is driving changes in acquisition training and education to better prepare our workforce for the many challenges it will face in the 21st century."

In April 2009, Secretary of Defense Robert Gates announced in-sourcing plans to increase the size of the DOD acquisition workforce by converting contractors to government positions, hiring additional acquisition professionals, and reducing the number of service support contractors from 39 to 26 percent, the pre-2001 level. Thompson said the Army is "aggressively moving toward this important directive," and shared the Army's in-sourcing strategy. "The Army is using a comprehensive approach to comply with Congressional direction to give special consideration to civilian performance of contracted services. In-sourcing cannot be effectively implemented within a single stovepipe. It is not simply a contracting matter but also involves the civilian manpower authorization, hiring process, and budget. It requires identifying funding sources to hire civilians, along with the use of over-hires until an authorization is documented. We find that a practical in-sourcing schedule must be established in order to ensure continuity of service."

Thompson also emphasized the importance of recruiting people for the AL&T Workforce who are able to perform high-technology missions. "All of the acquisition career fields require highly trained people, not just scientists and engineers, but also business and financial experts to put together contract instruments. My strategic objective is to make the Army a very tough customer. I want the Army AL&T Workforce negotiating the best deal for the U.S. Army because that allows us to put the best capabilities in the hands of our Soldiers. Increased investment in our people, coupled with sufficient, predictable investment in our programs, will continue to give our Soldiers the equipment, services, and support they need for success on the battlefield," he concluded.

On May 22, 2009, President Barack Obama signed into law *The Weapon Systems Acquisition Reform Act* (*Public Law 111-23*) to strengthen accountability standards for DOD purchases for military operations. Please visit Defense Acquisition University's Acquisition, Technology, and Logistics (AT&L) Knowledge Sharing System Web site at **https://akss.dau.mil/default.aspx** for a summary of this legislation.

Defense Acquisition Workforce Development Fund Program, *Section 852*, Catalog of Opportunities

Having successfully presented the Army's FY09 *Section 852* plan to the Acting Deputy Under Secretary of Defense for AT&L, the Army's *Section 852* requirement was increased to $109.7 million. While the Army's throughput capability has been expanded for many AL&T Workforce training programs via *Section 852*, the following efforts have also been initiated through this capability:

- The first centrally managed and funded Student Loan Repayment Program with the pilot program attracting more than 1,200 applicants.
- New hires that include 91 Student Career Experience Program students, 345 interns, 24 system-of-systems journeyman engineers, and 3 highly qualified experts.
- Successful launching of the Civilian Incentive Program, bringing recruitment and retention incentives throughout the AL&T community.

The Army's Catalog of Opportunities, as well as instructions for submitting new requirement considerations, can be found at **http://asc.army.mil/career/programs/852/default.cfm**. For more information, contact Kelly L. Terry at (732) 414-1431 or **kelly.terry@us.army.mil**.

AAC Annual Awards Ceremony

There are some workforce members whose performance and contributions to the warfighter set them apart from their peers. These extraordinary people will be recognized for their achievements at the AAC Annual Awards Ceremony on Sunday, Oct. 4, 2009, at the Marriott Crystal Gateway Hotel in Arlington, VA. I invite all AL&T Workforce members to join us in "Celebrating Our Acquisition Stars" and recognizing the significant accomplishments and achievements of our research and development laboratories, life-cycle logistics and contracting communities, project/product managers and acquisition directors, acquisition NCOs, and other acquisition excellence contributors. For more information, contact Marti Giella at (703) 805-1095/DSN 655-1095 or **usaasc.events@conus.army.mil**.

AAC Celebrates 20th Anniversary

This year marks the AAC's 20th anniversary. On Oct. 13, 1989, then-U.S. Army Chief of Staff GEN Carl E. Vuono approved AAC's creation as "an organization of dedicated military and civilian acquisition specialists and leaders." Spanning four presidential administrations, two wars, and numerous contingency operations, the AAC has made a tremendous impact on the Army's ability to protect our country. To all AAC members past and present, as well as the entire Army acquisition community, I offer my congratulations and a sincere thank you for a job well done. My hope is that for future generations, the AAC will continue its dedicated service to our Soldiers by improving the Army's combat capability and developing critical systems and services that enable our Army to meet its non-negotiable contract to fight and win our Nation's wars.

Craig A. Spisak
Director, U.S. Army
Acquisition Support Center

Contracting Community Highlights

Every day the Army's contracting workforce performs a critical mission under extraordinary conditions. Faced with incredible challenges of a 600-percent increase in workload in the last decade concurrent with a decreasing workforce, our community has succeeded largely as a result of a strong "can-do" spirit. As the Deputy Assistant Secretary of the Army for Procurement (DASA(P)), one of my roles is to provide you with the tools that will improve your day-to-day performance mission.

Some of you may be aware of the current Materiel Enterprise (ME) effort between Dean G. Popps, Acting Assistant Secretary of the Army for Acquisition, Logistics, and Technology, and GEN Ann E. Dunwoody, Commanding General, U.S. Army Materiel Command. They are personally championing this process to bring together senior leaders from both organizations and identify the current challenges that affect the enterprise organizations' processes and boundaries. Over the past several months, the ME has identified opportunities for transformation, both at the enterprise level and within the operating domains. From this transformation analysis, I have identified two enterprise projects that will increase the efficiency and operating effectiveness between the DASA(P) and the contracting community.

The first project is to create a standardized communication process and procedure flow between my office and the contracting community. Creating and implementing this initiative will be a joint enterprise effort between DASA(P) and the U.S. Army Contracting Command (ACC), but the results will be felt across all contracting activities. This project will facilitate timely, consistent, and accurate information distribution; assign suspenses; and receive and process data. Once implemented, this initiative will provide a standardized way of doing business by reducing the burden at all levels, increasing data quality and accuracy, and reducing cycle time.

The second joint ME project is to establish an Army Procurement Policy Council for regulatory and policy issues. This team of representatives from DASA(P), ACC, and other major commands will meet regularly to address Army contracting-related processes, procedures, and new statutory and regulatory initiatives, as well as to incorporate revisions to the *Army Federal Acquisition Regulation Supplement*. The council will provide the Army contracting workforce with a standard process for creating, distributing, and incorporating Army contract policies.

To further my commitment to improving Army contracting and enhanced collaboration within our community, I am directing an Army contracting stand-down day on July 20, 2009. This training day will be broadcast live from the Pentagon and will cover various contracting issues. Complete details of this event will be forthcoming.

I appreciate your continued support and shared experiences and accomplishments with the contracting community through *Army AL&T* Magazine.

Edward M. Harrington
Deputy Assistant Secretary of the Army
(Procurement)

Tight U.S. Army Corps of Engineers (USACE) Border Fence Construction Timetable Spurs Innovation

Ginger Gruber and Jim Frisinger

The first large-scale border fence construction project in U.S. history began Oct. 26, 2006, when then-President George W. Bush signed the *Secure Fence Act*. It required the Department of Homeland Security (DHS) to construct hundreds of miles of pedestrian and vehicle fence, including roads, across the Southwest border by Dec. 31, 2008. This aggressive timetable meant finding ways to accelerate procurement and logistics. Scheduling would be key.

The project goal would expand the fence to 670 miles over a 2,000-mile construction zone from the Pacific Ocean to the Gulf of Mexico. U.S. Customs and Border Protection (CBP) tapped USACE and its industry partners to leverage resources and complete this multibillion-dollar, politically charged task.

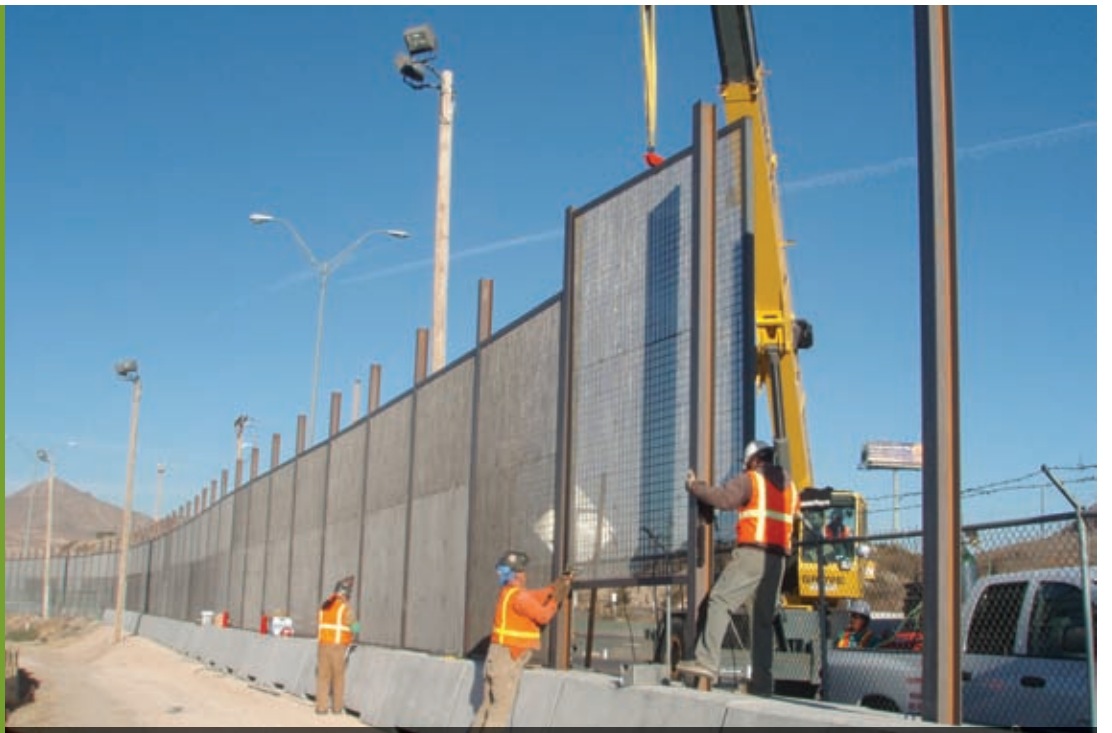
"We had to reinvent every aspect of the way we deliver projects," said Todd Smith, Pedestrian Fence Program Manager (PM), Fort Worth, TX, USACE Engineering and Construction Support Office (ECSO). "There really is no 'business as usual' anywhere within the fence program." That meant putting to the test a "virtual teaming" concept. The ECSO office, originally with 20 employees, would ramp up to 60, then reach out to build a nationwide virtual team of 500-plus USACE employees and hundreds of contractor personnel.

The team knew that planning would take up most of the execution time, leaving a very small construction window at the end. The chosen acquisition method was to establish $3.4 billion of contract capacity in Multiple Award Task Order Contract (MATOC) pools to maximize competition and prevent any single point of failure. This strategy pre-qualified contractors. When the fence laydown was determined and environmental regulations and real estate acquisition issues were resolved, execution could move quickly.

ECSO established 15 regional MATOCs consisting of 52 contractors of various business sizes (8(a), HUBZone, and Unrestricted). The effort was led by a tiger team in the Tulsa, OK, district and was completed in an astonishing 7 months. With 12 months remaining, more than 55 task orders, ranging from $1 million to more than $100 million each to build hundreds of miles of fencing, remained to be executed. To meet the schedule, a number of innovations had to be implemented.

Instead of USACE districts working independently, ECSO formed a virtual team from four USACE districts: Los Angeles, CA; Albuquerque, NM; Fort Worth; and Galveston, TX. This programmatic approach leveraged the best contracting talent and formed the heart of the procurement effort. To eliminate the differences in procurement procedures across districts, the team drafted a template Request for Proposal (RFP) that helped contractors more easily respond to multiple RFPs.

The *Secure Fence Act* required the DHS to construct hundreds of miles of pedestrian and vehicle fence, including roads, across the Southwest border by Dec. 31, 2008. Here, BG Kendall Cox, USACE Southwestern Division Command, leads the site visit at Imperial Sand Dunes fencing in Southeastern California. (USACE photo by Todd Smith.)



The project goal would expand the fence to 670 miles over a 2,000-mile construction zone from the Pacific Ocean to the Gulf of Mexico. Here, border fence is erected near El Paso, TX. (Photo courtesy of Cerrudo Services.)

ECSO worked with the USACE Engineering Resource and Development Center in Champaign, IL, to supplement the DOD Standard Procurement System by creating an RFP "wizard." The electronic program streamlined the mass development of RFPs for separate fence segments. Because 90 percent of each RFP shared common language, it ensured consistency and accuracy. Because program requirements evolved on a daily basis, the wizard could rapidly update changes to all draft RFPs simultaneously. It saved approximately 40 work hours per RFP on the contracting sections. It also enabled a multifunctional team to simultaneously mesh RFP language formulated by separate parties working in different offices, including both procurement (by USACE personnel) and technical passages (by engineering partners at Baker and Prime Engineering).

It was critical to keep the contractor workforce fully informed of rapid changes in the program. First, regularly scheduled industry days allowed face-to-face interaction among USACE, CBP, and MATOC personnel. Second, a twice monthly electronic newsletter, *TI(ma)TALK*, was launched to keep MATOC contractors informed on issues and provide early warnings for upcoming projects. Both actions made contractors more responsive to USACE needs and cut their inquiries during the Request for Information stage that follows the issuing of RFPs.

Through early refinement of the final fence requirements, it became evident that steel supplier capacity constraints would be compounded by separate purchases by multiple builders. Fence construction would consume more than 120,000 tons of steel—enough to build two aircraft carriers. Mesh, panels, and hollow tube were needed. The program was timed to crescendo during the second half of 2008. Any supply bottlenecks would cripple successful project completion.

A CBP, USACE, and Boeing team decided to bulk purchase all long lead items up front. The steel pre-purchase saved the government approximately $76 million in market price escalation from January through August 2008. Under this complex procurement arrangement, Boeing purchased the materials, set up border distribution centers, and handed off the materials to USACE construction contractors who were responsible for trucking them to the work site. The vast amount of material required a robust scheduling system. With 6,000 truckloads needed, material pick-ups were scheduled every single hour at peak times. USACE monitored the life cycle of the government-furnished material supply chain, tracking quantities picked up, monitoring the quantity installed, and ensuring that any excess was returned to the government.

Communication was critical with dozens of separate construction crews operating simultaneously. Weekly coordination teleconferences ensured that everyone was moving down the same path with the same goals. This was new and different work. The team was moving much faster than everyone was accustomed to.

By year's end, border fence mileage reached the 578-mile mark. It is now at 630 miles, with construction of most remaining segments well underway. "Frankly, almost no one believed we could do this well," said Mark S. Borkowski, Executive Director of the Secure Border Initiative, in a 2008 year-end assessment. "Between our Tactical Infrastructure [program], USACE, and our contractors, we exceeded almost everybody's expectations."

Ginger Gruber is the USACE ECSO Acquisition PM. She holds a B.S. in business economics and an M.B.A. from the University of Nebraska at Omaha.

Jim Frisinger is an ECSO contract public affairs specialist. He holds a B.A. in liberal arts from the University of Michigan.

RCC Sharana—Overcoming Contracting Challenges

MAJ Andrew Carter

The Regional Contracting Center (RCC) Sharana, one of seven Afghanistan RCCs, is located in Central Paktika Province in Eastern Afghanistan. In our general support role, we provide contracting for all U.S. and coalition forces in both Paktika and Ghazni provinces. The office consists of a U.S. Army major and a U.S. Air Force captain, master sergeant, and two staff sergeants. In FY09, RCC Sharana has performed more than 500 contract actions and obligated in excess of $45 million with almost $40 million going to Afghan businesses.

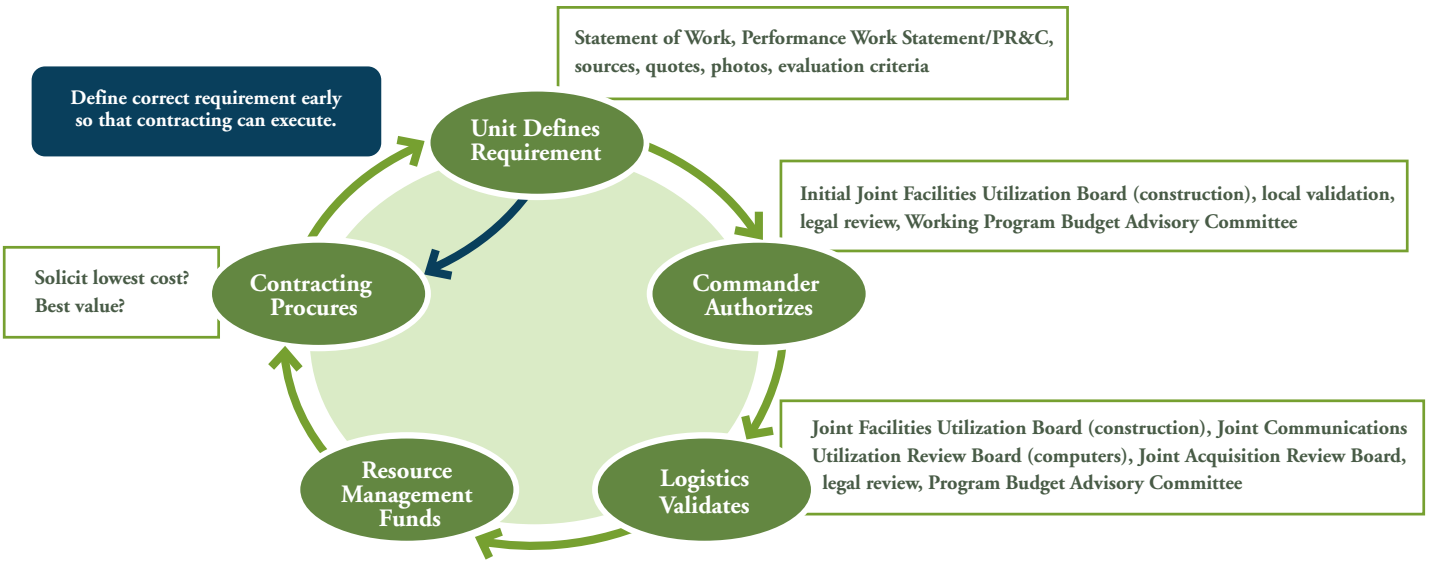
Paktika and Ghazni provinces span 17,000 square miles, about twice the size of New Jersey in area. In the east along the Pakistan border, the terrain is extremely mountainous with many locations only accessible via air. The road network, although robust in places, is still mostly gravel or dirt and subject to significant traffic issues. Travel time to visit the sites via helicopter can range from 20 to 80 minutes. Communications are challenging at best.

Our primary customers are two infantry battalions, the majority of a brigade support battalion, a large portion of two battalions of an engineering brigade, and a Polish brigade (with U.S. liaison officers). We also support provincial reconstruction and agricultural development teams, U.S. and coalition Special Operations Forces, U.S. Army Materiel Command elements, and various other small activities. In all, we support 8,000 U.S. and coalition forces personnel at more than 20 forward operating bases, combat outposts, and fire bases.

During recent unit changeovers, we engaged the arriving units with an aggressive customer education program geared toward the battalion staffs, company commanders, and company executive officers. We conducted numerous classes as the units arrived. One particular piece that piqued the units' interest was the process overview chart, which explains the steps involved in the requirement process.

Field Manual Interim, 4-93.42, Contracting Support Brigade (*CSB*), *Chapter-2*, states, "It is the responsibility of the requiring activities, not the CSB, to develop acquisition-ready requirements." The contracting community looks at this from a contracting perspective, emphasizing to the requiring activities that a good Statement of Work and funding (*Department of the Army 3953 Purchase Request and Commitment* (*PR&C*)) are needed for us to do our job. So we trained them, they thanked us for the training and the electronic tool kit we gave them, and we sent them on their way. A few weeks later the phone calls started, at first one or two, then enough to identify a systemic problem.

Procurement Players



Executing units do not understand how to validate, get approval, and fund requirements on time. Because we gave an overview of the process, they mistakenly thought we were the process owners. The unsigned PR&Cs started to flow in with the comment, "what else do you need from us?" or worse, "how long before the contract is in place?"

During our presentations, we assumed they had a basic understanding of the requirements process through their commands and staffs. We were just explaining our role and where contracting fits in the process. Instead, we found ourselves being asked to explain someone else's process.

We do not advocate contracting's involvement in the requirement approval process. The decision that Soldiers should sleep four instead of six in a B-Hut (barracks) or the number of nontactical vehicles allowed per unit, is, and should remain, within the command. However, for us to turn a requirement into a contract, that decision has to be made and funding applied. Getting the right approvals and the funding takes 75 percent of the time from an identified need to contractor performing.

We have had success with our collocated infantry battalion S4 (logistics) officer, but it was because of three factors:

- He is an outstanding junior officer who takes initiative and cares about Soldiers.
- His battalion's locations/missions makes them more reliant on contracted support.
- Our collocation allowed for daily meetings over several weeks.

These factors, although unique to this battalion, demonstrate the effectiveness of empowering junior leaders through knowledge. Their requirements get validated and funded faster than the other units, and the requirements are acquisition-ready.

Before deploying, battalion S4s and junior leaders need requirements processing training from their commands. They need to understand the process just like they do normal supply requests. This will help them plan accordingly and, when necessary, influence the process. Requirements management should not be considered only as a function of the brigade/division staffs. This training could be executed in their basic branch schools or as part of their predeployment training.

MAJ Andrew Carter is the RCC Sharana Chief. He holds a B.S. in management from the U.S. Military Academy and an M.B.A. from the University of California, Los Angeles. Carter is certified Level II in program management and Level I in contracting.

Executive Director Receives Decoration for Exceptional Civilian Service (DECS) Award

Danielle Oglevee

Edward G. Elgart, Executive Director of the U.S. Army Communications-Electronics Command (CECOM) Contracting Center, received the DECS Award during a ceremony at the Women in Military Service for America Memorial at Arlington National Cemetery, VA, on March 18, 2009.

Secretary of the Army (SecArmy) Pete Geren, assisted by LTG David H. Huntoon Jr., Director of the Army Staff (DAS), and Dr. Lynn Heirakuji, Deputy Assistant Secretary of the Army (DASA) for Personnel Oversight, presented Elgart and 16 other recipients with SecArmy Awards.

DECS is the highest award granted by the SecArmy to Army civilians. It is bestowed on recipients who have accomplished duties of major program significance to the Army that are exceptional among all others performing similar duties.

Elgart has dramatically enhanced the Army's ability to acquire research, development, production, and sustainment services of highly complex, state-of-the-art command, control, communications, computer, intelligence, surveillance, and reconnaissance systems for the Army, joint services, and coalition forces. As Executive Director and Principal Assistant Responsible for Contracting, Elgart manages more than 12,000 contracts valued at $260 billion and obligates more than $10 billion annually, much of it in support of ongoing operations in Iraq, Afghanistan, overseas contingency operations, and hurricane relief

SecArmy Pete Geren presents the DECS Award to Edward G. Elgart, Executive Director of the CECOM Contracting Center, as DAS LTG David H. Huntoon Jr. looks on, during the 2008 SecArmy Awards ceremony at the Women in Military Service for America Memorial, Arlington National Cemetery, March 18, 2009. (U.S. Army photo by C. Todd Lopez.)

efforts. He provides outstanding technical capability to the warfighter through prudent trade-offs between price, capability, quality, delivery, and past performance, saving more than $1 billion in the last 3 years through this best-value contracting method. Recognized for setting the standard across all levels of the Army, DOD, and the federal government, Elgart is consistently called on by these agencies to execute the most complex and crucial acquisitions.

Recognized as an Army subject matter expert for source selections, Elgart was appointed by the DASA for Procurement (DASA(P)) to chair the rewrite of the Army Source Selection Guide and to develop a comprehensive acquisition plan preparation guide, adopting best practices and acquisition business processes that he pioneered. His leadership brought a 56-percent reduced acquisition cycle time from requirement identification to contract award and an increase in business base from $6.15 billion in FY03 to more than $14.5 billion in FY07. Elgart's innovations, reduced cycle times, and cost savings contribute to rapidly providing Army warfighters with state-of-the-art equipment that increases their combat power and force protection and decreases mortality rates.

Elgart's ability to build coalitions and foster communication resulted in the CECOM Contracting Center attracting many customers from outside CECOM who rely on his leadership and visionary qualities for creative solutions. In that regard, the DASA(P) requested Elgart's acquisition expertise to lead the $1.35 billion procurement of the Army Recruiting and Advertising Program that supports recruitment and retention of a relevant and ready campaign-quality force for combatant commanders in support of the National Security and Defense Strategies.

Danielle Oglevee is a CECOM Contracting Center Procurement Analyst. She holds a B.A. in corporate communications from the College of Charleston and is Level III certified in contracting.

Army Procurement Desktop-Defense (PD2) Server Consolidation

Thomas Evans and Berry Dunbar

Since the mid-1990s, DOD has pursued a common system for contract writing automation. After a significant acquisition and development effort, all U.S. military branches began deploying the Standard Procurement System software PD2.

PD2 is a product of its time. Initially developed before the widespread use of the Internet for distributed applications, it is a classic example of a traditional, 2-tier client/server application. It was designed to operate in a local area network (LAN) with almost all application logic resident in the client computer. The very architecture of the client-server transaction requires the robust connectivity of a high-speed LAN and significant resources on the client's computer. Connectivity requirements, among other factors, dictated that each operational site install a PD2 server, along with support systems.

As a result, dedicated PD2 servers and the required support staff have reached high levels. The Army has more than 300 PD2 servers with an equal number of personnel maintaining and administering the program. PD2 and future versions under contract do not lend themselves, from an architectural point of view, to effective use in a wide area network.

The current Army implementation of the PD2 requires 321 individual servers and 319 support personnel at 80 installations. Labor costs total more than $12.7 million per year to support the contract writing system (CWS). The Army allocated more than $928,000 in FY03 to provide sites with upgraded versions of the application. Although the exact amount is unknown, installations spent significant additional dollars to upgrade physical servers. Previous experience indicates that major upgrades (and costs) occur approximately every 18 months. The cost of supporting the current CWS exceeds $16.2 million a year.

A consolidated CWS offers material and logical benefits to the Army. By moving to a modern, distributed system for contract writing, the Army takes advantage of a reduction in administrative, maintenance, and training costs. Server consolidation reduces the number of servers, sites, and server administrators. Initial estimates place these savings at approximately 50 percent per year.

Centralized sites will be protected by high levels of network and data security and will not be subject to the variances in local installations' security and backup policies. Moving to the consolidated server architecture to support CWS provides benefits of speed and productivity. System upgrades need occur at only two sites with no desktop upgrades needed. Redundancy of site data reduces user downtime during server upgrade requirements or system failures.

The consolidated PD2 environment will consist of data centers in Radford, VA, and Huntsville, AL. These centers will support approximately 8,300 users connecting from remote sites. Each Army site will have a unique database running on the new servers. The Radford data center will provide the primary support, while Huntsville will be the continuity of operations plan data center.

The hardware and software to support server consolidation has been purchased and is being installed. Migration of existing databases will start as soon as the new hardware has been accredited and will be phased in over 2 years.

Whatever the challenges, whether technical, budgetary, or environmental, it is clear that the move to a centrally housed CWS makes both economic and business sense. This plan offers cost savings and agility as well as the possibility of increased productivity and cost enhancements.

Thomas Evans is an Information Technology Specialist in the Deputy Assistant Secretary of the Army for Procurement (DASA(P)) Army Contracting and Transformation Enterprise Systems Directorate. He is Level II certified in contracting.

Berry Dunbar is a CACI employee providing service to the DASA(P) Army Contracting and Transformation Enterprise Systems Directorate. He holds a B.S. in industrial administration (management) from the University of Illinois, an M.S. in contract management from the Naval Postgraduate School, and an M.S. in management sciences from the University of Southern California. Dunbar is Level III certified in contracting.

Army Business Center for Acquisition Systems Improves Verification and Validation (V&V) Reporting

Stephanie Mullen

The *Federal Funding Accountability and Transparency Act of 2006* required the Office of Management and Budget (OMB) to create a free, publicly accessible Web portal, **USASpending.gov**, which made all FY07 public fund expenditures available on Jan. 1, 2008. OMB's administrator requested that all federal agencies and services describe their plans for ensuring the veracity of their data inputted to the Federal Procurement Data System-Next Generation (FPDS-NG) on the Web portal. The submissions were so diverse that OMB created an FPDS Data Quality Improvement Plan (DQIP) with FPDS elements to confirm data integrity and directed that all federal agencies and services submit their individual plan by July 2008.

The Defense Procurement and Acquisition Policy (DPAP) submitted its plan to OMB and directed all DOD services and agencies to submit a DQIP input on the certification, verification, and validation award data for 2008. At a minimum, the plan must reflect the quality goals and objectives, including FPDS-NG data V&V as compared to the contract file. OMB established 46 elements from FPDS-NG and DPAP included two elements for review.

Not to exacerbate the Army contracting community's workload, the Deputy Assistant Secretary of the Army for Procurement (DASA(P)) tasked the Army Business Center for Acquisition Systems (ABCAS) Software Engineering Center to use the Army Contracting Business Intelligence System (ACBIS) to create, in conjunction with FPDS, V&V reports and a reporting tool as part of the FPDS-NG elements in the DQIP. ABCAS successfully created the V&V reporting tool; however, the tool had its problems, especially when downloading and uploading numerous spreadsheets. The tool was time-consuming for V&V of FPDS-NG entries and troublesome for the contracting offices/commands to follow the detailed uploading process after completing V&V.

To improve the condition, ABCAS created the Acquisition Data Validation Tool (ADVT). Managed through the ACBIS Web portal operated by ABCAS, ADVT includes the 48 elements required to complete V&V consistent with the DQIP. Systems administrators and contract writing system super users have tested ADVT and their feedback was outstanding. The ABCAS team loads the V&V data and it becomes available 3 working days after the end of a quarter. The ABCAS team has also developed ADVT information and instruction bulletins and user guides.

ADVT is a tremendous step toward creating an automated reporting tool that meets DPAP and OMB requirements, expands the V&V reporting window, and is easy to use by the Army contracting offices. V&V requirements are making a difference on the award data accuracy that the Army is posting through FPDS-NG. The V&V reports are available and continue to be used by our contracting offices to gauge data integrity.

Stephanie Mullen is the former Director of the DASA(P) Army Contracting and Transformation Enterprise Systems Directorate. She holds a B.S. in accounting from Monmouth University and an M.B.A. from Fairleigh Dickinson University and is Level III certified in contracting. Mullen retired from federal service in May 2009.

Boomerang Warrior Helps Soldiers Detect Snipers

Valerie DeAngelis and Nathan Jordan

It was a clear and brisk day, perfect for a field demonstration of the Army's innovative Soldier-wearable shooter detection system—the Boomerang Warrior. Invited representatives from the U.S. Army, U.S. Navy, U.S. Department of Homeland Security, and various law enforcement agencies attended the event at the Fort Devens Shooting Range, Ayer, MA.

Contractor Bolt, Beranek, and Newman (BBN) Technologies developed the initial acoustic array technology under a Defense Advanced Research Projects Agency program. The innovative

The Boomerang III and Boomerang Warrior alert Soldiers of incoming sniper fire, providing accurate information on the shooter's location and giving Soldiers the opportunity to retreat to safety. Here, a Soldier returns to his vehicle, which is equipped with the mounted Boomerang III. (Photo courtesy of BBN.)

technology, called the Boomerang, has now been enhanced into the Boomerang III. The success of Boomerang III led the Army to seek a miniaturized version of the shooter detection system for the dismounted Soldier.

In response to a U.S. Army Natick Soldier Research, Development, and Engineering Center (NSRDEC) broad agency announcement, BBN submitted a concept paper and follow-on proposal to miniaturize Boomerang III into a device that could be worn by the individual foot Soldier. As a result, Bruce Buckland, NSRDEC project engineer, initiated procurement for the Natick Contracting Division (NCD) to broker a contract with BBN for further research and development into Boomerang III. Boomerang III estimates a shooter's range and elevation by comparing the timing of sound waves using miniature computer chips similar to those found in cell phones.

The Boomerang Warrior provides the same reliable performance and features as the vehicle-mounted Boomerang III system, but it's smaller, lighter, and integrated into tactical vests worn by the Soldier. Boomerang Warrior gives foot Soldiers an immediate warning of hostile fire locations and, when networked, can also provide unit leaders with the situational awareness needed to coordinate team responses to hostile fire. Incoming fire announcements are transmitted to an earpiece while a lightweight wrist display provides range, azimuth, and elevation coordinates of the shooter's position. As the Soldier moves, the system compensates for the Soldier's motion and continually updates the threat's location on the wrist display. A digital interface is also included to transmit shot coordinates to other situational displays.

As part of the event, a manikin dressed as a Soldier, complete with an armored vest, assault pack, and the Boomerang Warrior, was placed downrange. A BBN employee, acting as the shooter, took shots from various positions on the range to determine if the Boomerang Warrior sensors could accurately identify his location. Guests, who were in the test site tent far removed from the shooting, could observe on a computer what a Soldier would hear in his earpiece and see on his wristband while under sniper fire. This information was similar to what a network-connected command center would observe during an actual attack. To demonstrate its accuracy, the manikin was turned sideways and only the shoulder sensor closest to the shooter recorded the gunfire. The beauty of the dual-shoulder system approach is that it reports only the two best solutions for optimum performance.

The contributions of this technology will help to ensure the safety of our Soldiers, in both a mounted and dismounted capacity.

Valerie DeAngelis is a U.S. Army Research, Development, and Engineering Command (RDECOM) NCD contract specialist. She holds a B.A. in political science from Rhode Island College and is Level II certified in contracting.

Nathan Jordan is a second-year U.S. Army Civilian Training, Education, and Development System intern working as an RDECOM NCD contracting specialist. He holds a B.S. in science from Framingham State College and is Level I certified in contracting.

Editor's Note: BNN Technologies personnel contributed to this article.

Federal Employees Incorporate *Recovery Act* Into the *FAR*

Ann Budd

On Feb. 17, 2009, President Barack Obama signed the $787 billion *American Recovery and Reinvestment Act of 2009* (*Recovery Act*) into law. Its intent was outlined by Congress on Feb. 2, 2009: "This legislation will create and save jobs; help state and local governments with their budget shortfalls to prevent deep cuts in basic services such as health, education,

and law enforcement; cut taxes for working families; and invest in the long-term health of our economy." To lessen the fears of the American public concerning oversight of taxpayer dollars, the summary also stated that the *Recovery Act* would provide "unprecedented oversight, accountability, and transparency to ensure that taxpayer dollars are invested effectively, efficiently, and as quickly as possible."

Federal employees have been working feverishly to incorporate the provisions of the *Recovery Act*, also known as the stimulus package, into the *Federal Acquisition Regulation* (*FAR*). This was accomplished through the opening of five new *FAR* cases whose interim rules were published in the *Federal Register* on March 31, 2009, as part of *Federal Acquisition Circular* (*FAC*) *2005-32*. This was an unprecedented effort that was completed in 42 days.

The following five *Recovery Act* interim rules were issued in *FAC 2005-32*:

- **Buy American Requirements For Construction Material (*FAR* Case 2009-008)**. This rule implements *Section 1605*, prohibiting the use of funds appropriated for any project for the construction, alteration, maintenance, or repair of a public building or public work unless all of the iron, steel, and manu factured goods used in the project are produced in the United States. However, there are certain caveats. It specifies that this requirement be consistent with U.S. obligations under international agreements that the least developed countries be the exceptions and treated as designated countries. Waivers are permitted under one of three specific circumstances.
- **Whistleblower Protections (*FAR* Case 2009-012)**. This rule implements *Section 1553*, revising *FAR Subpart 3.9* by adding *Section 3.907*, which provides procedures for whistleblower protection when using funds appropriated or otherwise provided by the *Recovery Act*. *Section 3.907* specifies that nonfederal employers are prohibited from discharging, demoting, or discriminating against employees as a reprisal for disclosing certain covered information to certain categories of government officials.
- **Publicizing Contract Actions (*FAR* Case 2009-010)**. This rule implements the Office of Management and Budget's guidance *M-09-10, Initial Implementing Guidance for the Recovery Act, Section 6.2*. *FAR Part 4* requires the contracting officer (KO) to enter data in the Federal Procurement Data System (FPDS) on any action funded in whole or in part by the *Recovery Act*, in accordance with the instructions included on the FPDS Web page. *FAR Subpart 5.7* directs the KO to use the governmentwide point of entry to download specific information. *FAR Parts 8*, *13*, and *16* have been amended to reflect the new posting requirements for orders at *Subpart 5.7*.
- **Reporting Requirements (*FAR* Case 2009-009)**. This rule implements *Recovery Act*, *Section 1512, Division A*, requiring contractors to report on funding received. A new *FAR Subpart 4.15* and *Clause 52.204-11*, *Recovery Act Reporting Requirements*, have been added. All nonclassified solicitations and contracts, commercial and commercial-off-the-shelf contracts, and Simplified Acquisition Threshold actions, funded in whole or in part by *Recovery Act* funds, must include the new clause.
- **Government Accountability Office/Inspector General (GAO/IG) Access (*FAR* Case 2009-011)**. This rule implements *Sections 902*, *1514*, and *1515*, providing for the audit and review of both contracts and subcontracts and to interview contractor and subcontractor personnel under contracts containing *Recovery Act* funding. Three new alternate clauses have been added: *52.212-5*, *Contract Terms and Conditions Required to Implement Statutes or Executive Orders-Commercial Items; 52.214-26*, *Audit and Records-Sealed Bidding*; and *52.215-2*, *Audit and Records-Negotiation*. They provide specific authority for the Comptroller General to audit contracts and subcontracts and to interview contractor and subcontractor employees under contracts using *Recovery Act* funds. The same authorities also apply to federal IGs, with the exception of interviewing subcontracting employees.

Although not part of the *Recovery Act*, an additional item was also included in *FAC 2005-32*: *GAO Access to Contractor Employees* (*FAR Case 2008-026*). It implements *Section 871* of the *Duncan Hunter National Defense Authorization Act for FY09* (*Public Law 110-417*) by amending *FAR Parts 12* and *52*. Modifications to *Clauses 52.215-2*, *Audit and Records-Negotiation*, and *52.214-26*, *Audit and Records-Sealed Bidding*, allow GAO to interview contractor employees when conducting audits. The rule will not apply to the acquisition of commercial items and is reflected in *FAR Subpart 12.503*.

The implementation of these interim rules should provide the "unprecedented oversight, accountability, and transparency" that President Obama and Congress intended and "ensure that taxpayer dollars are invested effectively, efficiently, and as quickly as possible."

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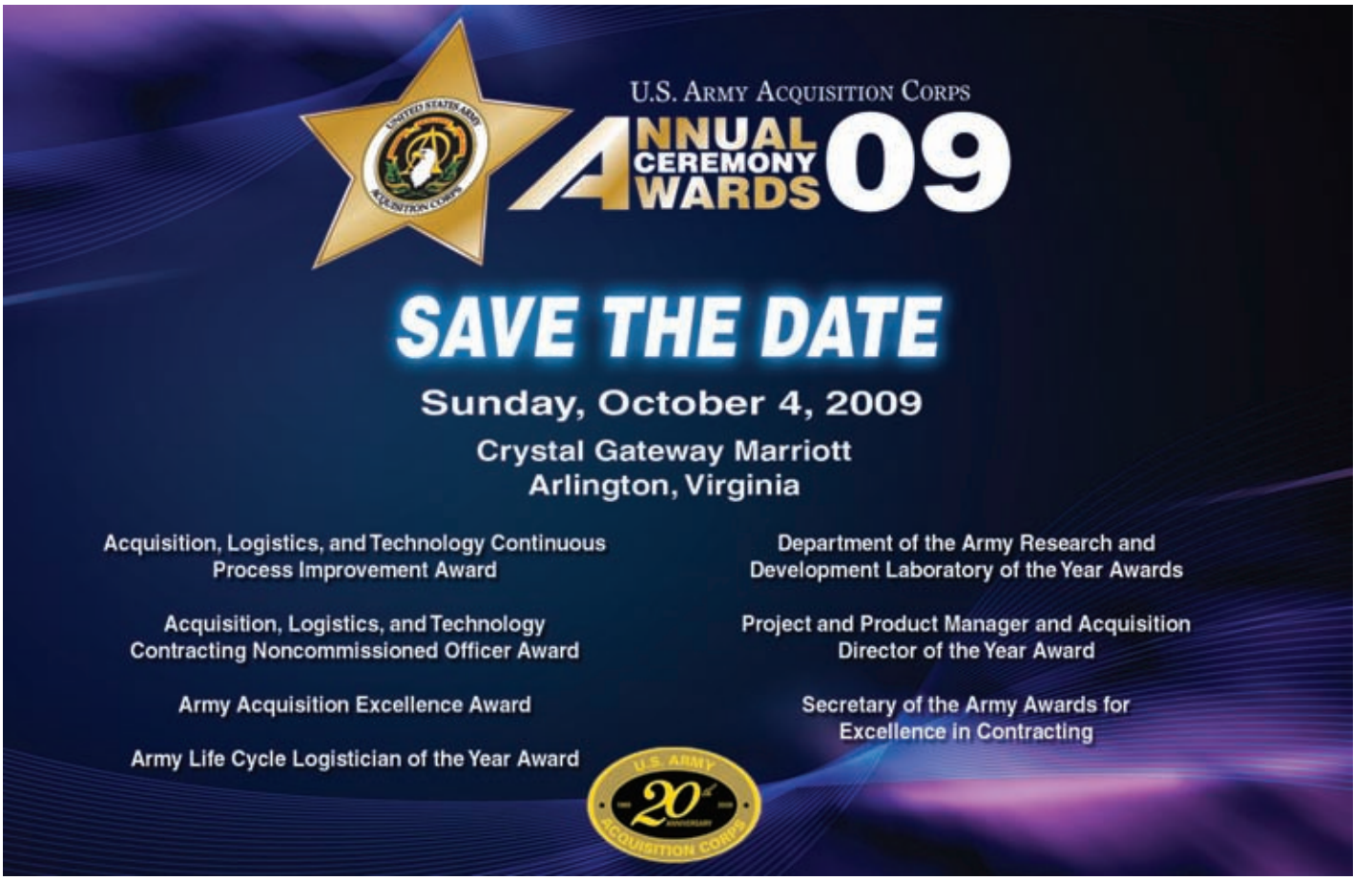
ASAALT Leaders Past and Present

A recent promotion ceremony brought together former and current Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASAALT) leaders. Shown here (left to right) are former Military Deputy (MILDEP) GEN Paul J. Kern (U.S. Army, Ret.), current Principal MILDEP LTG N. Ross Thompson III, former ASAALT Paul J. Hoeper, former ASAALT Claude M. Bolton Jr., former MILDEP LTG John S. Caldwell Jr. (U.S. Army, Ret.), and current Acting ASAALT Dean G. Popps. (U.S. Army photo by Steve Lusher, a contractor providing support to the Joint Program Executive Office Chemical and Biological Defense.)



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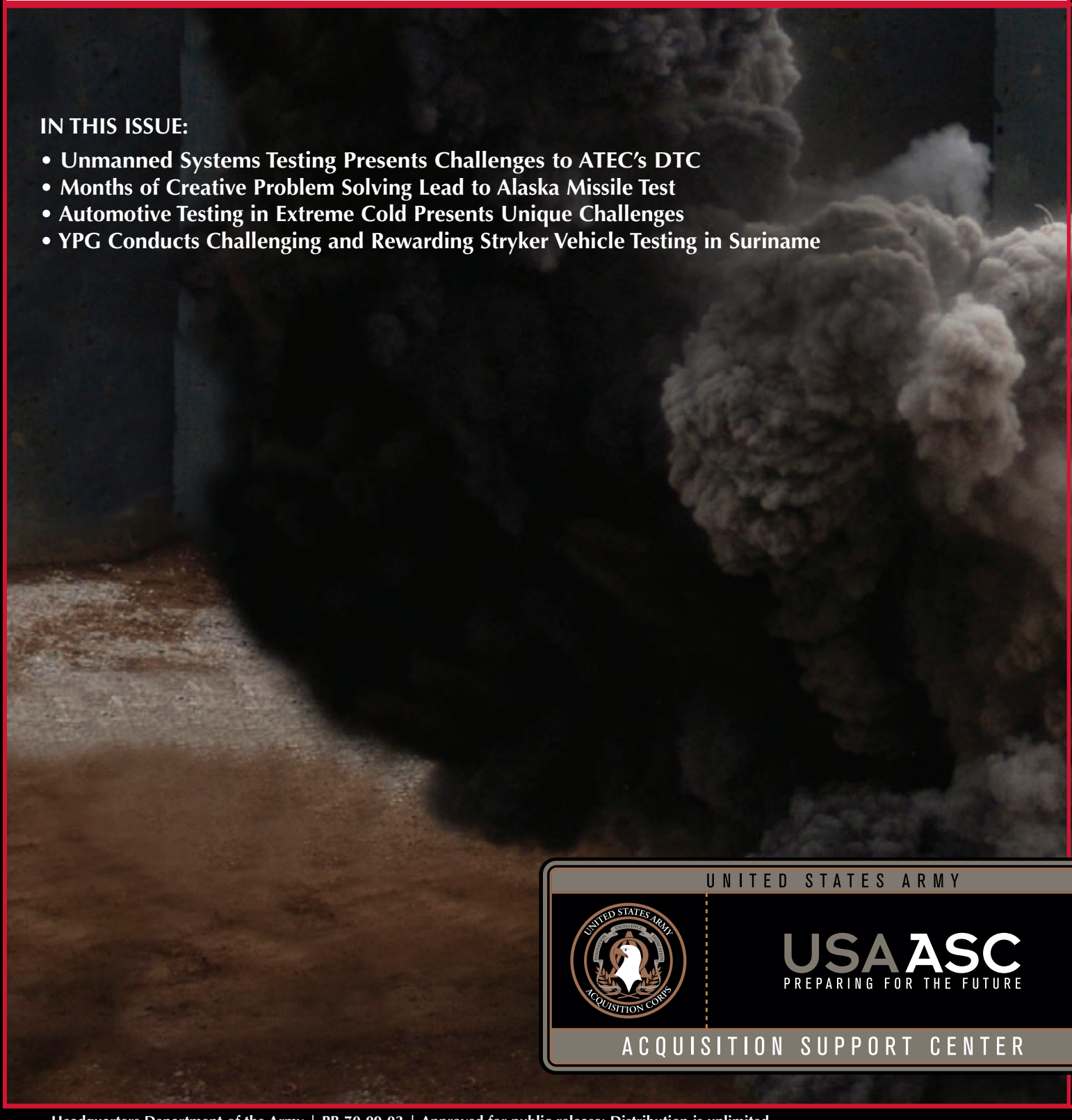

IN THIS ISSUE:

- **Unmanned Systems Testing Presents Challenges to ATEC's DTC**
- **Months of Creative Problem Solving Lead to Alaska Missile Test**
- **Automotive Testing in Extreme Cold Presents Unique Challenges**
- **YPG Conducts Challenging and Rewarding Stryker Vehicle Testing in Suriname**

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