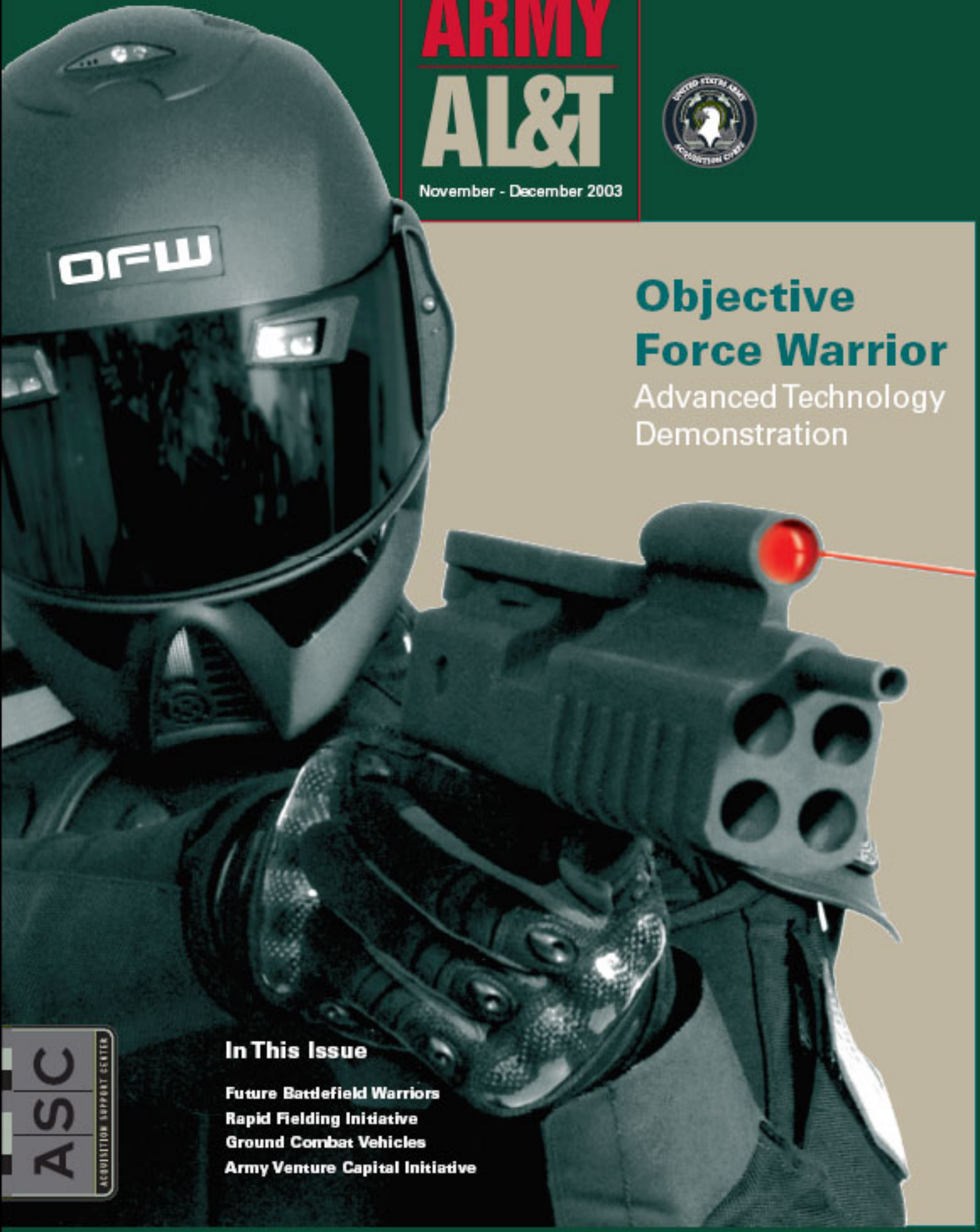
ARMY AL&T

November - December 2003



Objective Force Warrior

Advanced Technology Demonstration

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From the Army Acquisition Executive

Operational Challenges Fuel Battlefield Ingenuity and Innovation

As the U.S. Army Theme states, "We are at war. Our individual and organizational approach to our duties and tasks must reflect the seriousness and sense of urgency characteristic of an Army at war. Our Soldiers and Nation deserve nothing less."

Every day America's Soldiers put mission, unit and country first. They are serving with distinction in Iraq and Afghanistan, the Balkans, Kuwait, the Sinai, and Korea — in 120 countries throughout the world. They face threats that change, quite literally, overnight, and their skill in meeting these challenges fills us all with pride. Let me give you an example.

When SFC James Hamilton's unit, the 762nd Transportation Co., delivered rations and water to troops in Iraq, it continuously received some type of small-arms and rocket-propelled grenade fire. So Hamilton and the Soldiers in his Army Reserve unit started to gather excess parts and materiel and applied them to their vehicles for improved survivability.

"The command received word of what we were doing and our commander gave us the green light to continue," said Hamilton. "We're getting ready to modify the design of the trailer with two Mark-19s (automatic grenade launchers) and two additional SAWs (Semiautomatic Assault Weapons)."

"Other vehicles, to include Humvees and Heavy Equipment Transporters, known as HETs, were also modified to mount M249 squad automatic weapons and M2 50-caliber machine guns. The operators of the vehicles have qualified with the new weapon platforms at a [firing] range and are fully mission capable for defending convoys," Hamilton concluded.

SGM Robert D. Casher, operations sergeant major for the 32nd Transportation Group remarked, "This is Soldier ingenuity at its best."

It is this "ingenuity," mixed with the rapid acquisition of new technology, that is saving Soldiers' lives in Iraq and Afghanistan. Interceptor Body Armor (16.4 pounds) has replaced the flak jacket (25.1 pounds). This lighter weight armor provides more upper body mobility to the Soldier and greater protection. I have talked with Soldiers who are alive today because they wore body armor. Our goal is to provide all Soldiers with this same protection.

The Army's Force XXI Battle Command Brigade and Below (FBCB2) system is also saving lives. As a major component of the Blue Force Tracking (BFT) system deployed in support of *Operation Enduring Freedom* and *Operation Iraqi Freedom*, FBCB2 provides timely, relevant battle command information that enables informed decisions and facilitates integration of all forces. It has been hailed by Soldiers and commanders as an indispensable warfighting tool. A Marine intelligence officer may have said it best, "Counterbattery radar picked up rounds going through the Marine sector. Prior to firing upon, I checked BFT and discovered that a 3rd Infantry Division unit had crossed into the Marine sector and was engaging the enemy."

The accomplishments of our brave men and women in uniform are truly remarkable. That is one reason why the Rapid Equipping Force (REF) works day and night to quickly find innovative ways to increase combat capabilities while making the tasks performed by our Soldiers safer and easier.

Created just 18 months ago, REF works directly with operational commanders to find promising technology solutions to identified operational requirements. Instead of bringing a "one-size-fits-all" mentality to an urgent operational requirement, REF representatives in Afghanistan, Kuwait and Iraq have fulfilled more than 50 equipping requirements either directly or in conjunction with existing project and program offices. Some requirements have been for items as sophisticated as the Rapid Aerostat Initial Deployment, a 360-degree surveillance device suspended from an Aerostat balloon or attached to a tower, to something as low cost as commercial-off-the-shelf Personal Digital Assistants with programmed menus of mission-oriented phrases in local dialects.

In addition to the robot platforms that were first used to clear caves, compounds and bunkers in Afghanistan in 2002, technologies that REF brought to operational commanders in 2003 include a Soldier survivability electronic protection system that neutralizes improvised enemy explosive devices, state-of-the-art hand-held thermal viewers, countersniper devices, a remote video system that enables Soldiers to search for weapons in wells and other inaccessible areas and special shims that enable Soldiers searching for weapons in Iraq to nondestructively open padlocks. Capitalizing on its theater support team in country, REF delivered the last item to Soldiers to use on patrol within 24 hours of getting the requirement.

We must continue to work tirelessly to identify future force capabilities for the U.S. Army that should be put in the field now — not years from now. "We are at war. Our individual and organizational approach to our duties and tasks must reflect the seriousness and sense of urgency characteristic of an Army at war. Our Soldiers and Nation deserve nothing less." (U.S. Army Theme)

Claude M. Bolton Jr.
Army Acquisition Executive

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To contact the Editorial Office:
Call (703) 704-0110/0114/0128/0129 or
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Articles should be submitted to:
DEPARTMENT OF THE ARMY, ARMY ALT, 9900
BELVOIR RD, SUITE 101, FORT BELVOIR, VA 22060-5567.

Our fax number is (703) 704-0135.
E-mail: **army.alt.magazine@asc.belvoir.army.mil**.

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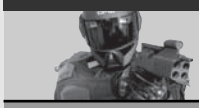

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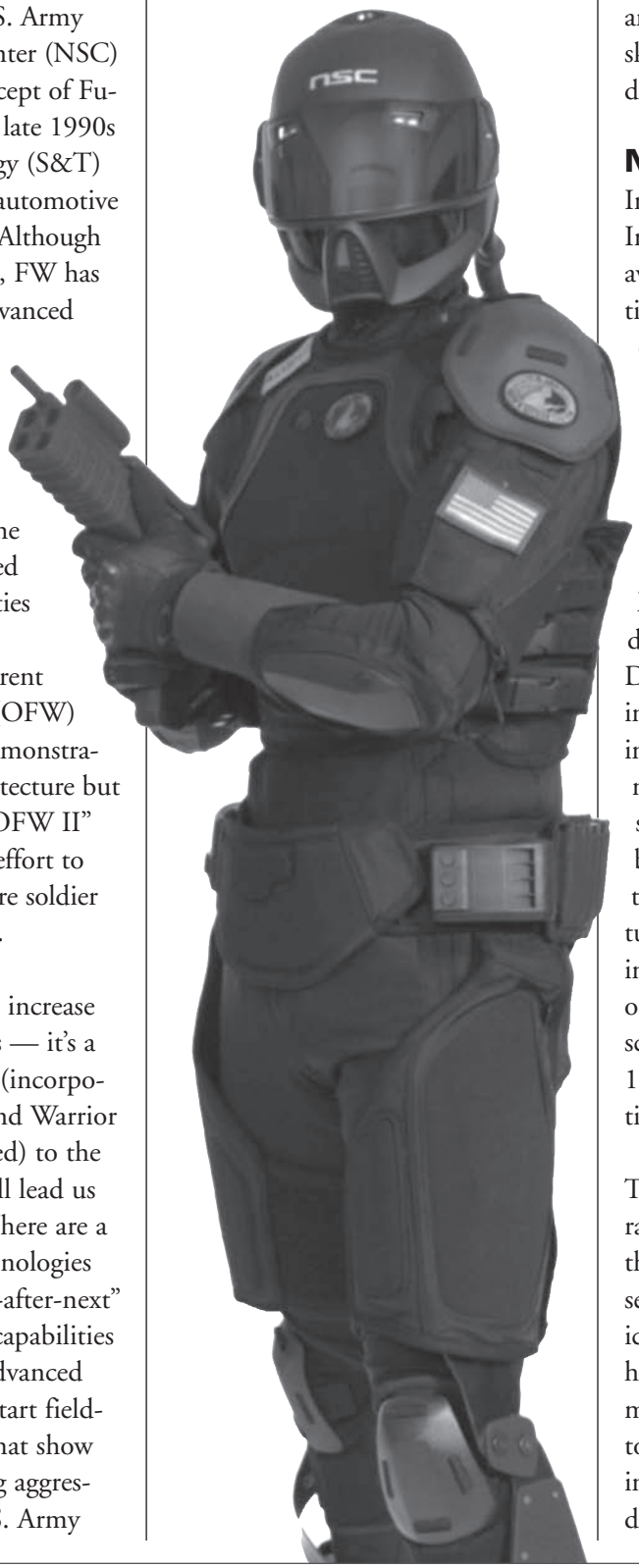
Future Battlefield Warriors

Jean-Louis DeGay

Engineers at the U.S. Army Natick Soldier Center (NSC) developed the concept of Future Warrior (FW) in the late 1990s as a science and technology (S&T) "platform" similar to the automotive industry's "concept car." Although not a formalized program, FW has become a way to track advanced military and commercial technologies to generate ideas about what warriors of 2025 may look like and the capabilities they may possess. The goal is to identify advanced technologies and capabilities that may not be mature enough to fit into the current Objective Force Warrior (OFW) Advanced Technology Demonstration (ATD) System/Architecture but show great promise for "OFW II" (i.e., the follow-on S&T effort to the current ATD) or future soldier systems even beyond that.



The FW is not simply an increase to the OFW's capabilities — it's a complete transformation (incorporating current soldier, Land Warrior Blocks I-III lessons learned) to the cutting-edge FW who will lead us into the next 20 years. There are a number of advanced technologies that will provide "decade-after-next" soldiers with leap-ahead capabilities over the Land Warrior Advanced Capability scheduled to start fielding in 2010. The areas that show greatest promise are being aggressively pursued by the U.S. Army and include nanotechnology, exoskeletons and full-spectrum individual protection.

Nanotechnology

In August 2001, the Massachusetts Institute of Technology (MIT) was awarded the U.S. Army's competition to research and develop nanotechnologies for fiber production. The Institute for Soldier Nanotechnology (ISN) began as a $50 million proposal, with industry contributing an additional $40 million in funds and equipment. ISN is a collaboration among MIT, the U.S. Army and other industrial organizations such as DuPont, Raytheon and Dow Corning. ISN's primary goal is to create innovations in nanoscience and nanotechnology in a variety of survivability-related areas that will be harvested by the partners for future Army application. Nanostructured or nanophase materials have internal structural features that are organized on the nanometer size scale. A nanometer is equal to 1/1,000,000,000 meter, or about 10 times the size of an atom.

This research will integrate a wide range of functions, including multithreat protection against ballistics, sensory attack, chemical and biological agents; climate control (cooling, heating and insulating); biomedical monitoring and load management to enable a revolutionary advance in soldier survivability through the development of novel materials for

integration into the FW systems. These technologies will translate into a one- or two-layered "smart" uniform that is soft and pliable like a traditional textile, yet provides ballistic and chemical protection, strength augmentation and adaptive (i.e., chameleon-like) camouflage. Concurrently, NSC is conducting nanotechnology research on nanocomposites to replace soft and hard body armor for protection, nanofiber membranes with nanoscale decontaminants for chemical decontamination, nanophotonics for laser eye protection and nanobarrier films for food packaging and protection.

Exoskeleton

Throughout history, one of the greatest challenges and limitations for soldiers, especially infantrymen, has been physical load. How much weight can a soldier carry and still accomplish his mission? As warfare becomes increasingly urban and advanced technologies make the battlespace wider and deeper, soldiers will be unable to depend on vehicles for protection, mobility, fire support and materiel resupply. Under current doctrine, soldiers are required to march 3-4 miles per hour carrying as much as 100-plus pounds of equipment. Exoskeleton-equipped soldiers would be capable of moving approximately three times faster while carrying more than double the current load with minimal actual stress to their bodies.

In Spring 2001, the Defense Advanced Research Projects Agency distributed the first grants from its $50 million, 5-year commitment contract to study and construct an exoskeleton. In nature, an exoskeleton is an external hard shell supportive covering of an animal. In this context, it's a powered mechanical, external support structure for soldiers. The system will assist pack-loaded locomotion, prolong locomotive endurance, increase locomotive speed and augment human strength. The system will be holistically designed with the soldier wearing it as an outer skin. Rather than operate it with joysticks, a haptic interface (a suite of sensors throughout the system would be activated by touch or contact to the skin) will allow the exoskeleton to become an extension of the soldier and his natural movements.

This pursuit has tremendous advantages for our soldiers. The exoskeleton would allow hard points to fasten armor for greater full-body protection, heavy weapons for increased lethality and the ability to carry greater loads (upwards of 400 pounds).

Other Technologies

While nanotechnology and the exoskeleton comprise two "pillars" of leading FW technologies, there are several other technologies that give the FW never-before-seen abilities. FW will take advantage of 3-D body scanning to produce a system that is tailored to each individual, from the electrospun combat uniform to the biomechanically engineered helmet, microturbine power generation, electrically conductive textiles capable of data and power transmission and active heating or cooling. Building on OF hardware and software systems, FW systems will act as remote triage stations. The uniform and onboard computer, tied into the tactical network, can recommend care and be teleoperated by medics to provide needed life-saving or life-sustaining measures. The FW will achieve oxygen exchange via a closed-loop breathing apparatus that negates the need for protective masks or filters. An onboard advanced personal weapons system with voice activation will contain five tubes of soft-launched, 15mm intelligent "fire-and-forget" munitions paired with a magazine of 4.6mm kinetic energy projectiles. NSC is also pursuing biotechnology research that will allow biosensors to be embedded in textiles to detect biological and chemical agents and toxic industrial chemicals and materials. NSC is also incorporating novel materials to enable textiles to self-decontaminate chemical agents and other toxic materials. These combined technologies will allow the FW to operate as an Army of One.

Soldiers, now viewed as a system-of-systems, will continue to be the foundation of future Army formations. The only way we can ensure soldiers are on the cutting edge of advancing science and technology is to constantly look toward future technology applications and adaptations. Today's and tomorrow's programs must address soldiers' concerns and feedback from the environments they work in. To be successful, FW must explore leading-edge technologies, making astute assumptions about future soldier requirements and battlespace employment. Only then can we maintain the combative edge of the unrivaled platform we call the Soldier.

JEAN-LOUIS "DUTCH" DEGAY is an Equipment Specialist in the OFW Technology Program Office at NSC. He has a B.A. in global political science from the University of Georgia.

Land Warrior-Stryker Interoperable Risk Reduction Strategies

COL Theodore E. Johnson and LTC David L. Gallop

The technology to provide soldiers with integrated and modular ensembles that offer unprecedented lethality by leveraging networked information has existed since the early 1990s. Integrating the technology has been difficult. The most recent attempt was Land Warrior-Initial Capability (LW-IC). LW-IC was unable to meet reliability requirements during developmental testing because hardening commercial hardware and software — while balancing functionality, space, weight, power and balance requirements — was extremely difficult. As Land Warrior moves forward into the development of Land Warrior-Stryker Interoperable (LW-SI), the program is incorporating lessons from the LW-IC failures and applying risk reduction techniques to product development.

LW-SI will be developed and tested in small, manageable bites. For example, one challenging requirement for LW-SI is the integration of a laser and radio frequency (Laser-RF)-based combat identification system. The LW-SI risk reduction strategy is to integrate existing Laser-RF technology into LW-IC ensembles to identify and isolate the technical difficulties early (within 7 months after contract award).

Another high-risk requirement is integration of networking, communications and power within the 10 Stryker configurations through a Land Warrior Vehicle Interface Kit (VIK). Rather than develop an operational requirements document-compliant VIK over a 3-year period and identifying real-world problems weeks before formal test, LW-SI will develop and test a Prototype VIK (Proto-VIK). Proto-VIK's objective is to force Land Warrior and Stryker engineers to work together inside the vehicle to deliver a functioning product prior to critical design review. The Proto-VIK will only provide a small fraction of the required capability but exercises the necessary engineering and organizational coordination to validate design assumptions.

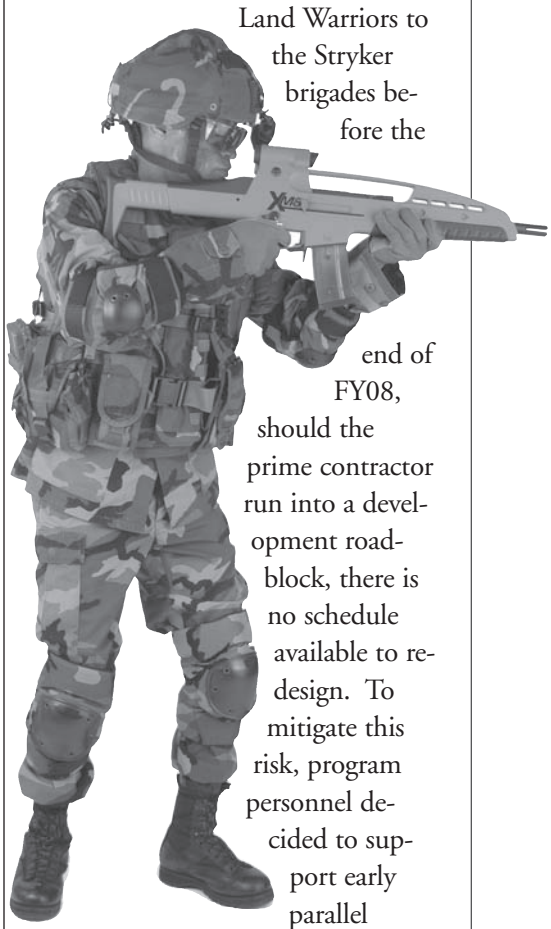
Test Exerciser

Land Warrior is developing a handheld leader planning tool — the Commander's Digital Assistant (CDA). The CDA uses Army standard hardware and hosts Land Warrior software. Since the hardware is fully mature, the CDA serves as a stable host to exercise Land Warrior command, control and communications (C3) functions. The CDA can provide real-world information on wireless network capacity, message formatting, graphic user interfaces and supportability. The CDA facilitates low-cost Land Warrior analogous information.

The 82nd Airborne Division used CDAs in Iraq. Their feedback on planning and communications requirements applies directly to LW-SI risk reduction. Having the ability to exercise hundreds of CDAs provides insights to LW-SI supportability. Those insights feed the LW-SI detailed design.

Early Parallel Development Paths

Given the HQDA mandate to field Land Warriors to the Stryker brigades before the end of FY08, should the prime contractor run into a development roadblock, there is no schedule available to redesign. To mitigate this risk, program personnel decided to support early parallel



development paths for the most challenging requirements — power, voice control, collaborative planning, weight reduction and combat identification. The program office is exploiting technology base expertise at the Army Research and Development Center at Fort Monmouth, NJ, for these parallel paths. This allows the prime contractor, who has total systems integration responsibility, to focus on the primary development path and monitor parallel path progress. The prime contractor, using the systems engineering and integrated product and process development processes will determine if, when and what efforts from the parallel paths will migrate to the primary path.

The parallel path efforts begin after system preliminary design review and last approximately 9 months. Each of the paths results in a prototype demonstration prior to system critical design review in the third quarter of FY04.

Risk Reduction Relationships

The internal LW-SI program risk reduction efforts support a lower risk development of the Land Warrior-Advanced Capability (LW-AC) program. LW-AC is the revolutionary capability plan of the Objective Force unit of action (UA). Both the LW-AC and LW-SI programs take advantage of technologies matured under the Objective Force Warrior Advanced Technology Demonstration (OFW ATD). The OFW ATD will feed LW-SI evolutionary improvements as early as FY06 and provide a foundation for revolutionary improvements for LW-AC.

The Army restructured the Land Warrior program in FY03 to facilitate a lower risk approach that follows a build a little, test a little approach. The program will exploit the CDA as model for Land Warrior to get real world, analogous data on C3 and supportability immediately. Early, short-duration parallel development paths yielding working prototypes mitigate some of the riskier technologies. Close coordination between the OFW ATD and Land Warrior programs will reduce the risk of fielding LW-AC to the UA and reduce the risk that LW-SI capabilities will become obsolete.

COL THEODORE E. JOHNSON is the U.S. Army's Project Manager Soldier Warrior. He has a B.A. in psychology from Upsala College, an M.S. in international relations from Troy State University and an M.S. in national resource strategy from the Industrial College of the Armed Forces, where he was a distinguished graduate.

LTC DAVID L. GALLOP is the U.S. Army's Product Manager Land Warrior. He has both an M.S. in aeronautics and M.B.A. from Florida Institute of Technology and is a graduate of the U.S. Army Command and General Staff College. Gallop brings more than 10 years of system acquisition experience to Land Warrior and is a member of the International Council of Systems Engineers.

Defining the Objective Force Soldier: TRADOC and the Objective Force Warrior Advanced Technology Demonstration

MAJ Marco J. Barrera and CPT Vincent Grizio

"Soldiers are the centerpiece of our formations."

The Army Vision

Defining the soldier concepts and requirements within the Objective Force (OF) is a daunting task. However, the U.S. Army Training and Doctrine Command (TRADOC) and the science and technology (S&T) community are in close partnership to help provide the answers. In fact, TRADOC and the Army Natick Soldier Center have been working together since the early planning of the Objective Force Warrior (OFW) Advanced Technology Demonstration (ATD) 2 years ago when both communities participated in developing the ATD's exit criteria. Through the OFW ATD, TRADOC, the S&T community and industry are set to refine the soldier operational concepts and user requirements and, ultimately, conduct a technology demonstration that provides the answers to the operational requirements for the OF soldier.

Where the unit of action (UA) operational and organizational (O&O) concept stops, the soldier operational concept begins. Currently, the Future Combat Systems (FCS) UA O&O describes the operational context for the FCS-enabled OF brigade and battalion but does not provide the detail required for small units at company level and below. The soldier and small-unit operational concept developed by TRADOC in conjunction with the OFW ATD will set the conditions for operational requirements that will add the right fidelity to the soldier described in the UA O&O.

> The OFW ATD seeks to exhibit connectivity within the command, control, communications, computers, intelligence, surveillance and reconnaissance network of the UA and Future Force.

The Soldier Concept and the UA O&O

Even in the OF, the dismounted soldier in close combat will continue to possess the greatest operational need. The TRADOC Systems Manager-Soldier (TSM-S) and the Infantry Directorate of Combat Developments (DCD) are developing the third increment of the Land Warrior program and are addressing the operational concept and potential requirement deficiencies OF soldiers may have. The OFW ATD leads the S&T effort to feed mature, advanced technologies into the Land Warrior program. Through direct OFW ATD involvement, the TSM-S will synchronize TRADOC development efforts with this ATD's spiral development process to continuously refine and validate operational concepts and requirements for soldiers and small unit operations.

Army transformation has initiated many programs to make the OF a reality. The UA O&O and the FCS Operational Requirements Document (ORD) provide the requirements for many of the UA platforms and enabling systems. TSM-S and DCD are spearheading the operational concepts and requirements effort for the OF soldier and small unit. The current OF soldier concept documents feed updates into the UA O&O Modes of Maneuver, Chapter 6.3.3.3, and further define soldier capabilities within the FCS UA structure at company level and below. Annex E of the UA O&O addresses the proposed soldier-borne ensemble capabilities, which is an integrated combat uniform that provides individual connectivity to the network, reduced weight through the integration of requirements for soldier systems, greater integrated body armor and better power sources. The user envisions soldier and small-unit operational concepts that describe dismounted, mounted, dismounted supported by mounted, mounted supported by dismounted, aerial envelopment operations and three more additions that include deployment preparations, forced entry operations and sustainment operations. The user envisions further concept refinements to provide a stand-alone soldier operational concept for the OF developed under the Soldier-as-a-System (SaaS) concept documents.

The OF soldier concepts, nested with the FCS UA O&O, will provide the detail missing in many OF documents because it shows how the individual soldier and leader will function within the FCS-enabled OF. This concept shows the integration of the soldier with his soldier-borne equipment and interoperability with FCS family of vehicles and FCS complementary systems. This integration and interoperability enables the soldier's continued role as an integral player in combined arms operations.

Soldier Requirements and the FCS ORD

Not until the OFW ATD and TRADOC's approval of the SaaS Integrated Concept Team (ICT) requirements management process did soldier requirements evolve in a holistic sense. Prior to integration through the SaaS ICT management process, fielding new equipment to a soldier was analogous to hanging additional ornaments on a Christmas tree. The paradigm shift focuses on centrally managing all soldier requirements. The SaaS ICT performs this task with participation from all TRADOC centers and schools. The Joint Capabilities Integration and Development System and TRADOC Pamphlet 71-9, *Force Development Requirements Determination*, provide the current guidance for requirements development. The SaaS ICT provides a custom-tailored approach to this requirements development guidance to address the unique complexities involved with managing SaaS.

The current draft version of the *Land Warrior Block III ORD* consolidates many of the baseline soldier requirements for the OF soldier. *The Land Warrior Block III* requirements document provides the next spiral development of the Land

Warrior program. The Land Warrior Block I and II design addressed close combatants and their vehicle interoperability. Land Warrior Block III evolves to provide OF capabilities to all soldiers — from infantrymen to combat service support soldiers.

The user continues the operational concept effort of streamlining soldier processes through integration of required operational capabilities. A system-of-systems approach ensures continuous integration of required capabilities to increase functionality while reducing weight, space, power requirements and logistic footprint. This effort includes integration of different requirements within this document including the approved Blocks I and II and integration of soldier-related requirements from multiple proponents.

As soldiers begin to perform multiple tasks in support of their missions, the requirements for all soldiers become more common. Requirements normally reserved for infantry soldiers are finding a place with combat service supporters and vice versa. In essence, the requirements address everyone, but to ensure that the "Christmas tree" approach does not continue, TRADOC, in conjunction with the OFW ATD, is working to provide an integrated soldier-borne system with common capabilities that will address the requirements for all OF soldiers. Integrated soldier system development continues by addressing additional requirements for specific military occupational specialty functions layered on top of the common soldier-borne ensemble. Primarily designed for all soldiers in the UA, the Land Warrior Block III vision includes airborne, air assault and special operations units. To further develop Land Warrior Block III requirements, the SaaS ICT is working with all proponents to fully address requirements for all soldiers.

The Way Ahead

Through early collaboration between TRADOC and the OFW ATD communities, the conditions for defining the operational requirements and concepts for the OF soldier are becoming a reality. The soldier and small-unit operational concepts and requirements developed early on by TRADOC assist the S&T community in focusing their development efforts. Conversely, the S&T community will provide answers and reality checks on the future force capabilities provided by the concept and requirement writers. This exchange will drive spiral developments for multiple revisions of the operational requirements and the technology. Phase II of the ATD will conclude with system design lock and Phase III will deliver prototypes for a limited systems demonstration that will provide the first glimpse at the OF soldier. This demonstration will showcase an integrated soldier-borne combat ensemble and its interoperability with FCS enablers that will project the soldier into the OF. The end result marries operational requirements with technological solutions so that soldiers and their supporting systems are better integrated to provide greater lethality, survivability, mobility, sustainability and command and control.

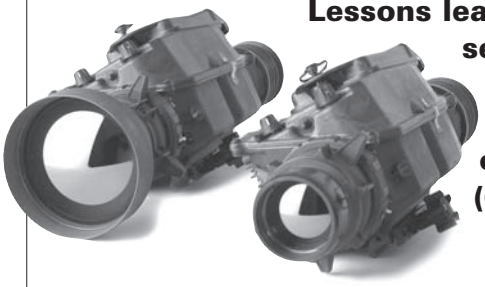
Defining the OF soldier requires answering many hard questions and understanding the daunting requirements for operating in a network-centric, FCS-enabled OF. However, careful thought, concept development, analysis and technology maturation will help refine the soldier's requirements as an interoperable member of the FCS-equipped OF. The developing soldier and small-unit concepts and requirements documents, nested within TRADOC's OF operating capabilities provides the azimuth to guide the S&T community and ensures an integrated soldier concept within the current OF concept documents. The consolidated efforts of TRADOC organizations, the S&T community and industry will help reveal the answers to the hard questions. The resulting systems will enable the soldier and small unit to dominate all opponents with overmatching capability in warfighting environments anticipated during the next 20 years.

MAJ MARCO J. BARRERA is an Assistant TSM-S for Land Warrior Block III. He has a B.S. in engineering management from the U.S. Military Academy and an M.S. in management information systems from Auburn University. Other education includes completion of the Material Acquisition Management Course.

CPT VINCENT GRIZIO is an Assistant TSM-S for Land Warrior Block III. He has a B.A. in marine science and business administration from the University of Miami. Other education includes completion of the Army Acquisition Basic Course.

The Rapid Fielding Initiative

COL Gregory J. Fritz

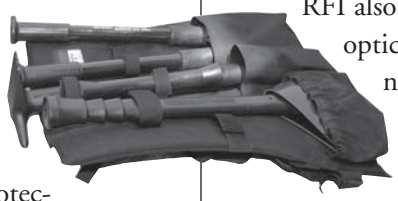


Lessons learned from *Operation Enduring Freedom (OEF)* revealed serious shortcomings in soldier and unit equipment. As a result, in November 2002, the Product Manager Clothing and Individual Equipment (PM CIE), began identifying commercial-off-the-shelf (COTS) and government-off-the-shelf (GOTS) solutions to meet these shortfalls.

The PM worked directly with the next brigade on its way to Afghanistan — 2nd Brigade, 82nd Airborne Division (Abn. Div.) — to prepare a list of equipment that soldiers and units needed for their mission in the rugged terrain and harsh climate of Afghanistan. The success of this initial effort between the PM and the deploying brigade commander became known as the Rapid Fielding Initiative (RFI) and served as a catalyst for subsequent units deploying both to *OEF* and *Operation Iraqi Freedom*.

In the months that followed, the remaining brigades of the 82nd, plus the entire 101st Airborne Division (Air Assault) and 10th Mountain Division (Light Infantry) have also received RFI equipment. RFI has been a tremendous success because it provided thousands of articles of mission-essential equipment to deploying units in a matter of weeks and months instead of the traditional years-long acquisition process. PM CIE, in close cooperation with deploying unit commanders, HQDA, the U.S. Army Training and Doctrine Command (TRADOC) and the Army Test and Evaluation Command (ATEC), secured the funding and safety releases necessary to provide pallet loads of equipment at an unprecedented rate. As a result, thousands of soldiers deployed to Afghanistan and Iraq with significantly enhanced lethality, survivability and comfort.

Several pieces of RFI equipment have been especially significant in soldier survivability. The Interceptor Body Armor, which increased a soldier's protection from exploding fragments and shrapnel to ballistic protection against rifle-fired ammunition, has been credited with dozens of documented cases of saving soldiers' lives. The Advanced Combat Helmet has also been documented in protecting soldier's lives from AK-47 shots that previously would have killed them.

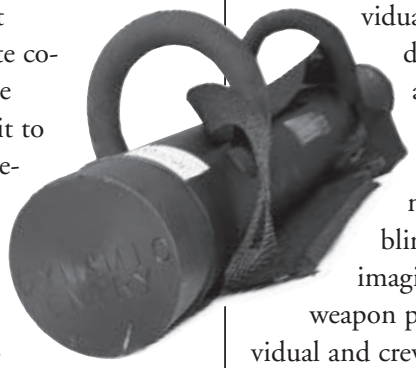


While much of the RFI equipment was harvested from COTS and GOTS production lines, the Advanced Combat Helmet was expanded from the Special Forces Multi-Integrated Combat Helmet program. This is just one example of PM CIE's innovative approach to meeting operational shortfalls for deploying units. Another example is the Military Operations in Urban Terrain kits that were adapted from traditional firefighting equipment to provide a rapid solution for the 101st Abn. Div.'s operational requirement for fighting in Iraqi cities and villages.

RFI also provided combat optics, sensors, lasers, night vision devices and thermal weapons sights to enhance soldier and unit lethality. This required some purchases above the basis-of-issue-plan (BOIP) and some adjustments to the Department of the Army Master Priority List (DAMPL). Thankfully, the compelling urgency of hostilities in Afghanistan and Iraq compressed the approval of beyond BOIP procurement and out-of-DAMPL sequence fielding so deploying units received the equipment they needed in a few short months, rather than the traditionally long process.

RFI not only provided the equipment, but also training and

logistical support for the new equipment. Upon HQDA notification, Program Executive Office Soldier (PEO Soldier) and PM Soldier Equipment arranged immediate coordination with the next-deploying unit to tailor their list of required equipment, from the previous unit's template to their unique mission requirements. HQDA then provided the funding for PEO Soldier to procure this equipment on an accelerated schedule. PEO Soldier also arranged for direct shipment of thousands of articles of equipment directly to the deploying units' home station, or in some cases, directly to the theater distribution point. Representatives from PEO Soldier then deployed to Fort Bragg, NC; Fort Campbell, KY; and Fort Drum, NY; to field the equipment to soldiers and train them in its use just before their deployments to Afghanistan and Iraq. As a result, soldiers and units were far more survivable and lethal in the harsh terrain and climate of these countries.



Additionally, RFI equipment enabled soldiers and units to "own the night" from their mounted weapons platforms and from their individual night observation devices and individual and crew-served thermal weapons sights. And when the infamous Iraqi sandstorms blinded nearly every imaginable sensor and weapon platform, these individual and crew-served thermal weapons sights were the only devices known to cut through the sand and provide limited visibility when all else was obscured by the intense sandstorms.

ATEC was a key player in RFI's accelerated timelines, providing materiel safety releases in fractions of the traditional testing process. TRADOC also assisted with documentation of operational needs and coordination of basic and unit-specific requirements.

HQDA and, specifically, the Deputy Chief of Staff G-3 and G-8, provided the resources and prioritization necessary to procure all equipment in a timely manner. But much of the success for RFI is attributable to unit commanders and their noncommissioned officer support channel who articulated the operational necessity for RFI equipment before deploying into harm's way.

Because of RFI's success, PEO Soldier has already been notified by HQDA to initiate coordination with four additional brigade combat teams to provide them with RFI equipment in the months ahead. Additionally, PEO Soldier is working closely with HQDA to formalize plans for providing RFI equipment to the rest of the Active Component plus enhanced brigades from the Reserve Component as well. RFI has been a tremendous success, providing soldiers and units with equipment that enhanced their survivability and lethality across the operational spectrum. RFI has significantly improved the trust and cooperation between warfighters and the acquisition community as well as HQDA, TRADOC and ATEC. This close cooperation will serve as a model for future acquisitions, providing direct and timely feedback for Army modernization investments and significantly compressing the timeline for putting mature technology into the hands of soldiers. RFI preserves America's fighting forces' technology overmatch and boosts every soldier's and unit's survivability and lethality. RFI has been a tremendous opportunity for the Army and industry to provide soldiers and units the equipment that otherwise had been procured "out-of-pocket." With continued cooperation, prioritization and resources, RFI will continue to provide American soldiers the fighting edge that they deserve.

COL GREGORY J. FRITZ was the PM Soldier Equipment at the time this article was written. He has since retired. He has a B.S. from the U.S. Military Academy, an M.S. from the Florida Institute of Technology and a Master of Strategic Studies from the Army War College. Fritz has also earned diplomas from the Defense Language Institute and the German General Staff College, Hamburg, Germany.

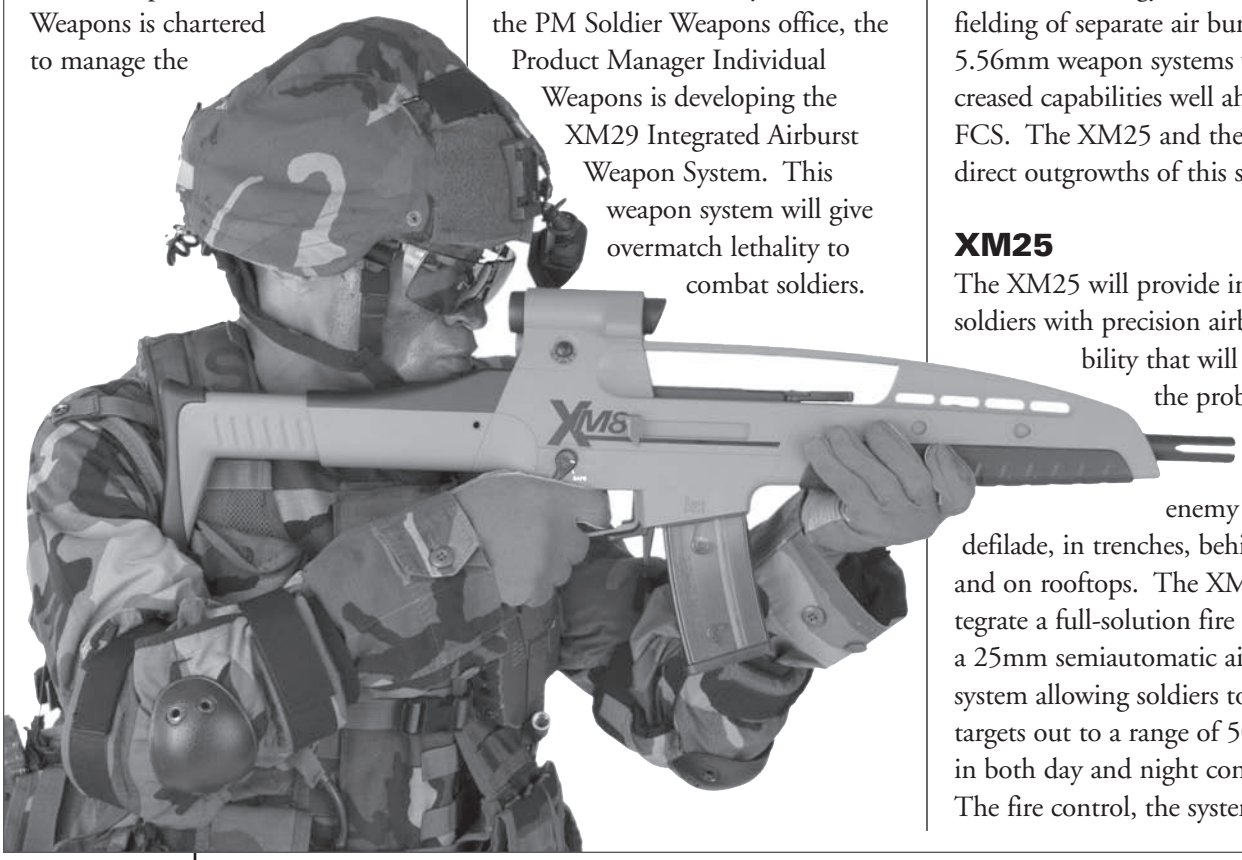
Project Manager Soldier Weapons and the XM8: Applying Future Technology to Benefit Today's Soldier

LTC Matthew Clarke, MAJ Trevor W. Shaw and David Ahmad

For the first time in Army history, there is a single office that centralizes all soldier support equipment. Activated June 7, 2002, Program Executive Office (PEO) Soldier has the mission to "Arm and equip soldiers to dominate the full spectrum of peace and war now and in the future." Within the PEO's portfolio are more than 300 programs. Executing these programs are three project manager (PM) offices: PM Soldier Warrior; PM Soldier Weapons; and PM Soldier Sensors and Equipment.

PEO Soldier is supporting development of the Objective Force Warrior (OFW) program to further ensure battlefield dominance by soldiers today and in the future. Responsible for the life cycle of all individual and crew-served weapons, PM Soldier Weapons is chartered to manage the development, acquisition and support of small-arms weapons and munitions for both mounted and dismounted soldiers.

PM Soldier Weapons is developing a family of weapons that will provide increased OFW lethality. Within the PM Soldier Weapons office, the Product Manager Individual Weapons is developing the XM29 Integrated Airburst Weapon System. This weapon system will give overmatch lethality to combat soldiers.



The XM29 integrated dual munitions weapon system incorporates a 5.56mm kinetic energy weapon and a semiautomatic, 25mm, air-bursting munitions launcher with full-solution control. The XM29 will provide precisely delivered air-burst ammunition in military operations on urban terrain and complex terrain at ranges exceeding the M203 Grenade Launcher with five times the lethality. Although the system is scheduled to support the Future Combat Systems (FCS), the PM Individual Weapons has transformed the planned strategy into a spiral development approach that allows fielding of capabilities as they mature. This strategy will allow for fielding of separate air bursting and 5.56mm weapon systems with increased capabilities well ahead of FCS. The XM25 and the XM8 are direct outgrowths of this strategy.

XM25

The XM25 will provide individual soldiers with precision airburst capability that will increase the probability of incapacitation of enemy forces in defilade, in trenches, behind trees and on rooftops. The XM25 will integrate a full-solution fire control to a 25mm semiautomatic air-bursting system allowing soldiers to engage targets out to a range of 500 meters in both day and night conditions. The fire control, the systems' brains,

integrates a thermal sensor, direct view optic, laser range finder and environmental sensor with a ballistic computer, just to name a few features. This capability will revolutionize the battlefield by enabling individual soldiers to fire a 25mm high-explosive bursting round through a window at 300 meters with devastating first-shot effects. The XM25 may be available for use by FY07.

XM8

The XM8 Lightweight Assault Rifle is a new 5.56mm carbine that forms the basis for a family of weapons to fill multiple roles from a single architecture. The XM8 weapon system incorporates many features requested by soldiers in the field including a high degree of modularity, an integrated sight, improved reliability and a reduced weight over current weapons. A systems engineering approach was taken in designing the XM8, ensuring that all capabilities the soldier requires for combat will be integrated into or fully compatible with the weapon. The XM8's goal is to be 20-30 percent lighter than a similarly configured M4 Modular Weapon System as it is fielded today but with increased lethality when integrated with the Soldier-as-a-System. This effort is also being supplemented by an ammunition science and technology effort to examine the lightweight case materials that could provide even further weight savings for the actual weapon. The modularity of the current weapon design simplifies barrel changes and requires a lower maintenance level compared to current weapons, thus allowing for simple barrel changes without the use of special tools. The XM8's modularity enhances combat capability and allows for mission-specific weapons tailoring. In only 5 minutes, unit commanders can direct their soldiers to reconfigure the weapon system into carbine, compact, sharpshooter or autorifle variants. For the first time, commanders can transform the capabilities of their soldiers to meet specific mission requirements using a single common weapon platform. This means commanders can provide their soldiers with longer ranges or higher volumes of fire capabilities from organic weapons. Each variant will fire all standard U.S./NATO 5.56mm rounds and provide semiautomatic and fully automatic operation modes. Initiated in August 2002, the XM8 program is on track to field initial weapon systems in FY05. To view a table outlining XM8's general weapon characteristics and performance, go to **http://asc.army.mil/pubs/default.cfm** (November-December issue).

The XM8 carbine will be the standard individual weapon for riflemen and most unit leaders. The compact variant will be significantly shorter than the XM8 carbine, improving portability and soldier mobility. It could be used for close quarter battles, personal defense and for selected vehicle crewmembers. The sharpshooter variant would support the squad-designated marksman mission. The autorifle variant will use a high-capacity magazine and a heavy barrel, and will provide a significant weight savings over the current M249 Squad Automatic Weapon, supporting the automatic rifleman mission.

Each XM8 variant will have an integrated sight that is factory boresighted featuring a reflex sight, an infrared (IR) illuminator, an IR pointer and an integrated backup sight capability. This combines three accessories into a single package. This design effort's goal is focused on increasing overall accuracy while decreasing target acquisition time. Accessory rails will be eliminated and replaced by a new integrated mounting system requiring only an initial boresight adjustment. PM Soldier Sensors is also working to develop an ultra-lightweight thermal weapon sight that will attach to the XM8 to complement the integrated sight.

Specific design attention also focused on improved reliability and durability. Using proven materials and processes, the XM8 will have a projected barrel life 63-117 percent longer than current weapons and will have improved reliability in all environmental conditions compared to current weapons. Contractor weapons testing with the XM8-type operating system conducted at Yuma Proving Ground, AZ, demonstrated impressive reliability. Weapons endured rigorous tests and incredibly harsh conditions including the firing of 24,000 rounds from a single weapon without stoppage and without cleaning. After completing this extreme test, the barrel was still within acceptable accuracy and dispersion limits. During additional testing, 10 weapons fired 10,000 rounds each with no cleaning or maintenance, and had only one stoppage between them during the 100,000-round test.

The XM8 multiple variant concept could replace the Army's M16 series 5.56mm weapons in use for the past 40 years and constitute a true family of weapons when combined with the XM25 and XM29. A high level of commonality will exist within the family, reducing the number of unique spare parts in inventory and decreasing the logistics burden and accompanying life-cycle costs.

The focus of PEO Soldier is to continuously provide improved capability to U.S. forces. The cutting-edge technologies developed for the future XM29 are being used today to develop and field the XM8 and the XM25. The XM29's spiral development strategy could provide the U.S. Army infantryman with a new carbine by FY05 and precision airburst capability by FY07 — systems that will provide enhanced maneuver and fire-support capabilities that will dramatically improve soldier lethality on the battlefield.

LTC MATTHEW CLARKE is the PM Individual Weapons at Picatinny Arsenal, NJ. He has a B.S. in biomedical engineering from the University of Pennsylvania and an M.S. from the Naval Postgraduate School. His education also includes the U.S. Army Engineer Basic and Officer Advanced Courses and the U.S. Army Command and General Staff Officer Course.

MAJ TREVOR W. SHAW is the Assistant PM Individual Weapons. He has a B.S. in leadership from the U.S. Military Academy and an M.S. in systems acquisition management from the Naval Postgraduate School. His education also includes the U.S. Army Command and General Staff Officer Course.

DAVID AHMAD is the Acting Chief of the Future Weapons Division at PM Individual Weapons. He has a B.S. in mechanical engineering and an M.B.A. in management of innovation and technology from Rutgers University. He is currently the system lead on the carbine: 5.56mm, XM8 lightweight weapon system.

FBCB2 Blue Force Tracking — Fielding During Combat

MAJ Rodney A. Mentzer

"FBCB2 is a winner! When all other means of communications failed, FBCB2 carried the day. This system provides improved situational awareness for all soldiers, leaders and staffs. The ability to send and receive text messages, develop and distribute graphics and monitor real-time tactical movements has made the Brigade TOC much more effective."

LTC Richard Trietley, Brigade XO,
1st Brigade, 82nd Airborne Division,
during *Operation Enduring Freedom*,
Khandahar, Afghanistan

On Jan. 7, 2003, a Force XXI Battle Command Brigade and Below (FBCB2) training and installation team arrived in Afghanistan faced with the monumental task of training and equipping the 1st Brigade (Bde.), 82nd Airborne Division's (Abn. Div.) soldiers with a Blue Force Tracking System that would greatly enhance battlefield awareness. These soldiers were in the midst of combat operations and, in many cases, had no prior knowledge of FBCB2 or its tremendous capabilities. The successful fielding can be directly attributed to the 1st Bde.'s outstanding leaders and well-trained soldiers.

Fielding and training a digital situational awareness (SA) command and control (C2) system during combat provided many lessons learned that may apply to other systems fielded during similar conditions. As the Assistant Program Manager (PM) for FBCB2, I provided Blue Force Tracking to the 1st Bde. in Afghanistan.

After receiving the mission to install, train and support this digital system during combat operations from COL Nickolas G. Justice, PM FBCB2, the first thing I did was contact the unit and begin to assemble a mission-capable team. As expected, initial contact with the unit met with some reluctance because the 1st Bde. was scheduled to deploy to a combat zone in less than 2 months. Already training at a high

operations tempo (OPTEMPO), the Brigade was not looking forward to fielding a new system. After scheduling several planning trips to Fort Bragg, NC, the Blue Force Team met with MAJ Armida Montemayor, 82nd Abn. Div. Assistant Division Signal Officer, and LTC Rick Trietley, 1st Bde. XO, to gain support from unit leaders and begin to develop a fielding plan.

A multifunctional, multidisciplined team was assembled to install and train systems in remote locations, under varying weather conditions and during combat operations. The team was comprised of personnel who had individual training experience or had installed FBCB2 systems before. The FBCB2 PM had also chosen several team members that had recently retired from the Army and several people who had prior field service representative (FSR) experience. This proved critical because the FSRs had the necessary technical expertise to operate the system.

> Accommodation of operational requirements and a willingness to work in less then ideal conditions based on vehicle and soldier availability was a major step in gaining warfighter confidence.

The FBCB2 technical and training team first met in November 2002 at Fort Hood, TX. The meeting provided a forum to formulate a mission overview and begin the war-gaming process. Three major issues resulting from the war-gaming process were:

- The need for cross-fertilization among all team members.
- Program of instruction (POI) development to support abbreviated training during combat.
- The criticality of preparation and planning given the prospect of austere logistics support in country.

Early in the planning process, we identified the need to cross-train all team members. We divided the team in half and identified each team member as either an installer or trainer. Those identified as trainers were sent to a 5-day FBCB2 Digital Master Trainers (DMT) Course at Fort Knox, KY. Developed by the FBCB2 U.S. Army Training and Doctrine Command Systems Manager (TSM), this course provided the background and in-depth knowledge of how the system functioned. These school-trained "trainers" became the subject matter experts that would then train the installers.

While the trainers attended the DMT Course, the installers deployed to Fort Bragg for hands-on training to learn how to properly install the FBCB2 system on vehicles once we deployed to Afghanistan. The training provided the installers the critical skills they needed to perform their tasks quickly and efficiently. Additionally, the installers compiled a list of tools and equipment needed to accomplish the task. Each installation kit included an accessory bag of hardware and equipment. When a kit was opened at a remote safe house along the Pakistan border, the team knew they would have the right hardware, tools and equipment to complete the job onsite.

Once all team members had received training in their individual areas of responsibility, we reassembled at Fort Hood to begin the cross-fertilization process. The FBCB2 train-the-trainer scenario saved time and allowed individuals to practice teaching what they had just learned. To ensure the team could effectively train soldiers, the team "borrowed" seven new soldiers from the 1st Cavalry Division to be trained on FBCB2. By training these soldiers and using their subsequent after action review comments, the team further refined the POI that would be used in Afghanistan.

Once everyone was sufficiently familiar with how to install and operate the FBCB2, we began tweaking the POI. We examined both the normal 40-hour POI that is taught at the basic FBCB2 operators course and the modified POI that was used for instruction in the Balkans in the late 1980s. From these two POIs, the team developed a plan that would allow for rapid training during mission down times. The plan simulated *Operation Enduring Freedom* missions and extracted the "need-to-know" from the "nice to know." Once developed, the hybrid POI contained the basics for SA and C2 messaging. To reinforce the training, we created a set of laminated cards that were attached by a D ring to each installed system. The quick-reference cards proved extremely useful in rapidly training soldiers on the system.

During the 10 weeks we were in Afghanistan, the PM FBCB2 installed 144 ground systems, to include 13 tactical operations center (TOC) systems at various echelons

Blue Force Tracking and FBCB2 link satellites, sensors, communications equipment, vehicles, aircraft and weapons in a seamless digital network to provide a continuous, all-weather battlefield picture.

of command. The TOC systems' criticality within the C2 node proved that every echelon within the organization must be fielded a system. Case in point, our initial plan did not include platoon and company command posts (CPs). Without providing CP systems at the platoon and company level, we did not gain the necessary command support for total fielding acceptance and implementation. Notwithstanding, FBCB2 on the nonlinear battlefield has proven incredibly valuable as a C2 node. With the units configured in small fire base positions, each fire base serves as its own unique CP node. Therefore, each fire base must be equipped like its higher TOC for reception and dissemination of plans and graphics. Smaller echelon fielding should be introduced to the G3 when performing mission analysis. Additionally, a complete and thorough understanding of how specific units fight is integral to fielding success and implementation.

> During the 10 weeks we were in Afghanistan, the PM FBCB2 installed 144 ground systems, to include 13 tactical operations center (TOC) systems at various echelons of command.

Systems were installed at seven different locations in Afghanistan. In some cases, these installations were done without power, without cover and in weather conditions that included snow, rain, wind and sand storms. The FBCB2 team knew that moving assets around to remote locations during combat would be extremely challenging. Fortunately, we included the S3 Air in all fielding discussions and subsequent transportation plans and requirements. Because FBCB2 wasn't part of the standard logistics system yet, it was essential that all tools, equipment and spare parts were "kitted" to eliminate any further strain on limited aviation resupply assets.

More than 300 paratroopers were trained on FBCB2 in TOCs, vehicles, safe houses and forward operating bases. Much of this training was conducted on the actual installed platforms. Additionally, the TSM provided excellent handbooks on tactics, techniques and procedures that took users to the next step. The FBCB2 TSM office augmented our team with CPT Thane St. Clair. He joined us a month after deployment as our TOC trainer, traveling between various safe houses training company CPs how to employ the system at their level. St. Clair took our POI to the next level by training users and teaching leaders how to manage and employ the system. In short, his efforts lent credence to the system and reinforced leader support.

Without question, a major test in fielding a new system during combat operations is gaining support and confidence from warfighters and establishing the fielding team's credibility. As Army Acquisition Corps officers fielding new equipment, we were cognizant of the external forces acting upon the unit we were assisting. The approach we took was, the unit is our customer and we must make accommodations to meet the unit's schedule. This is especially important when installing systems on vehicles involved in combat operations and their subsequent OPTEMPO. Accommodation of operational requirements and a willingness to work in less then ideal conditions based on vehicle and soldier availability was a major step in gaining warfighter confidence. Additionally, involving the command team,

ensuring on-the-spot assistance and providing responsive customer service were major elements contributing to the program's success.

Clearly, establishing credibility was paramount to the project's success. The FBCB2 team accomplished this by becoming extremely proficient and efficient at their jobs. Additionally, the entire team was totally committed to mission accomplishment.

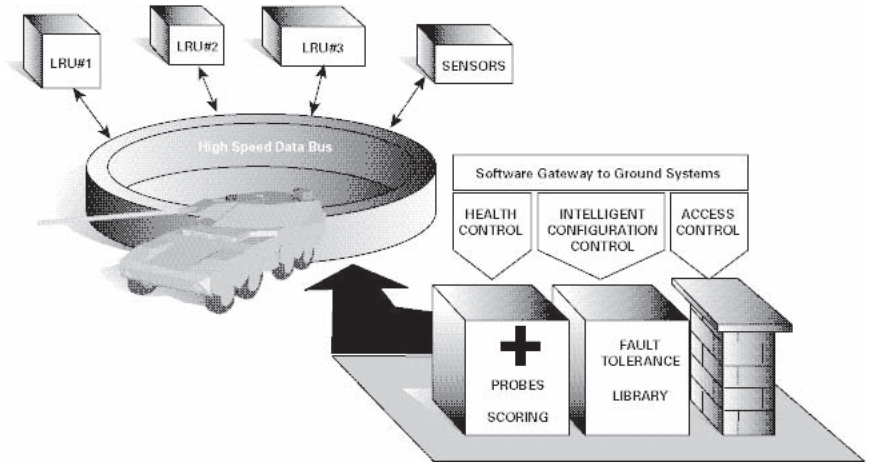
In the Nov-Dec 2002 *Army AL&T* magazine, BG Michael Mazzucchi, Program Executive Officer Command, Control and Communications Tactical, stated that we have "made great strides in providing the warfighter valuable tools to understand the tactical situation more clearly, make decisions with more confidence and react more quickly to changing battlefield conditions." The FBCB2 fielding during *Operation Enduring Freedom* was successful because of several key factors: the 1st Bde, 82nd Abn. Div.'s acceptance and support for training and installation of the FBCB2 Blue Force Tracking system; and the civilian team from PM FBCB2 and Northrop Grumman. As the Commander, 2nd Batallion, 1st Bde., 82nd Abn. Div., summarized, "FBCB2 is the best tactical situational awareness tool that I've ever used."

MAJ RODNEY A. MENTZER is the Assistant Product Manager for FBCB2/BFT at Fort Monmouth, NJ. He has a B.S. from the U.S. Military Academy, an M.S. in kinesiology from Indiana University and an M.A. in procurement and acquisition management from Webster University.

Ground Combat Vehicles: Present and Future Diagnostics and Prognostics

Dr. Elena N. Bankowski and Christopher Miles

The diagnostics capability of ground combat vehicles (GCVs) has to be compatible with the Army Diagnostic Improvement Program. Present systems are capable of performing health monitoring and health checks using internal embedded resources.



They employ standard sensors and data busses that monitor data signals, measurements and built-in tests. These devices provide a comprehensive data source to accomplish complete and accurate system-level diagnostics and fault isolation at line replaceable unit (LRU) level. They provide system health monitoring and prognostics capability for subsystems consisting of engine, transmission, power pack interface, gauge cluster unit and others. Prognostics routines provide diagnostics capability to identify the cause of failure, when failure is predicted, and corrective action to prevent unscheduled maintenance action.

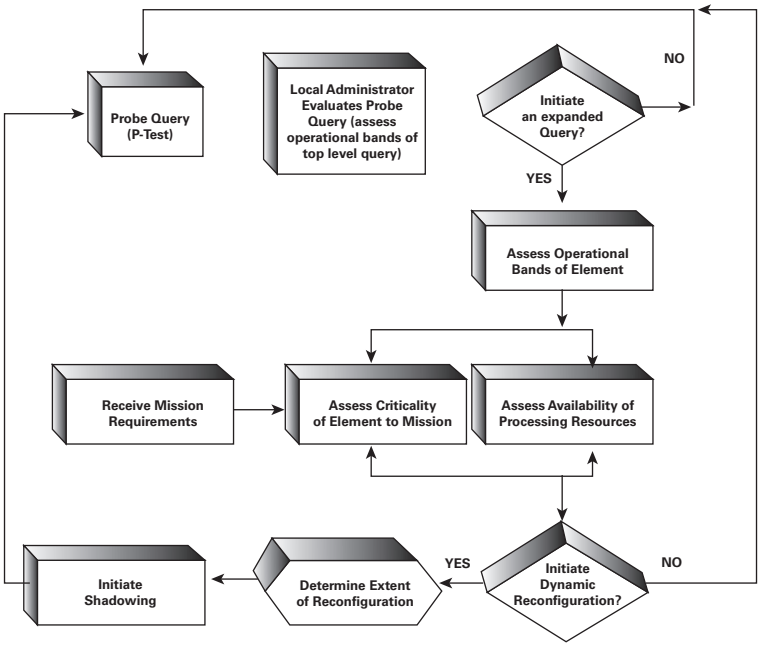
A GCV's health status and prognostic information are displayed to operator, crew and maintenance personnel. Present systems use a common data/information interchange network per standards defined in the Joint Technical Architecture to provide access to vehicle health data. The technologies used in present systems include embedded diagnostics, combat maintainers, revised maintenance concepts and schematic viewers. Implementation

of these technologies significantly reduced maintenance hours on GCVs. For example, today's Main Battle Tanks (MBTs) contain a multitude of processors, yet combat systems such as the Abrams provide redundancy only between the hull electronics unit and the turret electronics unit. The Abrams employs duplicate processors hosting redundant software in different vehicle compartments. More than half a million lines of software code span multiple processors. The software in the Abrams tank was created in a highly sophisticated development and testing environment.

The U.S. Army Next Generation Software Engineering Technology Area (Next Generation) proposed Statistical Usage Testing (SUT) in the Post-Production Software Support (PPSS) project for the Army's MBTs. Usage models were supported by the Markov chain process, test management, test-case generation and statistical testing. We implemented a prototype tool for composing top-level models and lower-level submodels. This model-compose utility allowed for the development of submodels similar to subroutine development in programming. The major lessons learned from the SUT project were:

- SUT can positively impact MBT testing because the focus is on operational usage.
- Usage modeling is feasible in the MBT environment.
- Usage modeling uncovers issues that relate to behavior and testing.
- A logical and complementary relationship exists between the current testing approach used by Next Generation and SUT.

SUT modeling techniques were applied to the Driver's Integrated Display, a component of the tank's soldier-machine interface. Since then, additional LRUs with increasing complexity have been modeled using SUT. In applying modeling techniques, a high degree of complexity was observed, consisting of the numbers of screens to be modeled and the amount of information that could impact a tester's next action. These challenges were overcome using some innovative approaches. Next Generation investigated the feasibility of using SUT in the PPSS test environment. The primary motivation was the realization that there were not enough test assets, people or time to test the MBT software for each release. The SUT's approach was to determine better ways to test increasingly complex systems and system-of-systems in the future. Significant progress has been made, and efforts are now underway to combine SUT with other approaches to automated testing to scale it up even further.

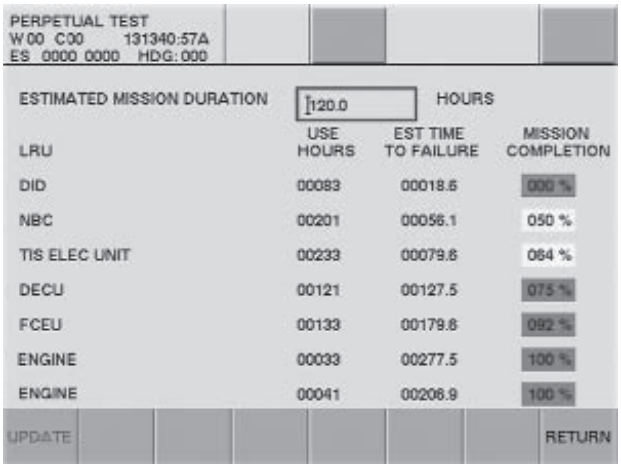


System Health Check Process

Future Diagnostics and Prognostics

The proposed new technology for health monitoring, diagnostics and prognostics of future systems will use a federated software and probes approach. Gauges will determine if the system operates within acceptable performance bands by monitoring data provided by the probes. Health monitoring systems will use mission models to make intelligent choices considering tasks criticality. Prognostics of system LRUs will be based on probes data and statistical usage models.

Future weapon platforms will host a significant increase in software. The processing burden of the front-line vehicles will require a further increase in processing capability. Next-generation weapon systems processing requirements will grow with the incorporation of intelligent decision aids, sensor fusion and advanced communications. A future system will have 2 x 106 configuration combinations. Cost, reliability, space and mission requirements will preclude achieving redundancy with dedicated, embedded processors that duplicate functionality.



Proposed Prognostic Screen

The Next Generation vision is that a collection of general-purpose processors connected to a common bus will be scattered throughout the GCV and assigned dynamically to the various vehicle control and mission-specific tasks as required. This approach reduces cost and provides greater effective redundancy because any healthy processor can be assigned to any task. Next Generation system processes require extensive monitoring and analysis capabilities to track whether the weapon system is operating properly. A robust reconfiguration capability is required to reorganize task assignment to processors to respond to hardware and software failures and changed mission requirements.

The proposed technology will provide better health and situation control (HSC) for GCV diagnostics and prognostics. HSC continually tests the processing elements with probe/agent technology. Algorithms within HSC assess the processors' health based on a criticality scoring system that considers mission requirements. Probes are launched by HSC query processing elements. The probed data are sent to a gauge that has a variable sensitivity or gain. Statistical usage models and criticality scoring control the gauge's sensitivity. In response to the gauge, the replicating process launches agents that can insert anomalous events for diagnostic purposes. In this context, a probe is a subset of an agent having only the ability to query without affecting framework, I/O protocol or quality of service.

Each weapon system fitted with the HSC will control self-repair and reconfiguration of onboard processors using a statistical-based intelligent scoring system that considers function criticality in current battlefield situations. HSC is a software system that will enhance the performance of a weapon system by providing on-the-fly reconfiguration to accommodate the loss or malfunction of processing elements or to optimize onboard performance capability. Selected software components of soldier-machine interface in a crew station will be modeled using HSC architecture modeling techniques. The hardware environment will be modeled so that HSC analysis tools can select compatible hosts from candidate processors.

Missions will also be modeled so that HSC tools can make intelligent choices considering task criticality. HSC will detect faults and select the optimal crew station configuration to maintain essential functionality in response to current battlefield conditions. HSC will also construct correct configurations of software to load onto a GCV for combinations of weapons systems, sensors and missions. It will collect usage and runtime error data that can be used to improve the software development and testing processes. HSC-collected usage information and runtime error patterns will be fed into Next Generation SUT models to improve the modeling fidelity and software testing process. Success of this aspect of HSC will be measured by the reduction in time for the SUT models to identify, isolate and repair errors. HSC architecture descriptions will be used to improve SUT usage modeling techniques and processes. The HSC probe controller will serve as an agent for the HSC controller, reporting the health of the weapon system elements. Off-vehicle probes will also be launched to assess the health of companion vehicles within the operational unit.

DR. ELENA N. BANKOWSKI is a Senior Computer Engineer at the U.S. Army Tank-automotive and Armaments Command and has an advanced degree in engineering. She previously worked in the automotive industry and at the University of Detroit-Mercy. In addition, she published 20 research papers and received two awards from the National Science Foundation.

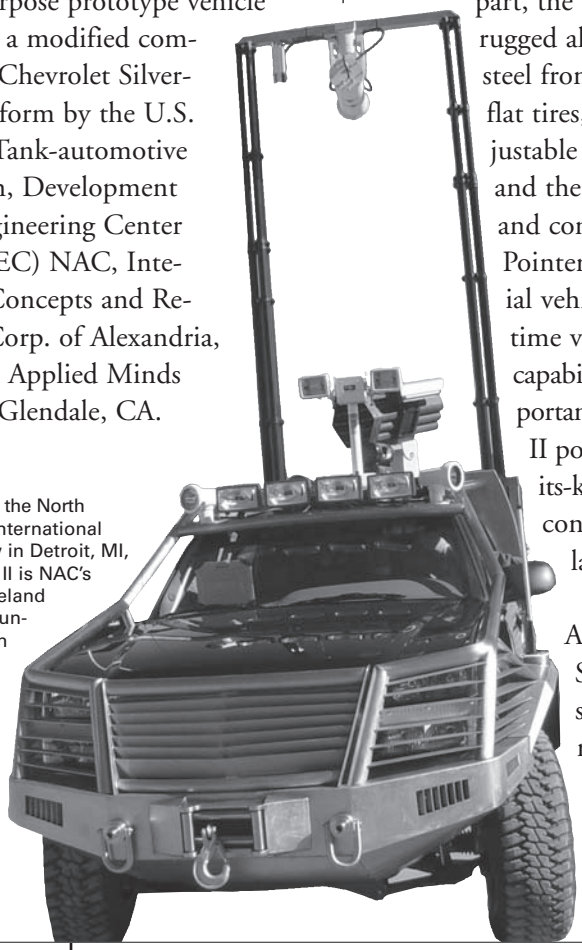
CHRISTOPHER MILES is pursuing his Ph.D. at the Naval Postgraduate School. He is a software engineer at the U.S. Army Tank-automotive and Armaments Command and has worked on several Army combat vehicle ground systems, including the Crusader, Bradley and Abrams.

SmarTruck II: A Versatile Vehicle

Paul D. Mehney

"A multipurpose vehicle for multipurpose missions," was how one National Automotive Center (NAC) engineer described the function of NAC's latest prototype vehicle — SmarTruck II. Unveiled at the North American International Auto Show in Detroit, MI, the SmarTruck II has been a hot topic of conversation within defense and homeland security offices ever since. Sporting truly revolutionary technology, SmarTruck II has the ability to adapt to diverse missions by using a variety of plug-in computer modules.

Two years in the making, SmarTruck II is the result of input gathered from a variety of military, law enforcement and government entities. This information was then merged into a multipurpose prototype vehicle built on a modified commercial Chevrolet Silverado platform by the U.S. Army's Tank-automotive Research, Development and Engineering Center (TARDEC) NAC, Integrated Concepts and Research Corp. of Alexandria, VA, and Applied Minds Inc., of Glendale, CA.



Unveiled at the North American International Auto Show in Detroit, MI, SmarTruck II is NAC's latest homeland security/counterterrorism vehicle.

Sporting 6 x 6 all-wheel-drive capability and an increased payload capacity, SmarTruck II negotiated every terrain challenge thrown at it during homeland security, military and counterterrorism trials. In part, the truck features a rugged all metal stainless steel front grill guard, run flat tires, flood lights, adjustable blackout lights and the ability to launch and control an electric Pointer unmanned aerial vehicle that has real-time video transmission capabilities. Most important, the SmarTruck II possesses a first-of-its-kind, rapidly reconfigurable modular system design.

According to SmarTruck II designer Bran Ferren, of Applied Minds Inc., "With this truck, you're not confined to any one mission, or any one technology. What you have, basically, is a platform that can take from one to six modules, or any combination that fits the form factor and payload capacity. It's the modules that provide the flexibility," Ferren explained.

SmarTruck II is capable of accepting from one to six specialized modules that perform a variety of specific functions. Once they are plugged into the truck, a high-tech onboard computer Vehicle Operating System recognizes the module and will automatically configure the truck's command and control capabilities. "You can reconfigure the truck however you want and be up and running in minutes," Ferren commented.

With the module system, the SmarTruck II will excel in a variety of roles. NAC Director Dennis J. Wend stated, "Beyond military capabilities, SmarTruck II can be configured for homeland security, community service and humanitarian aid applications such as disaster relief, medical response, surveillance, field kitchen, water purification, water pump and as a command and control center."

Ferren agreed, "Whatever the mission, the idea is that you can outfit a fleet of standard, all-purpose chassis with whatever modules you need.

In the wheeled vehicle department, it's a genuine breakthrough. The point is reconfigurability. That's what provides flexibility and that's what has never been done before."

On display with the truck are four of its most innovative module systems, the Base Power Module, Electro-Optics Module, Weapons Module Pad and Integrated Communications Module. According to SmarTruck II Program Manager Germaine Fuller, "The Base Power Module is the brain of the vehicle. Currently, SmarTruck II uses shore power to prevent depleting the vehicle's power for auxiliary units. The Base Power Module manages that power and acts as a control and switching center for AC/DC capabilities." The Electro-Optics Module has a 30-foot vertical lift that hosts a high-powered surveillance camera that is capable of viewing objects 20 miles away. Other military applications for this module could include battlefield radar hosting and electronic warfare packages.

The most impressive module, the Weapons Module Pad, boasts an impressive Spike fire-and-forget missile system and its two supporting self-feeding magazines. Developed by the U.S. Navy specifically for the SmarTruck II platform, Spike is a low-cost, shoulder-launched, man-packable system that houses 16 missiles and can fire 2 missiles simultaneously at independent targets. When not in use, the Spike retracts into the module for storage.

Lastly, the communications module ensures that vehicle crew can securely communicate with various military and intelligence sources. This module also integrates 3D mapping capability, vehicle-mounted thermal imaging and in-vehicle surveillance radar that is capable of detecting moving objects within 7 kilometers of the vehicle. Additionally, the Integrated Communications Module houses the truck's cutting-edge light-emitting diode (LED) messaging system. "This is the first time such a system has been used on this type of vehicle platform," explained Fuller. "Through using infrared spectrum communication housed in the truck's tail lights, the LED system enables SmarTruck to communicate with other vehicles in a convoy. Trailing vehicles' computers are then able to read the information and decipher things such as the lead truck's speed, direction and braking distance between the vehicles."

As technologically advanced as the SmarTruck II is, the most important aspect of this truck is its role. As summed up by designer Ferren, "The message here is really about saving lives. The truck's purpose is to meet the requirements of a new, emerging challenge — how to most effectively protect our cities and people. We designed SmarTruck II for this role — to help people and to save lives."

PAUL D. MEHNEY is a Marketing Specialist with TARDEC's Operations Business Group. He has a B.A. from Michigan State University.

Army Acquisition Corps: 'Your Soldiers' on Point for the Betterment of the Army

LTG John S. Caldwell Jr.

The following is excerpted from LTG John S. Caldwell Jr.'s keynote address at the 2003 Army Acquisition Corps Ball, Oct. 5, 2003, Arlington, VA.

Photos by SPC Adam R. Mancini, Army Visual Information Division

Congressman and Mrs. Schulze, Michael and Barbara Wynne, Secretary and Mrs. Bolton, Gil Decker, Page and Barbara Hoeper, Dr. and Mrs. Ken Oscar, General and Mrs. Paul Kern, Judy — distinguished guests all. Good evening and welcome to the Army Acquisition Corps (AAC) Ball.

Before I get into my remarks and reminiscences, I want to remind us all that our Nation is at war and our service men and women are in harm's way every day, even right now. They are there because our way of life and our freedoms are under attack. Please keep them in your prayers.

Now, I want to take a little of your time and talk about "us" and what we do to support our warfighters and what we must do to transform our Army. I want your spouses, families and friends to understand what you do for our great Army.

Who are "we?" We are the Nation's Acquisition Workforce, a special blend of uniformed military, government civilians, supporting industry and friends.

Let me focus on your Army Acquisition Corps, military and civilian. I'll call them "Your Soldiers" in this audience. "Your Soldiers" fight a myriad of battles every single day to safeguard the systems in development so they can actually become combat capabilities. They fend off wolves and have to deal with more oversight than a second lieutenant who has just made his first really big mistake.

The warfighters we support often undervalue "Your Soldiers." Field commanders are unaware of the battles "Your Soldiers" fight on their behalf. The regulations, policies and laws that govern our business frustrate them. However, "Your Solders" go through each day making the Army the best, realizing that they will get little credit for their efforts, outside of their own community. They work hard, deploy, fight and have longer commands. Yet, "Your Soldiers" are the grease in the wheels that the Army cannot operate without. "Your Soldiers" are the ones that design, build, field, sustain and retire the capabilities that enable our Army to dominate any enemy wishing to tangle with us.

"Your Soldiers" fight a myriad of battles every single day to safeguard the systems in development so they can actually become combat capabilities. They fend off wolves and have to deal with more oversight than a second lieutenant who has just made his first really big mistake.

You may say, wow, that's pretty grim. Well, at least they get to work in luxurious office space like the Pentagon! Did any of you hear the recent story about the Pentagon penthouse?

The Pentagon penthouse was the 5th floor nerve center where the Acquisition Corps storm troopers prepared the Future Combat Systems program to do battle in the halls of the Pentagon heading toward program approval last May. Field marshals Yakovac [MG(P) Joseph L. Yakovac] and Schenk [BG Donald Schenk] were in command. I tried to show you pictures, but no one would volunteer them. However, many witnesses are here among you tonight. Look around and a smile may betray them.

The penthouse was established last fall as a small office, equipped for about five, but normally occupied by 20 on a 24-hour shift basis. With the dust 3 inches thick, it probably hadn't been used since GEN George C. Marshall was Chief of Staff.

Well, the penthouse conditions were tolerable for a while. But a few weeks into it, a young major asked me, "Sir, how long are we going to be working like this?" I said, I think we're making good progress, but you should expect to be there until the big milestone decision meeting. He replied, "Which one? May 3 or the one in November 2004?" I just smiled.

Soon the "house" was in disarray. It smelled like a locker room, looked like a college dorm room on a Saturday morning, had trash piled up inside and out, clothes hanging off of everything imaginable and had the sound of a tactical operations center. Let me tell you this place was an operations center and nothing less. The storm troopers were counterattacking in every direction all day long. It got so bad they had rodents stealing their food and paperwork. It was at that point I made my visit to the penthouse to award my coins for valor.

So we have "Your Soldiers" leading our Acquisition Corps, military and civilian, doing battle around the world. Let me mention just a few.

COL Nick Justice and LTC John Bullington did great things with fielding digital systems in Iraq; COL Mary Fuller, Craig Spisak and COL Peggy Carson helped me with the personnel part of this business; MAJ Lance Scott fielded advanced joint battle command capabilities in Iraq; LTC Mark Malatesta provided biological agent detection capability to all the services; COL Bruce Jette, working directly with field commanders and our program managers, converted

Army Acquisition Executive Claude M. Bolton Jr. presented a statuette representing the American Soldier's tireless efforts to keep the United States free for all to LTG John S. Caldwell Jr., thanking him for giving the AAC Ball keynote address.

technology into fielded combat capability in record time; COL Curtis McCoy handled all the battle damage assessments in Iraq; and finally, it was LTC John Zavarelli who ran the Pentagon penthouse.

Let me briefly address what we need to do to transform our Army and continue to lead the transformation of our Joint Forces. These strategic objectives will be your challenge and they are articulated in our Campaign Plan (**http://asc.army.mil/divisions/cm**). It shouldn't surprise you that they are all people oriented. The right people will handle the rest.

First, we need to strengthen the relationship between the acquisition workforce and the warfighter. This will enable us to get better combat capability faster, and better spotlight the value of your Army Acquisition Corps.

Second, we must provide a clearly defined environment that encourages and offers career opportunities and leader development. This will enable us to fill the shoes of those great leaders that have gone before us — many are here tonight.

Third, we must maintain a technically competent workforce responsive to the current and future Army's needs. This will enable our forces to maintain and even widen our force's technological advantage in this very dangerous world.

As I near retirement, I've given a fair amount of thought to how I'd like my 36-year career contributions to be measured. Let me share that with you. You can agree or disagree.

I was commissioned in 1967. Some of you are my contemporaries. We were at war in Vietnam, not yet near the end or even the most violent phase. During the most violent phase, 300 to 400 Americans were being killed each week! By the end of hostilities, more than 58,000 died in that war — 27 of them were my West Point classmates. Several hundred thousand more were seriously wounded.

I like to think that my contemporaries that stayed in the military decided to do something about that. We set out to transform just about everything about our Army — the quality of its soldiers, leaders, materiel, organization, doctrine and tactics — everything. Recognizing that the loss of even one life is one too many, to date, we have lost approximately 316 in Iraq and 34 in Afghanistan.* America has lost less than 500 to hostile action since 1980, despite being at war a substantial portion of that time. That's the kind of metric I want to be measured by and I am very proud of our accomplishments.

Your challenge is to be much better than that. Your objective should be zero loss of life.

Well, I can't think of a better way to close than to say how proud I am to be one of "us." I am proud of you and what you have accomplished; and what you will do to meet tomorrow's challenges. I know of your sacrifices. You are great Americans. Thank you and God bless you all.

LTG JOHN S. CALDWELL JR. is the Military Deputy to the Assistant Secretary of the Army for Acquisition, Logistics and Technology and Director, Acquisition Career Management. He has a B.S. degree from the U.S. Military Academy and an M.S. degree in mechanical engineering from Georgia Institute of Technology. In addition, he has attended the Industrial College of the Armed Forces, the U.S. Army Command and General Staff College and the Defense Systems Management College Program Management course. He will retire Jan. 1, 2004, capping a distinguished career of more than 36 years.

*As of press time, that number has risen to 423 casualties in Iraq and 92 in Afghanistan. These figures include hostile and nonhostile casualties.

Soldiers Use AKO to Voice Views

Patrick A. Swan

A favorite pastime for many soldiers is voicing their opinions on how to improve their uniforms and equipment (see related sidebar). Unfortunately, they rarely give those views to the people who can act on them. That oversight changed in a big way Aug. 8, 2003, when the Project Manager for Soldier Equipment placed the following short teaser in the Group Announcement section of the main AKO home page:

WANTED:
Feedback on soldier equipment. Please visit the PM Soldier Equipment (PM SEQ) community page to provide your feedback on everything from uniforms to body armor to combat optics.

The field response surprised even the most optimistic-minded at PM SEQ. "Before we got the Army-wide announcement posted on AKO's home page, we had 33 unique visitors to our community page for all of July," said Community Page Administrator Frans Van der Lee. "AKO listed our announcement on a Friday night. By Saturday, we'd had 535 unique visitors. On Sunday, we had 438 more. The overwhelming response we received in just one weekend is proof positive of AKO's power," Van der Lee remarked.

PM COL Greg Fritz said hundreds of soldiers, including some in Baghdad, posted feedback to the Soldier Equipment discussion threads on AKO. Van der Lee said 22 soldiers e-mailed him directly through the e-mail link on the PM SEQ community page.

"Surprisingly, the majority of the e-mails were purely positive feedback, which means a lot to the product teams working hard to develop the best equipment possible," Fritz said. "Also there were a few commercial-off-the-shelf solutions suggested and other outside-of-the-box ideas."

Fritz said the purpose for placing the announcement was simple. "We wanted to drive traffic to our community page and make soldiers aware of where their equipment comes from and that our product teams care about them and want their feedback. We also wanted to give soldiers a direct link to the PMs making the decisions and the product teams developing the equipment. Now they can have a direct line of communication to those responsible for delivering the goods. More importantly, Fritz added, the announcement was placed because soldiers are the customers.

What Does Soldier Feedback Look Like?

The following is a sampling of soldier feedback from the AKO Web site.

SPC Daniel G. Kemp
B Co., 3/502 Infantry

Subject: Soldier Feedback Wanted on Interceptor Body Armor (IBA)

This is my second deployment wearing IBA with plates, and I can say it works a lot better with the MOLLE [Modular Lightweight Load-carrying Equipment] than it did with the old LBV's [Load-Bearing Vests] and ALICE [All-purpose Lightweight Individual Carrying Equipment] rucksacks. Most of us have just attached the MOLLE pouches to the fronts of our IBA's and thrown the MOLLE carrier vest into our B bags for later. It's a good system. A guy from our 3rd Brigade stopped three 7.62 x 39s with his chest plate, and still shot the guy who shot him.

Now, is the IBA the way to go if you do not have plates? No. It's designed for front-line close combat. It's not a one-size-fits-all measure. The Army is so injury-paranoid they want everyone to have some kind of body armor just to cover themselves, but fail to acknowledge the need for various types of body armor

"They are the ones putting their lives on the line serving their country," Fritz continued. "They deserve the best equipment and near real-time answers to their questions and concerns. Knowledge is power and the more information we can pass to them about the equipment, the better they will perform. The more feedback we get from them, the better we can serve them and get the best possible equipment in their hands quickly."

LTC Rod Wade, an AKO Team Leader, said soliciting and obtaining such field feedback is what Army knowledge management is all about. "The work by PM SEQ to quickly gather feedback from an informal community of interest as large as the Army represents the ideal of combining new technology, people with common interests in making things better and a receptive functional proponent to make the Army better," Wade said.

The AKO discussion threads began with solicitations for feedback on uniforms, interceptor body armor (IBA), thermal weapons sights, night vision devices (NVDs), boots and the Rapid Fielding Initiative (RFI).

Van der Lee said that those items were chosen because they are some of the more recent hot items and because soldiers always had comments on uniforms. He added that soldiers took it upon themselves to start their own follow-on discussion threads on the community page for other pieces of equipment. PM, SEQ personnel were very happy to see that because it allows them to just plant the seed and let it grow. Some of those soldier-generated threads included discussions about the Army physical fitness uniform, the battle-dress uniform (BDU), fire-support equipment, the M45 protective mask, the Class A uniform and the Army beret.

Fritz said it was no surprise that soldiers were brutally honest in responding to questions about the subject topics, but he was surprised at the initiative to start their own discussion threads as well as to see the feedback generated on topics that weren't even proposed. "There are a lot of soldiers out there eager to have their say," Fritz continued, "and I was surprised by the number of replies from outside of our organization that provided great answers to some tough questions. There are many subject matter experts on soldier equipment throughout the Army, and these threaded discussions give them an opportunity to weigh in no matter what their current duties are."

Fritz stated that soldier-driven feedback is essential for building a better Army, but AKO also plays a critical role because it provides a forum for Internet-savvy younger soldiers as well as everyone in the Army family — from senior Army leaders and retirees to family members, commanders and noncommissioned officers. AKO thrives around-the-clock and around-the-globe harnessing the "intellectual capital" or good ideas from one of the world's most successful institutions. PM SEQ is proud to do its part in promoting AKO and the free exchange of ideas for improving America's Army.

Fritz said that PM SEQ will share the feedback with product development teams and others who can influence decisions about soldier equipment including HQDA, the

just like different types of gloves or whatever. But it's all about the funding, guys. Look at all the money that got flushed down the Crusader howitzer boondoggle and think of all the operator-level gear we could have bought with it.

SGT Michael Martin

Subject: Soldier Feedback Wanted on NVDs

I am with 3/3 Infantry Division and we went all the way to Baghdad wearing PVS-7A. No, they were not comfortable, but they helped us get where we needed to be during night and dawn. I have driven all night and I am home so, yes it would have been nice to have at least 7B, but oh well. Yes, we are a high-deployment unit so our low-tech 7A was much better overall than the opposition's, and that allowed us to do what we did. I hope the Army does upgrade these old NVDs [night vision devices], but I guess we showed they work.

SGT Benjamin Lewis
C Co. 1-506 Infantry (Air Assault)

The issue of boots seems to be debated more by noninfantry, nonhumping types. As any good infantryman will tell you, the current boots work just fine. You need to take care of your feet. Fresh socks, foot powder and exercise will keep your feet dry and hard. Still, new boots would be an enjoyed luxury. As far as steel-toed boots in the motor pool, they used to be

U.S. Army Training and Doctrine Command, the Army Test and Evaluation Command, the Army Acquisition Executive, the Army Forces Command and industry. In addition, the information will be shared with anyone who cares to listen. "None of this valuable feedback is locked away in PM SEQ's vaults," Fritz said. "On the contrary, AKO enables us to put it out there for everyone. As a matter of fact, anyone logging onto AKO can access it right from the home page, just by clicking on AKO Discussions in the upper left-hand corner," he added.

PM SEQ previously captured feedback for programs such as RFI primarily through onsite visits, phone calls and e-mails. RFI is a new program and, at first, the office was just dealing with one brigade. That soon grew to one division, and then another. "Now, it is spreading like wildfire across the Army, for units being deployed to Afghanistan and Iraq," Fritz stated. "Thus, by using threaded discussions and knowledge centers on AKO, we can pass lessons-learned feedback from each brigade to their successors and reach a far wider audience than phone calls, e-mails and onsite visits."

Fritz and Van der Lee take issue with critics who say such feedback is merely anecdotal and not scientific. Van der Lee stated, "What could be more scientific than a soldier putting on his uniform and body armor and then noting that he cannot access the pockets on his chest? You can only test and experiment with equipment in a controlled environment so much. It is the soldier in the field employing the equipment that will provide to the most true and scientific test of the equipment."

Fritz sited another example using thermal weapons sights. "During the infamous Iraqi sandstorms, our Army had very limited visibility," he said. "But soldiers in Iraq (not a scientific-controlled test environment) discovered that they still had good visibility with their individual and crew-served thermal weapons sights, even when the sandstorms obscured nearly every other optical sensor."

"Although scientific feedback is important, so is feedback from soldiers on the ground in all the places where AKO reaches," Fritz said. "We have already received feedback from hundreds of soldiers, around-the-clock and around-the-globe and, scientific or not, we want to capture their feedback so we can do a better job of supporting them," he added.

Some soldiers may say that although discussion threads let them vent, nothing will change. Fritz disputes that assertion as well. "In less than 1 week, we have generated feedback and replies from hundreds of soldiers across the Army. In turn, we share this feedback with everyone who influences the design, development, testing, fielding and funding of soldier equipment. I assure you, a soldier's honest feedback significantly influences the decisions that are made in that entire process," Fritz continued. "All those ideas that were stuck in a soldier's head as he or she served honorably on the front lines are finding their way back to the people who can make profound changes to benefit the entire Army. One soldier's lesson learned now has the potential to benefit the rest of the Army as soon as that soldier can get to an

authorized. It wasn't until people started dropping things on their toes that they realized the steel is thin and it will collapse. I would rather have a few broken toes then missing some that have been cut off by my own boot. That is the reason for no steel toes in the motor pools.

SGT Clifford Oliver

I agree that the LBV has to go. I just spent 6 months in Iraq and the way to travel is with the IBA and your magazines, canteens (if you use them) and whatever else you use strapped to the body armor. I think we should do away with the LBV altogether. The IBA should be standard issue to all soldiers instead of the old body armor we have.

Anonymous

A couple of thoughts on what I'm reading in this discussion:

1. Pockets are an issue. Body armor takes away the 4 pockets on the BDU blouse. A protective mask takes away at least the left hip pocket and restricts access to the left cargo pocket. This leaves soldiers with their right hip and cargo pockets. I'm leaving the back pockets out of this comment; I haven't used them in about 10 years. A possible solution includes slanting the chest pockets on the BDU blouse. This will ease access to these pockets while wearing body armor. Add calf pockets similar to aviator BDUs. Having worn aviator

Internet connection and put it out there for everyone else to read."

Fritz stated that things have already changed because AKO is transforming the Army in ways that most of us never imagined. As the Army transforms to a knowledge-based force, everyone will have the potential to be better informed and to make smarter decisions. "The change genie is already out of the bottle," he continued, "and bright, young soldiers who are tech-savvy will continue to use AKO to have their voice heard and to help build a better future Army."

Fritz hopes that soldiers will bookmark the PM SEQ site and community page and will continue to return, to contribute their feedback and to keep abreast of what is being done with that feedback. The vision is for AKO Knowledge Collaboration Centers that will be a single-source repository of detailed information, technical manuals, training modules, briefings and notices. The goal is to give soldiers the best equipment and universal access to information about that equipment. The AKO community page is their direct link to equipment decision makers.

Fritz added that it is important for soldiers to spread the word about the PM SEQ community page on AKO and what it provides to them. "The more feedback we get, the more justification we have to implement change and improve soldier equipment," Fritz concluded.

PM SEQ is a component of Program Executive Office (PEO) Soldier, which was activated June 7, 2002, to provide centralized soldier system acquisition management. PEO Soldier is the first organization with acquisition responsibility to develop, field and sustain everything a soldier wears or carries. PEO Soldier's mission is to arm and equip soldiers to dominate the full spectrum of peace and war, now and in the future. Developing and fielding an effective soldier system requires alignment, synchronization and funding of multiple programs. PEO Soldier manages 346 programs organized under the direction of three project managers. Project Manager Soldier Warrior consists of Product Manager Land Warrior and Product Manager Air Warrior. Project Manager Soldier Weapons includes Product Manager Individual Weapons and Product Manager Crew-Served Weapons. Project Manager Soldier Equipment consists of Product Manager Soldier Sensors and Product Manager Clothing and Individual Equipment.

Additional information about PEO Soldier can be found on AKO at **www.us.army.mil**, or the PEO Soldier public Web site at **http://peosoldier.army.mil** and at **http://www.pmsoldierequipment.army.mil**.

PATRICK A. SWAN is the Chief Information Office/G-6 Public Affairs Officer. He has an M.S. in communication and public administration from the University of Oklahoma.

BDUs, I got a lot of use out of these pockets, especially while seated in a vehicle or aircraft. As far as the cargo pockets, add an opening to them similar to the aviator BDUs so that when the soldier is seated this opening is facing up.

2. Soft cap vs. the beret. I think great arguments can be made for both sides. I go with function. I can put my soft cap on with one hand and it keeps the sun out of my eyes. I often think that the Army forgot to acquire tables for every building exit on post. Without these tables, I have to put everything on the floor to get my beret on.

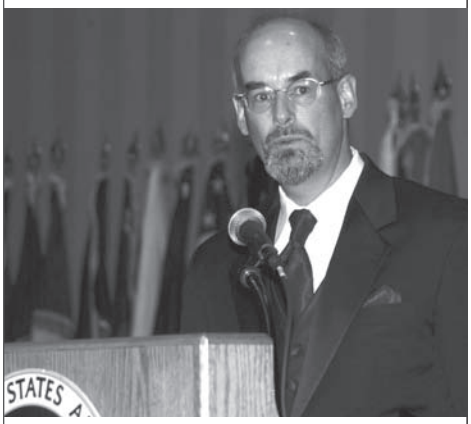
3. Field uniforms and clothing allowance. Four sets of BDUs aren't enough. I typically keep at least six uniforms on hand. At almost $50 per set, the price for BDUs is a little steep. Add in the physical training uniform, and a soldier's clothing allowance doesn't cover all the costs. I'm strongly in favor of a direct-exchange system for BDUs with a reduced clothing allowance. After all, how many soldiers do you know who look at their clothing allowance as an opportunity to pay bills or, like I used to do, blow it on beer?

Army Presents Annual Research and Development Laboratory Awards

Meg Williams (Photos by SPC Adam R. Mancini, Army Visual Information Division)

All 15 Army laboratories competed for the Annual Research and Development Laboratory (RDL) Awards — a testament to the strength of the Army's labs and the significant contributions their people are making to Army transformation and readiness.

Claude M. Bolton Jr., the Army Acquisition Executive and Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT); LTG John S. Caldwell Jr., Military Deputy to the ASAALT; and Dr. Thomas H. Killion, the Acting Deputy Assistant Secretary for Research and Technology and Chief Scientist, presented the RDL Awards at the 2003 Army Acquisition Corps Ball Oct. 5, 2003, at the Grand Hyatt Regency, Crystal City, VA.



Edward Doucette, NSC Director for Airdrop and Aerial Delivery, accepts the award for R&D Lab of the Year in the Small Lab Category.

"The labs that competed are to be commended for their outstanding research efforts and warfighter focus, as well as their support to Soldiers during *Operations Enduring Freedom* and *Iraqi Freedom* and national Homeland Defense," Secretary Bolton remarked. "The rankings were close and the selection committee had an especially difficult time choosing this year's winners."

The Research and Development Laboratory of the Year (Small Lab Category) Award was presented to the Natick Soldier Center (NSC) for technology generation, application, transition and rapid fielding of equipment, and technology acceleration through strategic partnering and leveraging. NSC developed the *Scorpion Soldier Platform* achieving major breakthroughs in human factors engineering, biomechanics, anthropometrics and technology integration into the human platform. Edward Doucette, NSC Director for Airdrop and Aerial Delivery, accepted the award on behalf of "the brilliant and hardworking workers of NSC."

The Research and Development Laboratory of Excellence (Large Lab Category) Award was presented to the U.S. Army Armament Research, Development and Engineering Center (ARDEC) for its advanced warhead development. ARDEC created a single liner *Explosively Formed Penetrator* resulting in a 60-percent increase in armor penetration over current warheads. ARDEC also implemented *Lean/Six Sigma* processes that resulted in more than $700 million in life-cycle cost savings from completed projects. COL John A. Merkwan, ARDEC Commander, thanked the award committee and acquisition senior leaders for recognizing the people at ARDEC for being the Army's center of lethality.

COL John A. Merkwan, ARDEC Commander, accepts the award for R&D Lab of Excellence in the Large Lab Category.

The Research and Development Laboratory of the Year (Large Lab Category) Award was presented to the U.S. Army Aviation and Missile Research, Development and Engineering Center (AMRDEC) for one-stop life-cycle engineering,

technical and scientific support for aviation and missile weapon systems and their support systems, including *Unmanned Aviation Vehicle* platforms, robotic ground vehicles and various other systems.

Dr. William McCorkle, AMRDEC Director, accepts the award for R&D Lab of the Year in the Large Lab Category.

Specifically, AMRDEC's *Low-Cost Precision Kill Advanced Technology Demonstration*, a low-cost conversion using commercially available components, transformed the current HYDRA-70 unguided rocket into a precision strike weapon providing Hellfire level of accuracy with a cost reduction factor of 86 percent. In addition, AMRDEC's implementation of an innovative, highly responsive *Prototype Integration Facility* helped it quickly develop and rapidly exploit technology, transitioning to fielded solutions in hours, days or weeks rather than years. "Our most important customers are Project Executive Offices (PEO) and Project Managers," said Dr. William McCorkle, AMRDEC Director, who accepted the award on behalf of the 2,400 people at AMRDEC. He also thanked AMRDEC's principal customers: PEO Air, Space and Missile Development; PEO Aviation; and PEO Tactical Missiles.

"The Army's labs are the enablers for the achievement of the Army vision, its objectives and the Army's transformation to the Future Force," LTG Caldwell stated. "These exceptional research and development organizations, like those recognized here tonight, will continue to provide the unmatched technical advantage in support of our non-negotiable contract with the American people — to fight and win our Nation's wars," he concluded.

The RDL awards program was established in 1975 to honor Army research and development labs that have made outstanding contributions in science and technology, providing the Army's warfighters with the best capabilities in the world. The RDL awards recognize labs for their outstanding contributions and their impact on enhancing the capability of Army operational forces worldwide.

MEG WILLIAMS is a Senior Editor/Writer and provides contract support to the Acquisition Support Center through BRTRC's Technology Marketing Group. She has a B.A. from the University of Michigan and an M.S. in marketing communications from Johns Hopkins University.

SSC Welcomes New Commander

On Oct. 10, 2003, the U.S. Army Soldier Systems Center (SSC), Natick, MA, welcomed new commander COL David Bongi during a ceremony in Hunter Auditorium. Bongi was introduced as the Installation Commander and Acting Deputy Commanding General for Operational Readiness, U.S. Army Research Development and Engineering Command (RDECOM), a new command headquartered in Edgewood, MD.

Bongi previously was assigned as SSC's Director of Security for Homeland Operations. Homeland Operations transferred to U.S. Army Forces Command and will no longer be represented at Natick. The RDECOM position details still need to be finalized with RDECOM headquarters and the Army Materiel Command, but the duties will be focused on providing integrated and responsive technologies and support to current military operations, and to quickly adapt advanced or near-term technologies into military systems.

Bongi replaces BG Craig Peterson, who served as Deputy Commanding General for Homeland Operations and Installation Commander since July 2002.

For more information about SSC, go to **http://www.natick.army.mil**.

Army Venture Capital Initiative

Dr. John A. Parmentola, Dr. Robert S. Rohde and Bruce J. Held

On May 7, 2003, the Army announced that OnPoint Technologies of Maitland, FL, would manage an Army Venture Capital Initiative (AVCI) focused on innovative power and energy technologies for the soldier. The announcement marked the introdcution of a new Army model for engaging small, entrepreneurial businesses to develop and transition innovative technologies to support the needs of individual soldiers — the centerpiece of Army transformation.

Venture Capital and the Army

The National Venture Capital Association defines venture capital (VC) as "money provided by professionals who invest alongside management in young, rapidly growing companies that have the potential to develop into significant economic contributors." Because VC is usually invested in young companies with innovative products, VC investments are inherently risky, but hold the potential for high rates of return on investment. VC is usually provided in exchange for an equity stake in the recipient business, with typically substantial investor involvement in the company's day-to-day operations. This provides a degree of business focus and expertise that might otherwise be very limited within the company, improving the startup company's chance of success.

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The Army constantly looks for technology innovations that can offer greater performance, lower cost and better ways of accomplishing its mission. Entrepreneurs in small, young companies often develop such innovations, but generally target larger commercial markets for profit potential. These companies may not consider defense markets because of concerns about the defense contracting environment, intellectual property protection, limited market size and the perceived potential for extensive oversight, largely because of a requirement to protect the public interest.

An Army-focused and -funded VC company, managing its relationship with the Army through a flexible agreement instrument, can, if properly formulated, mitigate some of these concerns. By offering what the entrepreneurs need most — capital for company and technology development — the VC company can provide a strong incentive for initiating and maintaining close relationships with the Army. An Army-focused VC fund would help entrepreneurs develop products that are potentially useful to both the commercial and government markets. In this dual-use market, the Army could be the entrepreneur's influential "first user," as opposed to being an isolated and limited niche market player.

There is a precedent for this type of approach. The CIA established In-Q-Tel® as a not-for-profit (NFP) VC-like corporation to find and develop technologies for the intelligence community. Though the CIA and In-Q-Tel have only been using VC for a few years, the experience appears to have been positive.

AVCI

In Section 8150 of the *2002 Department of Defense Appropriations Act*, Congress earmarked $25 million of the Army's FY02 basic and applied research funds for a "Non-Profit Army Venture Capital Corporation." As a result of this legislation, the Army moved forward to establish its VCI.

The Army focused the VCI on power and energy technologies for the soldier — a technology area with a clear Army requirement, a parallel commercial market and ability to be influenced by the amount of available funding.

In the fall of 2002, a Broad Agency Announcement was issued for

proposals to establish and manage the Army's $25 million VCI. Twenty proposals were received. The Army selected Military Commercial Technologies Inc. (MILCOM), a for-profit VC company with an excellent investment track record and experience in collaborating with government organizations. MILCOM proposed an NFP partner, OnPoint Technologies Inc., through which the Army and MILCOM would manage the initiative.

The AVCI was established through an "other transaction" (OT), a legal instrument with significant flexibility. The OT highlights OnPoint's two principal goals:

- Find innovative power and energy technologies, invest in their development and then transfer them to the soldier.
- Reap substantial net returns for the investing organizations from commercial and Army markets.

Because OnPoint is an NFP organization, earnings on its investments are reinvested. If the fund is successful, OnPoint will become an "evergreen" fund (self-financing), using the proceeds from earlier investments to finance each new round of investments in technologies of interest to the Army.

Under the terms of the agreement, MILCOM will manage most of the actual investing activities by identifying potential investments, conducting due diligence to recommend investments and managing most of the administrative burdens associated with the investment process. OnPoint will approve investments recommended by MILCOM, manage relations with the Army and ensure that Army technology goals are pursued as a main objective of the investment activities. Both entities are responsible for managing the technology road-mapping process used to identify investments that best balance the Army's technology requirements and the venture capitalist's need for a positive return on investment.

For its efforts, MILCOM will be compensated much the same as any other venture capitalist, though with a twist. The typical venture capitalist has only one goal when making investment decisions: to make significant returns on the money invested over a relatively short time period. To encourage moneymaking investments, the typical venture capitalist retains a percentage of any profits (the "carry") earned on the investments made with the monies entrusted to him/her. The AVCI, however, differs in that the goal of realizing a positive return on monies invested must be considered concurrently with the more important goal of developing technologies that transition to the Army. MILCOM will be incentivized with the prospect of additional compensation when technologies from its investments actually transition to the Army. These two primary mechanisms, the carry and the technology transfer incentive, have been carefully structured to encourage investments with the dual likelihood of making money *and* yielding technologies that will be integrated into Army systems over time.

> OnPoint, in partnership with the Army, must identify the issues and requirements associated with the soldier's power and energy needs — teaming with soldiers, with those in the Army responsible for managing the development of soldier equipment and with the entrepreneurial companies doing the development work.

Managing AVCI for Success

The Army has decided to have no decision-making authority in approving or disapproving OnPoint's investments. This will go a long way toward eliminating the perception of extensive oversight that is of concern to companies that the Army seeks to engage through the AVCI. It will also provide OnPoint with the flexibility to shape its strategy and maintain its agility in responding to both commercial and Army interests. However, this does not imply a hands-off approach. The initiative's probability for success will be enhanced by the Army's actions on its market side.

OnPoint, in partnership with the Army, must identify the issues and requirements associated with the soldier's power and energy needs — teaming with soldiers, with those in the Army responsible for managing the development of soldier equipment and with the entrepreneurial companies doing the development work. The planned Army participation in these teaming activities will help to ensure that OnPoint has the information and knowledge it needs to make investing decisions that correctly align with and produce innovative technologies that transition to the Army.

Through this new approach to doing business, the Army expects to capture

Continued on Page 43

University Affiliated Research Centers

Dr. John A. Parmentola

University Affiliated Research Centers (UARCs) are DOD-approved collaborative partnerships between academia, government and industry. They combine universities' cutting-edge research capabilities, industry's expertise in technology manufacturing and the knowledge of government scientists on how to shape basic research understanding into technology that satisfies warfighting needs. UARCs are affiliated with major universities that conduct research in scientific areas with potentially high-payoff, paradigm-shifting technology applications. The Army seeks to exploit the opportunities created by UARCs to accelerate development of transformational capabilities to a lighter, smarter, faster force.

UARCs are established to promote innovation and facilitate rapid maturation and transition that laboratory knowledge to practical technical applications. The university, government scientist and industrial teaming is key to achieving success in translating knowledge and understanding into a feasible acquisition program.

Nanotechnology for the Soldier

The Institute for Soldier Nanotechnologies (ISN) was formally established as a UARC May 22, 2003. ISN is a collaboration between the Massachusetts Institute of Technology (MIT), U.S. Army, and industry partners Dupont, Raytheon, Dow Corning and the Center for Integration of Medicine and Innovative Technology. Nanotechnology seeks to enable the design and creation of novel materials or devices at the nanometer scale, often at the level of individual atoms and molecules (1 nanometer is about 50,000 times smaller than the diameter of a human hair). Nanostructures would be assembled into macroscopic systems to produce materials with performance characteristics that are not achievable today.

The goal of ISN's specific work is to enable ultra-lightweight materials for soldier protection integrated into warfighting ensembles. ISN's cutting-edge research focuses on soldier survivability in three key areas: ballistic protection from high-speed projectiles, blasts and chemical/biological threats; soldier performance improvements; and medical interventions. Research supports revolutionary capabilities including multithreat protection against ballistic projectiles, sensory attack and chemical and biological agents; soldier ensembles with climate control; remote biomedical monitoring; and physiological stress management. For example, research efforts in mechanically active materials will provide actuators for body armor or exoskeletal support (for load-carrying systems, wound compresses and splints embedded in uniforms) and pressure/motion sensors to remotely monitor soldier health. Signature management technology will provide embedded sensors to detect enemy range-finding or target designation surveillance. Soldier medical technology will provide triage information and embedded first-aid.

> The Army seeks to exploit the opportunities created by UARCs to accelerate development of transformational capabilities to a lighter, smarter, faster force.

ISN currently has a multidisciplinary staff of 34 faculty, 80 graduate students and 28 postdoctoral research associates from several departments in MIT's schools of engineering and science; it will also include government and industry scientists. MIT has established ISN building space of more than 30,000 square feet with a state-of-the-art nanotechnology laboratory and office space for students, visiting researchers and

MIT faculty. The laboratory is designed to foster collaborative research across many disciplines, including mechanical engineering, chemical engineering, chemistry and materials science. The ISN laboratory is also situated for easy access to the rest of MIT's world-class research infrastructure.

Advanced Simulation and Immersive Environments

The Institute for Creative Technologies (ICT) UARC was established in 1999 with the University of Southern California to exploit research and technology opportunities in advanced gaming and entertainment industry simulations for Army applications. ICT leverages the resources and talents of the entertainment and game development industries to work collaboratively with computer and artificial intelligence (AI) scientists to advance state-of-the-art immersive simulation capabilities. This innovative center's long-term goal is to enable creating virtual reality systems that could take the form of immersive environments like the "Holodeck," used in the *Star Trek* television and movie series. This work will one day make possible a four-dimensional simulated interactive world with holographic images, directional sound and olfactory and tactile experiences.

ICT research in modeling and simulation focuses on technologies for immersion, networked simulation, computer-generated autonomy and tools for creating simulated natural environments. Applications include visual prototyping of equipment and concepts, mission planning and rehearsal and adaptable leader training. The ICT/Army Experience Learning System provides the ability to learn through active learning systems.

> Nanotechnology seeks to enable the design and creation of novel materials or devices at the nanometer scale, often at the level of individual atoms and molecules (1 nanometer is about 50,000 times smaller than the diameter of a human hair).

ICT engages entertainment industry researchers to capitalize on innovations in multimedia, location-based simulation and interactive gaming. Exploiting dual-use technology, ICT creates opportunities for the Army to benefit from and transfer applicable entertainment technologies into military training systems. Working with some of the most creative entertainment industry talent, ICT adapts their artistic concepts of story and character to increase the degree of participant immersion in synthetic environments and to improve the realism and usefulness of these experiences for support training and mission rehearsal. The Mission Rehearsal Exercise System, a simulator that uses AI-based virtual humans to challenge trainees with dilemmas they might encounter in peacekeeping operations, received the Defense Modeling and Simulation Office/ National Training Systems Assocation *Outstanding Achievement Award in Modeling and Simulation Training*.

ICT has already successfully collaborated with several Army organizations to speed products from research into practical applications. It has worked with the U.S. Army Training and Doctrine Command's Infantry School at Fort Benning, GA, to develop cognitive leadership training aids that leverage both "gamer" PC's *(Full Spectrum Commander)* and Microsoft's© X-Box® game console *(Full Spectrum Warrior)*. Both training aids feature Explainable Artificial Intelligence developed at ICT. *Full Spectrum Warrior* is now in final development and could be in soldiers' hands before the end of the year. *Full Spectrum Commander* is already in use training soldiers in Afghanistan. At this year's annual Electronic Entertainment Expo, *Full Spectrum Warrior* won two Game Critics Awards: "Best Original Game" and "Best Simulation Game."

The Critical Leadership Analysis System, developed for the Army Research Institute at Fort Leavenworth, KS, combines coordination architecture, a machine learning approach to natural language processing and a novel algorithm for automated animation of rendered human faces in an application designed for interactive learning of leadership skills.

ICT is currently developing the Joint Fires and Effects Trainer System as a training component for the Fort Sill, OK, Joint Fires and Effects Integration Center. This project includes groundbreaking work in virtual human depiction and graphical capabilities similar to the ICT-developed "FlatWorld" system to create a series of immersive environments for training the "universal observer" of the future.

Biotechnology

The Institute for Collaborative Biotechnologies (ICB), established this year, performs cutting-edge

research in the area of biologically inspired materials and sensors. The actual contract, offered to multiple universities, was awarded in August 2003. This UARC was established to promote rapid progress in biotechnology, which promises radically new technologies that are expected to impact soldier survivability, early warning and weapons systems. Through this center, the Army seeks to foster the interdisciplinary fundamental knowledge and technical capabilities to manipulate biological systems and components and to exploit biologically derived products and processes for soldier and platform applications.

ICB will conduct scientific research in two areas of emphasis: sensors, electronics and information processing; and technical fundamentals to transition cutting-edge biotechnology research into these application areas. A single university will serve as lead UARC host for ICB, with subcontracts to two other universities to complement the expertise of the host institution and that are fully integrated and networked into the host institution program. The lead university will establish procedures to provide dynamic and real-time collaboration between the three universities, as well as participating team members from industry, Army labs and/or other research centers. The Army's vision for ICB is that it will serve as the network "hub" for assessing, coordinating and leveraging extramural cross-disciplinary biotechnology research on the Army's behalf.

The Institute for Creative Technologies (ICT) UARC was established in 1999 with the University of Southern California to exploit research and technology opportunities in advanced gaming and entertainment industry simulations for Army applications.

Electrodynamics, Pulsed Power and Hypervelocity Physics

The Institute for Advanced Technology (IAT) at the University of Texas at Austin was initially founded in 1990 as a Federally Funded Research and Development Center and restructured as a UARC in 1993. The center's principal goal is to develop revolutionary capabilities in lethality. To achieve this, the UARC provides the Army with world-class expertise in electrodynamics, pulsed power, hypervelocity physics and long-term, comprehensive research programs at the forefront of advanced electric weapons technology. It also engages in the specialized training and education of Army personnel to ensure the Army's capability to address the critical scientific, engineering and technical issues associated with developing advanced weapons.

Hypervelocity physics investigation at IAT provides fundamental descriptions of impact dynamics between penetrators and targets. Their electrodynamics research is directed at developing a basic understanding of electromagnetic launchers and their associated pulsed power systems. IAT uses high-performance computing coupled with baseline experiments conducted in their facilities. It is the Army's first UARC dedicated to the scientific underpinnings for electromagnetic launch. It is through the balance between the theoretical foundations and experimental art that IAT has maintained its leadership position in these challenging research areas.

DR. JOHN A. PARMENTOLA is the Director for Research and Laboratory Management for the Deputy Assistant Secretary of the Army for Research and Technology, Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology. He has a B.S. in physics from the Polytechnic Institute of Brooklyn and a Ph.D. in physics from the Massachusetts Institute of Technology.

Did you know?

Effective Oct. 14, 2003, Product Manager (PM) Physical Security Equipment was redesignated as PM Force Protection Systems. The name change reflects the Army's increasing emphasis on force protection capabilities and leveraging technology to improve security while reducing manpower requirements. The program will focus on providing affordable, scalable, modular and supportable tactical force protection capabilities to forward-deployed tactical forces while continuing to provide state-of-the-art physical security equipment to Army installations worldwide. Furthermore, the name change better represents the growing focus on force protection efforts, homeland defense and support to forward support forces.

The PM Office is responsible for development and acquisition of capabilities to include robotics, unmanned ground sensors, installation security, mass notification, explosives detection, access control and surveillance systems. Located at Fort Belvoir, VA, the PM Force Protection Systems Office is aligned under the Program Executive Office for Combat Support and Combat Service Support, Warren, MI.

The Role of the OFW LTI: The Eagle Enterprise Perspective

Kevin G. Bonner and Scott D. Myers

Unmanned ground and air platforms perfom manpower-intensive or high-risk tasks – reducing the soldier's exposure to risk, while expanding his area of operations and influence.

As the Lead Technology Integrator (LTI) for the Natick Soldier Center (NSC)-led Objective Force Warrior (OFW) Phase II program, Eagle Enterprise (a General Dynamics Co.) works with NSC to select and integrate leap-ahead technologies to create the equipment and operational concepts for the Army's future soldier. The OFW soldier must be capable of revolutionary lethality, survivability and mobility and be fully integrated and interoperable with the Army's other major transformation efforts under Future Combat Systems (FCS).

To achieve a lightweight, overwhelmingly lethal, fully integrated individual soldier combat system, Eagle Enterprise is implementing an approach that focuses on:

- Soldier Borne Systems (SBS) that include everything worn, borne or consumed by the dismounted soldier.
- Integrated systems-of-systems approach focusing on a

soldier-centric force enabled by robust, netted communications, advanced situation awareness and netted direct and indirect fire effects.

To achieve the OFW soldier system-of-systems vision, Eagle Enterprise has formed a diverse, 16-member team of technology and systems integration experts to provide a comprehensive evaluation of suitable technologies to be incorporated into the OFW Phase II system prototypes and a rigorous system-of-systems engineering approach to ensure technologically feasible and field-supportable OFW systems that can transition to Program Executive Office (PEO) Soldier. The Eagle Enterprise team's ability to employ new technologies and operational concepts is facilitated by the agreement between Eagle and its government customer. The Section 845 agreement establishes a true partnership between Eagle and the government and allows for changes in team membership to incorporate new technology providers as well as coordinate seamless transition to Phase III when all milestones are met (approximately mid-FY05).

Technology Assessment/ Selection

During the competitive Phase I, Eagle Enterprise identified enabling technologies to drive leap-ahead capabilities in OFW units and developed concepts for all soldiers in the unit of action. These capabilities include:

- Integrated soldier-level protection and individual equipment system.
- On-the-soldier power generation and management.
- Networked communications with multilevel security.
- Semiautonomous ground mobility support for soldier offload and resupply.
- Networked effects for massed fires.
- Multispectral enhanced vision.

- Integration of an individual soldier weapon into system functionality.
- Information management software for situational awareness and tactical planning and modification.

Comprehensive technology surveys and assessments were initiated to identify candidate technologies in each technical domain enumerated above. In all, 2,073 specific DOD- or government-sponsored and commercial technologies were identified and entered into their respective trade spaces. Each technology was assessed using both quantitative and qualitative methodologies for OFW applicability on the basis of power usage, technology readiness level, weight, cost, form factor and technology-specific discriminators.

The 884 technologies deemed appropriate for OFW use were then assigned an overall score of 1 (poor) to 5 (excellent) for suitability insertion during Phase II. In each category, primary and alternate technologies were selected to define the overall OFW system concept. The initial choices for SBS components are being reevaluated during Phase II for insertion into the system during the spiral development process described below.

System-of-Systems Approach

Unlike most science and technology (S&T) programs, to ensure appropriate risk reduction during the S&T phase prior to transitioning to the PEO OFW has adapted a formal systems engineering process, including compliance with Software Engineering Institute/Capability Maturity Model levels, which provides software development monitoring processes and metrics to ensure ease of integration within the SBS, across the Small Team Systems and to achieve interoperability with FCS.

Eagle has made systems engineering an integral part of its integrated product and process development by creating the Systems Engineering Team (SET). SET operates in conjunction with the User and Operational Effectiveness Team (UOET) and the System-of-Systems Integration Team (SoSIT) to develop the OFW prototypes, move requirements forward and ensure user acceptance. Each major team and its subteams are co-led by government and LTI members.

SET is charged with overseeing the overall spiral development of small soldier team requirements through sound analyses, technology exploration, experimentation and assessment with users in a relevant operational environment. SET focuses on requirements tracking, developing and managing a sound modeling and simulation methodology, providing analysis and assessment capabilities and applying systemic influence for human/system interaction (MANPRINT), interoperability, producibility, logistics and training. One of SET's goals is to support achievement of an approved operational requirements document to support a Milestone B decision.

SET flows its requirements to the SoSIT that is responsible for the development of integrated OFW prototypes through a spiral development process. The program's spiral development approach, selected by Eagle because of the aggressive OFW schedule, is a robust, iterative process enabling incremental capability growth. To mitigate schedule risk, in addition to the spiral development process, the Eagle approach relies heavily on modeling and simulation to prove the maturity of technology, integration and operational concepts. A critical element in SoSIT's charter is the development of architecture that is flexible enough to accommodate future OFW developments and be compatible with FCS. Three integration subteams under the SoSIT are managing the development and integration of key aspects of the SoS architecture: SBS Integration Team (SBSIT), Software Integration Team (SIT) and Small Team Systems Integration Team (STSIT).

SBSIT manages development of and integrates human-worn and human-borne equipment, providing requisite resources to the development of integrated protection and individual equipment, electronics, radio equipment, energy storage, weapon systems and physiological monitoring and sustainment. SIT provides the netted communications and collaborative situational awareness that enables the OFW's revolutionary capability. STSIT leverages the assets available to the dismounted soldier as an integral part of the teams, squads and platoons, developing and assisting in testing and assessment of capabilities provided by integrating unmanned ground and air vehicles and sensor fields with the soldier.

SBSIT manages development of and integrates human-worn and human-borne equipment, providing requisite resources to the development of integrated protection and individual equipment, electronics, radio equipment, energy storage, weapon systems and physiological monitoring and sustainment.

UOET provides the continuous user voice throughout the spiral design process to facilitate synchronizing the OFW technologies with user expectations. This team provides SoSIT with continuous feedback while SoSIT and SET provide feedback to the user community for continued refinement of the OFW operational concepts and Land Warrior Block III requirements.

In summary, OFW is a pioneering program, bringing the engineering discipline normally associated with system development and demonstration programs earlier in the acquisition life cycle while retaining the traditional innovative S&T development and prudent risk-taking environment. LTI's role is to develop OFW SBS prototypes capable of fighting effectively in small units and with FCS and future joint forces, while also ensuring that OFW products can be transitioned successfully into the Land Warrior acquisition program.

KEVIN G. BONNER is the Program Manager Objective Force Warrior Program, General Dynamics Eagle Enterprise. He has a B.S. and an M.S. in electrical engineering from Drexell University.

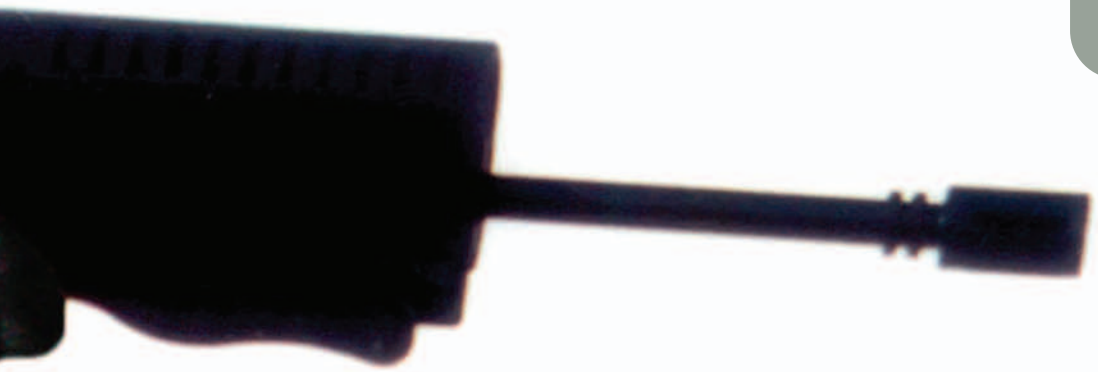
SCOTT D. MYERS is Vice President of General Dynamics Eagle Enterprise and Vice President General Dynamics Robotic Systems. He serves in the capacity of Lead Technology Integrator Program Oversight for the Objective Force Warrior program. He has a B.S. in mechanical engineering from Clemson University and an M.S. in mechanical engineering from the University of Texas.

OBJECTIVE FO

RCE WARRIOR

Advanced Technology Demonstration

Carol J. Fitzgerald



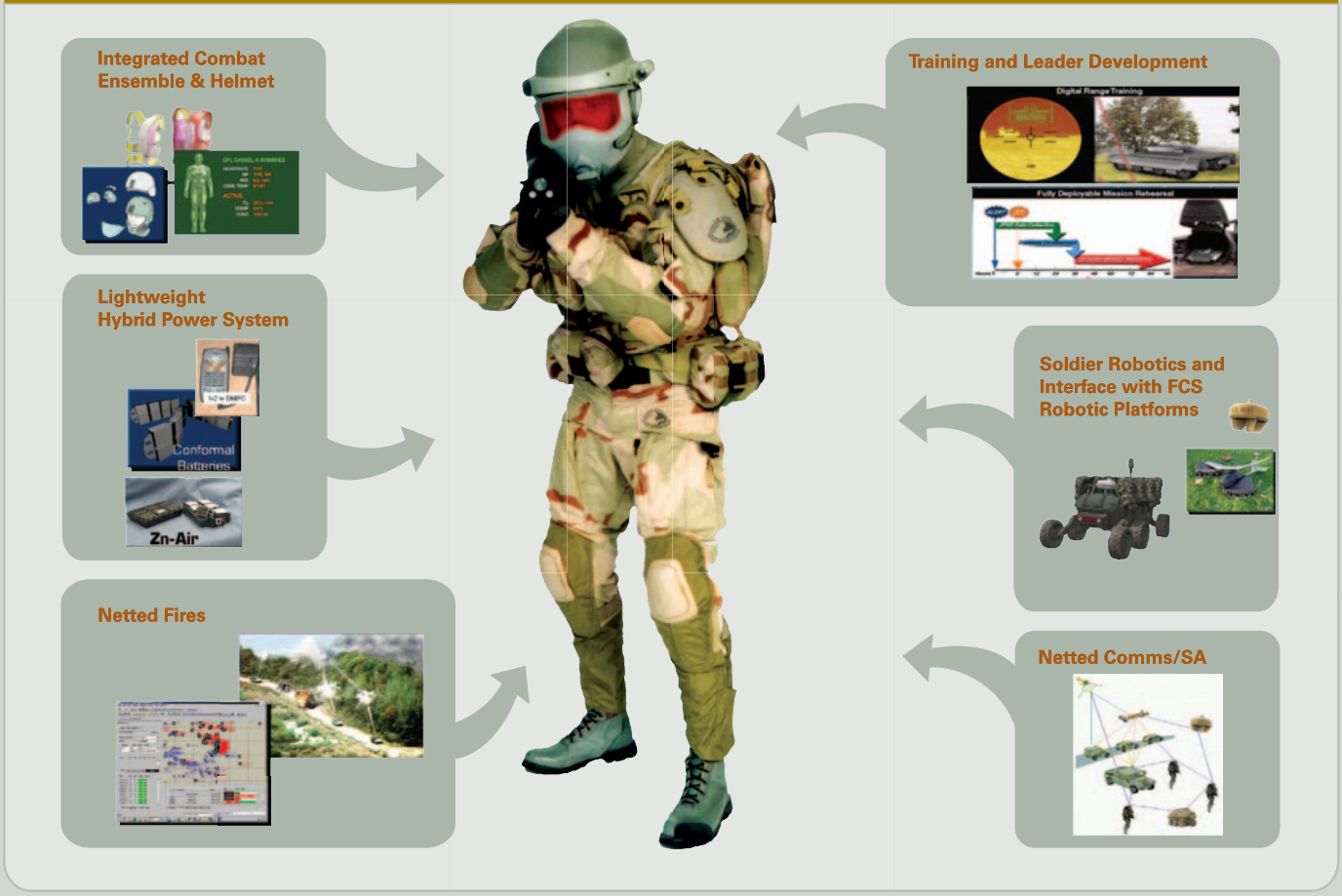
"It is only by doing things others have not that one can advance."

LTG George S. Patton Jr.

The Objective Force Warrior Advanced Technology Demonstration (OFW ATD), led by the U.S. Army Natick Soldier Center (NSC), is the Army's flagship science and technology (S&T) program charged with maturing and integrating technologies into a system-of-systems (SoS) and demonstrating a revolutionary capability for the individual soldier and small team. OFW is the primary S&T feeder to Land Warrior Block III Advanced Capability (LW-AC), the variant of Land Warrior that is scheduled to be fielded with the Future Combat Systems (FCS) Increment 1 in 2010. OFW is an approved FY02 Science and Technology Objective (STO) and was approved as an ATD in FY03.

The OFW vision resulted from several independent efforts sponsored by the Deputy Assistant Secretary of the Army for Research and Technology (DASA(R&T)) to determine what could be done to field a revolutionary soldier system this decade as the centerpiece of the Army's Future Force. Among these efforts were an Independent Review Team (2000), an Army Science Board Study (2001) and a multiteam visioning effort coordinated by Oak Ridge National Laboratories. Each initiative concluded that achieving revolutionary increases in capability this decade would require increasing investments and integrating, holistic SoS approaches for the individual and small team. The result was the OFW ATD — the programmatic forcing function that will integrate myriad technology maturation efforts and demonstrate them by the end of FY06 — and a paradigm shift similar to that initiated in the FCS program.

Figure 1. Objective Force Warrior Capabilities



A Unique Approach

The early planning for OFW ATD included identification of warfighter needs, capabilities to meet those needs and investigation of technologies that could provide the desired capabilities. This resulted in many planned S&T efforts being reshaped under the leadership of DASA(R&T) and the Assistant Secretary of the Army for Acquisition, Logistics and Technology to better support the OFW vision. Planning also included active involvement with NSC by the key stakeholders — the U.S. Army Training and Doctrine Command (TRADOC) Systems Manager for the Soldier; the Project Manager Soldier and the U.S. Army Forces Command (FORSCOM). Their participation continues and is instrumental in keeping the program on the correct azimuth to accomplish the long-term OFW transition goal to Program Executive Officer Soldier for acquisition and fielding as LW-AC.

> The early planning for OFW ATD included identification of warfighter needs, capabilities to meet those needs and investigation of technologies that could provide the desired capabilities.

OFW SoS

From the outset, OFW's focus has been on an SoS. This concept includes all items that the soldier wears or carries — the Soldier-Borne System (SBS) — and those systems that are integral to the small team's assets — the Small Team Systems (STS) — that contribute greatly to mission performance. (Assets include small unmanned ground vehicles, back-packable unmanned aerial vehicles, laser designators and unattended sensors, just to name a few.) While the ATD focuses on the SoS, many technologies that are embedded within the SBS and STS components are being leveraged from STOs and other external programs like FCS for integration within or interface with the OFW SBS. This holistic TRADOC Soldier-as-a-System approach will help minimize or reduce soldier-borne loads, enhance power management and optimize individual and team performance.

Figure 2. Technologies/Capabilities

Networking Digital Radio
- Lightweight/low power SUO/ SAS capability (SLICE)
- Cross-domain solution (multiple security levels)
- Electro-textile based and body conformal antennas
- Digital networking

Personal Navigation
- Hybrid all-terrain nav; 3 M, 3D accuracy
- GPS, DRM, TOA, MEMS IMU
- Kalman Filter

Situational Awareness
- Ad hoc networking
- Integration of OFW net with FCS network (WIN-T) and unattended sensor network
- Warrior team collab planning & mapping
- Horizontal data fusion
- Multiple displays (wrist-mounted, helmet-mounted, PDA) to enhance SA

Head-Borne Vision Enhancement
- Helmet mounted fused IR/I2 vision sensors
- Laser illuminator for low/no light conditions
- Improved wgt, ergonomics and ctr of gravity

Headgear Protection and Integration
- Integrated/modular design compatible w/XM50 mask for respiratory protection
- Lightweight protection for frag and 9 mm
- Integrated laser eye protection

Direct & Area Fire Weapons
- XM-8, XM-29, lightweight machine gun
- Lightweight 5.56 ammo

Fire Control Systems
- Laser pointer for rapid target acquisition
- Fused thermal/I2 on weapon
- Day sight for close quarters combat

Organic Supporting Fires and Synchronization
- Distributed and Integrated fire control system integrating BLOS and fires from FCS
- Software integration for near real time call for fires

Leveraged FCS Unmanned Systems
- Common operator control unit (Goal: integrated soldier control unit)

Robotic Mule
- Load carriage, power generation
- Mobile squad-based fusion station

Small Unmanned Ground Vehicle
- Modular sensor suite payloads

Organic Unmanned Aerial Vehicle
- One man portable
- 0.5 lb payload; 8(T)-16(O) km range
- Real time day/night video and comms

Figure 3. Technologies/Capabilities

Rechargeable Batteries and Chargers
- Li ion polymer - 160 Wh/kg
- FCS compatible
- Team smart recharger
- Conformal designs

Hybrid Power Sources
- High-energy density fuel cell centralized recharger 400 Wh/kg
- Metal air systems 1000 Wh/Kg
- Distributed body worn power architectures for 1-2 W DMFC modules

Power Management
- Low power processing
- Efficient SW architectures
- Automated/selective device powering

Training
- Embedded
- TTP recall; leader development
- Collaborative en route training and mission rehearsal

Human Performance
- System fightability (physical, cognitive)
- Physical/cognitive performance enhancement
- Customized voice, tactile, haptic, visual, auditory human-system interfaces
- Intelligent multi-modal input/output devices

Integrated Combat Suit
- Modular design
- Integrated body armor/load carriage chassis with hybrid ballistic materials
- Joint protection
- Multifunctional materials including:
- SPM for CB/wet protection
- Electro-textile power/data PAN
- Novel signature mgmt (multi-environment visual and near/far IR)
- FR materials

Thermal Balance
- Passive design features (spacer materials, highly wicking materials)

Prompt Casualty Care
- Integrated tourniquets

Sustainment
- Water generation/purification
- Nutritional supplements
- Compressed and "eat-on-the-move" rations

Physiological Status Monitoring
- Sensor suite for PSM
- Remote triage (life sign detection)

Hydration
- On-the-move hydration with CB filtration and purification

OFW Imperatives

The OFW ATD seeks to exhibit connectivity within the command, control, communications, computers, intelligence, surveillance and reconnaissance network of the unit of action (UA) and Future Force. The goal is to operate the soldier-borne system for 24 mission hours without resupply and reduce soldier-borne fighting loads to 50 pounds or less. These capabilities will be demonstrated at a system technology readiness level (TRL) 6 (system/subsystem model or prototype demonstration in a relevant environment) and in a fightable, user-friendly, tactically viable and technologically sound SoS. In addition, the requirements for LW-AC (Block III of the LW Operational Requirements Document (ORD)), currently in draft, will be refined and validated in conjunction with the spiral design process. The goal is to have the ORD completed by the end of FY06 to support Milestone B.

OFW Capabilities

Myriad capabilities are embodied within the OFW SoS concept and push the technological research and development envelope. These capabilities include netted communications and collaborative situational awareness; netted lethality, full-spectrum individual protection in an integrated multifunctional ensemble; sensory enhancement; robotics and mobility; power sources and power management; training and human performance as depicted in Figure 1. The specific technologies associated with these capabilities, which will be demonstrated in the FY06 ATD, are illustrated in Figures 2 and 3.

OFW ATD Structure

The OFW seamless government/industry team is using an Integrated Product and Process Development (IPPD) approach with disciplined systems engineering processes and a structure of teams and integrated product teams (IPTs) that reflect the holistic, human-centric, SoS approach. The OFW ATD structure has three phases:

- Phase I — Concept Development
- Phase II — Preliminary and Detailed Design
- Phase III — Prototype Fabrication and Demonstration

Phase I was competitive with two Lead Technology Integrator (LTI) teams — Eagle Enterprise and Wolfpack Enterprise — developing competing operational and SoS concepts for all soldiers in the UA. The Army selected Eagle Enterprise for Phases II and III, where funding constraints allow for the design and fabrication of only the dismounted variants of OFW, but with inclusion of the "hooks" to grow the system for the other soldier variants when funding becomes available. The major activities were:

- Conduct operational and organizational concept studies.
- Perform technology searches and assessments.
- Design initial operational, system and software architectures.
- Perform critical modeling and simulation experiments.
- Evaluate targeted government technology maturity investments.
- Demonstrate TRL 3.

The team will conduct four design spirals during Phase II to iteratively and incrementally build and assess the OFW SoS, with appropriate risk mitigation throughout the process. The major activities will be:

- Conduct four spiral "design, prototyping, experimentation and analysis" iterations.
- Implement mature process for systems and software engineering.
- Develop interfaces with FCS, Warfighter Information Network-Tactical (WIN-T) and Comanche.
- Leverage and integrate technology from related Army and DOD S&T projects.
- Perform critical modeling and simulation, integrate design evaluations and user assessments with design spirals. Refine architectures and operational requirements.
- Evolve robust prototypes through design spirals.
- Move to TRL 5.

During Phase III, the OFW team will undertake several Limited Objective Experiments (LOEs) to iteratively assess OFW's operational and technical merit and determine if

> While the ATD focuses on the SoS, many technologies that are embedded within the SBS and STS components are being leveraged from STOs and other external programs like FCS for integration within or interface with the OFW SBS. This holistic TRADOC Soldier-as-a-System approach will help minimize or reduce soldier-borne loads, enhance power management and optimize individual and team performance.

the ATD exit criteria have been met. The capstone demonstrations will look at the entire SoS used collectively and tactically and validate the enhanced operational effectiveness. Simulation experiments will augment live experimentation. An Experimental Force (EXFOR) will be requested from FORSCOM to participate throughout the Phase II design/assessment process to conduct the LOEs and capstone demos. The major activities will be:

- Fabricate final sets of products to support Squad (+) EXFOR.
- Comprehensive training program for EXFOR.
- Conduct 6 LOEs.
- Conduct capstone demo in operationally realistic environment to achieve exit criteria.
- Move to TRL 6.
- Integrate demos with FCS, WIN-T and Comanche.
- Transition to PEO Soldier for system development and demonstration phase.

Transition Strategy

The revolutionary OFW SoS will transition to PEO, Soldier when the ATD concludes. Transition deliverables will include all OFW hardware and software; technical data and analyses; tactics, techniques and procedures and training programs of instruction; any model and instrumentation upgrades that are undertaken and new processes and methodologies developed to effectively execute the rigorous ATD. In addition, a two-pronged transition approach will allow OFW technologies or components that individually mature early (i.e., a TRL 5 or 6 now or in the next year or two) to be considered by PEO Soldier for insertion into Land Warrior-Stryker to get evolutionary improvements into the hands of soldiers quickly. At the same time, these technologies will remain a part of the OFW system architecture and will be enhanced within that architecture.

Achieving Interoperability

Interoperability within the Future Force will be accomplished via OFW active participation with PEO Soldier in the FCS Soldier System Integration IPT. This IPT will provide a forum for collaborative identification, definition, development and assessment of optimal Soldier System/FCS interfaces, based on the soldier systems' more challenging size, weight and power constraints. In addition, an Associate Contractor Agreement will allow the Eagle Enterprise LTI to interact directly with the FCS Lead Systems Integrator. Interoperability assessments are part of Phase II and interoperability experiments are part of Phase III ATD activities.

OFW begins the paradigm shift to a soldier-centric Future Force, and the rigorous, disciplined systems approach led by NSC puts LW-AC on a glidepath to success via risk reduction and pushing the envelop in this ATD. Partnering with TRADOC ensures OFW is on the right azimuth for soldier and small-team capabilities; and partnering with PEO Soldier ensures an effective transition from S&T to acquisition. But the vision doesn't end with OFW. Future Warrior will continue to look beyond the current S&T focus to bring the full OFW revolution to fruition.

The OFW seamless government/industry team is using an Integrated Product and Process Development (IPPD) approach with disciplined systems engineering processes and a structure of teams and integrated product teams (IPTs) that reflect the holistic, human-centric, SoS approach.

Note: If you are unfamiliar with acronyms used in this article's figures, check the List of Acronyms at ***http://asc.army.mil/pubs/alt/default.cfm****.*

CAROL J. FITZGERALD is the OFW Technology Program Manager. She has a B.S. from Cornell University, an M.S. in science and technology commercialization from the University of Texas-Austin and an M.S. in national resource strategy. She has completed the Defense Systems Management College's Program Management Course, the Senior Acquisition Course and is a distinguished graduate of the Industrial College of the Armed Forces.

Army Future Force Moves Toward Jointness

Meg Williams

Four Army leaders discussed the "Army Future Force" at the 2003 Association of the United States Army (AUSA) Annual Meeting held in Washington, DC, Oct. 6-8. They were taking U.S. Army Chief of Staff GEN Peter J. Schoomaker's message and moving it forward, according to LTG (Ret.) Theodore G. Stroup Jr., AUSA Vice President, Education, who introduced panel members. Schoomaker spoke at the conference's Dwight David Eisenhower Luncheon, pressing the Army to move ahead with its transformation efforts and outlining 15 priorities, including "jointness" as a top Army priority.

All of the "Army Future Force" panel members addressed jointness in their remarks. "Since the vision of transformation was unveiled at this conference in 1999, the guidance has been very clear," said GEN Kevin P. Byrnes, Commanding General (CG), U.S. Army Training and Doctrine Command. "We need to capture technologies as they emerge and put them in the hands of our Soldiers now. Our Future Force must contribute to the Joint Forces Command and we must broaden our mix of capabilities to support the Joint Forces Command."

Byrnes noted five steps that will help lead to the Army Future Force.

- The Army must adopt a culture of innovation.
- Rigorous experimentation is needed to network the battle command.
- Modular formation units of action will be the centerpiece of the Future Force.
- Networked systems must support soldiers.
- Training and leader development is paramount to building the Future Force.

"Our future contract to our soldiers is to get them the tools they need," Byrnes continued. "The Rapid Fielding Initiative (RFI) has made sure that every soldier deployed has the same kit whether they're Guard, Reserve or Active Component Soldiers. Program Executive Officer Soldier BG James R. Moran and BG(P) Benjamin Freakley, [CG, U.S. Army Infantry Center] Fort Benning, GA, have done very well in leading the soldier-as-a-system concept forward. We are changing how we pull forward technologies to use in the Current Force."

Another way the Army brings new technology to soldiers is through the Rapid Equipping Force (REF), which is run by REF Director COL Bruce Jette. "The Army has a good process to have resources applied immediately," said GEN Paul J. Kern, Commanding General, U.S. Army Materiel Command (AMC). "We will continue to use the REF to solve problems today."

AMC is pushing forward concepts and technologies such as V-SAT (small aperture commercial C and Ku-band satellite terminals). V-SAT was not set up until 45 days after the Army arrived in Baghdad. Prior to its arrival logisticians could not communicate with each other. "We must ensure that the network exists, that it is less vulnerable and has a land-based component able to keep up with the force," Kern emphasized. "There were no requisitions for communications capability for logisticians and all ground lifts were used for food, water, fuel and munitions. Also, no C-130 cargo aircraft were available to us. These are the things we've got to fix today — we cannot wait until 2010."

Moving from a supply-based process to a joint distribution-based process is another concept AMC is pushing. "We are facing a full-spectrum of threat and we need to have the agility to fight with a full spectrum of forces," Kern remarked. "We must operate jointly to provide communication with our folks and to reduce the number of soldiers in convoys. We need to have an agile central distribution center instead of a linear distribution center."

As the Army transforms, spiral development will bring in technologies from both inside and outside the Army. LTG Benjamin S. Griffin, Deputy Chief of Staff, G-8, works with the Joint Capabilities Integration and Development System, a joint board that looks at common systems among services. To reinforce this cooperation, the "8s" of each Service have been meeting every 2 weeks to lay the groundwork for the Joint Requirements Oversight Council. "Our goal is to cut bureaucracy and get systems approved and fielded quicker," he said.

One such good news story is the Army's Stryker Brigade Combat Team. "It took 4 years from concept to IOC (initial operational capability) for the Stryker Brigade," said Griffin. "And we are upgrading the Strykers with Force XXI Battle Command Brigade and Below and Blue Force Tracking to improve situational awareness, satellite communications and slat armor for rocket-propelled grenade protection."

> "We're not just preparing for war," Riggs said. "We are at war and we must bring technology to the warfront sooner."

Another element critical to the Future Force is command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR). "We must fully integrate space and terrestrial communications," Griffin implored. "The C4ISR technical initiatives include Blue Force Tracking, combat identification systems and software blocking."

LTG John M. Riggs, Director, Objective Force Task Force, explained that DOTML-PF (doctrine, organization, training, materiel, leadership, personnel and facilities) development and fielding is being accelerated and that this is being driven top-down to the Services. "We're not just preparing for war," Riggs said. "We are at war and we must bring technology to the warfront sooner."

Riggs suggested that, to bring technology to the warfront, the Army must operate in Joint Interagency Multinational teams using common architecture, network, equipment and processes. Title X (the U.S. code that lists the responsibilities to raise an Army) functions will also need to be modified — the civilian workforce will need to assume non-core and nonmilitary-essential missions.

MEG WILLIAMS is a Senior Editor/Writer and provides contract support to the Acquisition Support Center through BRTRC's Technology Marketing Group. She has a B.A. from the University of Michigan and an M.S. in marketing communications from Johns Hopkins University.

Continued From Page 29

innovative technologies produced by small entrepreneurial companies that, in the past, hesitated to do business with a government agency. This will widen the Army reach into other innovative and rapidly evolving commercial world segments. The expectation is that this could open up unforeseen technological opportunities to support the needs of future soldiers.

DR. JOHN A. PARMENTOLA is the Director for Research and Laboratory Management for the Deputy Assistant Secretary of the Army for Research and Technology, Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT). He has a B.S. in physics from the Polytechnic Institute of Brooklyn and a Ph.D. in physics from the Massachusetts Institute of Technology.

DR. ROBERT S. ROHDE is the Deputy Director for Laboratory Management for the Director for Research and Technology, ASAALT. He has a B.S. in physics from Loyola University in Chicago and an M.S. and Ph.D. in physics from the Illinois Institute of Technology in Chicago.

BRUCE J. HELD is a Policy Analyst at the RAND Arroyo Center, the Army's Federally Funded Research and Development Center. He has a B.S. from the U.S. Military Academy, an M.S. in aerospace engineering from Stanford and a J.D. from the University of Maryland School of Law.

Army Presents Acquisition Commander and Project and Product Manager of the Year Awards

Meg Williams (Photos by SPC Adam R. Mancini, Army Visual Information Division)

Before the Acquisition Commander and Project and Product Manager of the Year winners were announced all nominees were asked to stand and be recognized. These outstanding representatives of the Army Acquisition, Logistics and Technology Workforce research, manage, develop, test, evaluate, contract, field and sustain our warfighting systems to ensure that our soldiers have the materiel they need to fight with greater lethality, survivability and sustainability — regardless of where the battlefield or mission takes them.

The Honorable Claude M. Bolton Jr., the Army Acquisition Executive and Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT), and LTG John S. Caldwell Jr., Military Deputy to the ASAALT, presented the annual Acquisition Commander and Project and Product Manager of the Year Awards at the 2003 Army Acquisition Corps Ball, Oct. 5, 2003, at the Grand Hyatt Regency, Crystal City, VA.

Project Manager of the Year COL David Ogg

"It is a testament to both the Army and Acquisition Corps that so many excellent people are nominated and recognized each year for remarkable service above and beyond the call of duty," remarked Bolton. "These award winners have been selected from an elite group of nominees. They faced challenges and complexities in a year characterized by change, deployments, unit rotations and high operations tempo."

Project Manager of the Year

The Project Manager of the Year Award at the Colonel/GS-15 level was presented to COL David Ogg from the Interim Brigade Combat Team, Program Executive Office (PEO) Ground Combat Systems. The Interim Brigade Combat Team plans, manages and directs the development, testing, production, fielding and sustainment of a full range of systems, including 10 variants of the Stryker Family of Vehicles. Despite the complexity and requirement to meet tighter deadlines than in other more traditional Army Acquisition programs, Ogg's program exceeded a 90-percent Operational Readiness Rate, delivering products on time and meeting or exceeding Soldier requirements.

"I'd like to thank my boss, MG(P) Joseph Yakovac Jr. for nominating me," Ogg said. "There are 150 military and civilian people working at Warren, MI; Fort Lewis, WA; Washington, DC; and General Dynamics and it's my honor to accept this award on their behalf."

Product Manager of the Year LTC Dave Lockhart

Product Manager of the Year

The Product Manager of the Year Award at the Lieutenant Colonel/GS-14 level was presented to LTC Dave Lockhart, Product Manager for Joint Tactical Radio Communications Systems (JTRS) Army – Ground and Air, from PEO Command, Control and Communications-Tactical. Lockhart and his team were able to identify and effectively minimize contractor cost and schedule overruns via aggressive program reviews and relentless application of earned-value management. He spearheaded streamlined, innovative measures that enabled the

Army Acquisition Executive Claude M. Bolton Jr. presents the Acquisition Commander of the Year Award to COL Mary Brown along with LTG John S. Caldwell Jr.

JTRS team to maintain objective schedule momentum and deliver exceptional results for five JTRS clusters and responsibility for fielding more than 100,000 systems with a $23 billion budget.

"On behalf of myself and my team, we've worked extraordinarily hard to get the JTRS radio out and tested and I thank you for this award," said Lockhart.

Acquisition Commander of the Year — Colonel

The Acquisition Commander of the Year at the Colonel/GS-15 level was presented to COL Mary Brown from the Army Test and Evaluation Command, Aberdeen Test Center. As the Aberdeen Test Center Commander, Brown manages 60-plus acres of test ranges and 73 major test facilities. She also oversees operations involving nearly 1,600 military, civilian and contractor personnel and is responsible for developmental testing of combat and combat support systems; ammunition, including small rockets and missiles; and Navy ship structures. Brown's organization is committed to ensuring that Soldiers receive the safest and best equipment available.

"I would like to recognize my bosses for their unwavering support," said Brown. "This is a team award — it took a team effort to win this. I represent more than 150 civilians and officers who work hard every day and who know how much their work means to others."

Acquisition Commander of the Year — Lieutenant Colonel

The Acquisition Commander of the Year Award at the Lieutenant Colonel/GS-14 level was presented to LTC Jack Cunnane, U.S. Army Contracting Agency, Southern Region. Cunnane's command was directly responsible to the U.S. Army III Corps for missions and quality of life support at Fort Hood, TX, and in supporting force projection and rapid deployment contingency operations. His support enabled III Corps to complete 100 percent of its mission requirements. Cunnane further demonstrated his dedication by volunteering to serve in Iraq to establish the joint contracting element that supported ongoing warfighter operations in theater.

Acquisition Commander of the Year LTC Jack Cunnane

"This award would not be possible if not for the civilians and soldiers at the Army Contracting Agency," Cunnane said. "There's truly nothing they wouldn't do for the Army."

MEG WILLIAMS is a Senior Editor/Writer and provides contract support to the Acquisition Support Center through BRTRC's Technology Marketing Group. She has a B.A. from the University of Michigan and an M.S. in marketing communications from Johns Hopkins University.

Natick Integrated Materiel Management Center's Fire Response Team

Daniel Galarza

On Dec. 18, 2002, at approximately 8 p.m., molten red flames engulfed a major military parachute storage, packing and maintenance facility in Vicenza, Italy. The facility contained thousands of personnel and reserve parachute systems. The cause of the blaze was linked to faulty electrical wiring. The extreme heat from the fire caused ceiling light fixtures and electrical conduits to melt. On Dec. 27, 2002, DOD response team personnel were called away from their holiday activities and flown to Vicenza, Italy. The team consisted of aerial delivery representatives from the Natick Soldier Center (NSC) and Integrated Materiel Management Center (IMMC), Natick, MA.

IMMC inspectors recommend that USLs distorted by heat and contact with metal storage bins be immediately replaced.

The parachute packing and storage facility had been operational since the early 1980s. The storage site in Vicenza houses more than 3,300 T-10D Troop Back Parachute Assemblies and approximately 3,200 Modified Improved Reserve Parachute System (MIRPS) parachutes. The site's main function is to store, pack and maintain parachutes in support of airborne operations. The facility also serves as a major airborne equipment logistics platform for the Army's Southern European Task Force (TF) Command. Additionally, parachutes are stored at the site for use in real-world contingencies such as *Operations Iraqi Freedom* and *Enduring Freedom*.

The urgency of restoring the parachute system quantities to meet contingency requirements necessitated a round-the-clock, 24-hour operation.

The NSC team's mission was to evaluate and assess the burned parachutes' form, fit and function. Most parachute equipment is made of nylon, which, under intense heat conditions, can melt or burn and become nonfunctional. The team had to inspect two types of parachutes.

T-10D Troop Back Parachute Equipment Characteristics. The T-10D Troop Back Parachute Assembly provides the capability to safely deliver an airborne soldier and individual equipment from an aircraft in flight for a vertical assault on an enemy. The materials used in manufacturing the parachute include:

- Canopy — 35 feet in diameter and comprised of 1.1-ounce rip stop nylon cloth.
- Pack tray — made of 7.5-ounce nylon duck material.
- Deployment bag — made of 8.2-ounce sateen cloth.
- Universal static line (USL) — made of 15 feet of tube edge material.
- Suspension lines — made of type II nylon cord.
- Risers — made of type XIII 30-inch nylon webbing.

MIRPS. The MIRPS is an emergency parachute system that is used only after a malfunction is detected in the main parachute. With the exception of a stainless steel ripcord and compression spring, the canopy and pack tray materials are identical to the T-10 parachute.

The Mission Begins

On Dec. 27, aerial delivery representatives boarded a plane bound for Vicenza. The team consisted of IMMC Aerial Delivery Sustainment Team Leader Gloria Wooten-Standard, NSC Personnel Airdrop Systems Equipment Specialist John R. Mahon, NSC Textile Technologist Laurra Winters and NSC Master Airdrop Technician CW4 Murry Chapman and Master Airdrop Technician CW3 Cortez Fraser of the Defense Distribution Center, Susquehanna, PA. The team's main purpose was to evaluate and assess the parachute material's and hardware's serviceability. They were also tasked to inspect and determine the availability and replacement costs of the fire-exposed parachutes and estimate what it would take in time and resources to restore the facility to mission-capable status. The urgency of restoring the parachute system quantities to meet contingency requirements necessitated a round-the-clock, 24-hour operation.

The inspection consisted of first separating the chutes that could be easily labeled "unserviceable." These parachutes displayed severe signs of melted nylon, large holes in the canopies, burn marks and breaks in the material caused by flames or extreme heat. After conducting a visual inspection, the team began the grueling task of individually inspecting each

parachute system's component/sub-component for the following:

- Parachute system hardware including condition, finish and strength.
- Parachute material degradation including canopy, harness, pack tray and suspension lines.

The team sought to answer command leadership questions that were posed to them upon their arrival. Inspection details are included below.

What are the effects of smoke on parachute systems? Winters was instrumental in providing answers to this very important question. Tests were conducted on the pH level of the soot found on the parachutes to determine if the acid from the soot had degraded the parachute systems' materials. Test results indicated the materials were well within the range of serviceability for that particular item. For instance, the test results for the T-10 Canopy indicated an average pH level of 6.9. The specifications range for canopy serviceability is from 5.5 to 9.0. Therefore, the canopies, other than containing dusty black particles, were serviceable for actual use.

What is the effect of extreme heat on the parachutes? Besides fire, petroleum distillants can degrade parachute fabrics and accelerate the material's usage life. Fortunately, the firefighters who fought the blaze used only water. USLs experienced material distortion as a result of the heat generated by the metal containers they were stored in. For safety reasons, the team recommended that all affected USLs be replaced. The remaining system components underwent testing for proper pH levels as well as a thorough physical inspection. The inspectors determined the parachutes that survived the fire intact, could be put back into service.

When the fire began, 95 percent of the parachutes were packed. If the outside of the packed chutes were not damaged, is it safe to assume the inside of the chutes were unaffected as well? The team quickly and unanimously decided that no assumptions would be made where safety was concerned. Each parachute was physically inspected for serviceability regardless of its outward appearance.

Tests were conducted on the pH level of the soot found on the parachutes to determine if the acid from the soot had degraded the parachute systems' materials.

The soot from the fire formed a thick layer on the parachutes. Would they all require washing? The amount of soot resulting from the fire was almost overwhelming. The water spray and mist used to douse the blaze stained the parachute fabric materials and rusted the metal hardware. The fine mist of black particles embedded themselves in the parachute and hardware. Nylon and cotton parachute materials, as well as worker clothing, were covered and stained with this natural black camouflage. Additionally, tests had already determined the soot to be more of an aesthetic nuisance than a genuine performance impairment. The criteria of form, fit and function had been met. Brushes were used to remove gross amounts of soot. As a result, the inspection team did not require that the parachutes systems be washed. Just to be sure, the team sent worst-case samples of materials and hardware to Natick, MA, for further evaluation.

How much will it cost to replace the unserviceable equipment or parts within? Many systems did not require total replacement. For example, after replacing several USLs, the parachute system became serviceable and was placed back in contingency. Several pack trays were shipped from the United States to make the systems complete. The detailed inspection helped identify the defective/unserviceable components, allowing the organization to requisition just what they needed, thereby decreasing the time it took to replenish their operational and contingency stocks. IMMC's Wooten-Standard was on-hand throughout the operation and was able to give on-the-spot authorization for procurement of replacement parts and systems. The final cost of replacing parts and/or systems was more than $500,000.

Regaining Soldier Confidence

News of the Vicenza parachute storage facility fire spread quickly throughout the southern European military community. Soldiers expressed safety concerns over having to depend on equipment that had been exposed to extreme heat and smoke conditions. Soldiers entertained visions of hurtling toward the ground as air rushed through big gaping burn holes in their parachutes. Southern European TF

leaders asked the aerial delivery team to assist in restoring Soldier confidence.

On Jan. 6, 2003, the TF commander held a special briefing to inform soldiers about overall parachute condition and to inspire soldier confidence in their equipment. The Natick aerial delivery team played a crucial role in the briefing. For instance, Mahon provided a summary of the team's inspections results. He reviewed the inspection standards, findings and recommendations. Winters discussed soot and pH acid level test results. A microscope was also set up for soldiers to examine the microscopic smoke and soot particles on the nylon cloth material.

Finally, the team fielded direct questions from the paratroops. They provided straightforward responses to the technical questions. At the briefing's conclusion, Soldier safety concerns were allayed and confidence in the parachute systems was restored.

The Aerial Delivery Response Team's validation came in March 2003. The team received news that an airborne brigade from Italy had just performed a combat airdrop mission in Iraq without incident. More importantly, the brigade used the parachutes that were involved in the Vicenza parachute facility fire. It did not take long to realize the parachutes used by the brigade were the very same chutes that were inspected and recertified 2 months prior by aerial delivery team members Wooten-Standard, Mahon, Winters, Chapman and Fraser. The team takes great pride knowing that they played a vital role in helping combat units win the airborne war over Iraq.

DANIEL GALARZA is a recently retired Army Major. He is an Aerial Delivery Equipment Specialist with the U.S. Army Tank-automotive and Armament Command's Commodity Business Office. He holds a B.A. in communications from Southwest Texas State University.

ASC Booth Pulses With Activity at AUSA 2003

Meg Williams (Photos by Mike Roddin)

Location. Location. Location. When it came to this year's Association of the United States Army (AUSA) Annual Meeting, held Oct. 6-8, 2003, the Acquisition Support Center (ASC) booth space was hot property.

An AUSA Annual Meeting visitor learns more about AAC/ASC during his visit to ASC's booth.

ASC designed its booth with striking new images including the Abrams tank, Black Hawk helicopter and desert warfighters to focus on ASC's 2003 goal to Strengthen Our Link with the Warfighter. Oversize American and Army Acquisition Corps (AAC) flags proudly flew high above the multimedia display, helping pinpoint ASC's location in a very crowded, newly opened Washington Convention Center. The 20′ x 20′ ASC space pulled in an estimated 6,000 visitors who learned more about ASC's goals and objectives and mission to develop, improve and integrate the systems and services that enable the U.S. Army to meet its non-negotiable contract to fight and win the Nation's wars.

Taking particular interest were Army Acquisition Executive and

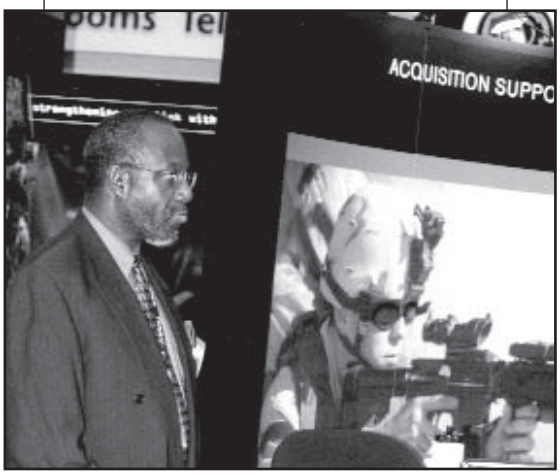
LTC Lisa Kirkpatrick, Product Manager Heavy Tactical Vehicles, talks to ASC Strategic Communications Division staffer Nicole Perella.

Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT) Claude M. Bolton Jr. and LTG John S. Caldwell Jr., Military Deputy to the ASAALT and Director, Acquisition Career Management. The two senior acquisition leaders looked on as convention attendees took an AAC quiz on the interactive kiosk and watched ASC's Soldier-centric video, another focal point that helped draw visitors to the booth.

The kiosk also featured a Good News Story segment to promote several key acquisition workforce accomplishments during *Operations Iraqi* and *Enduring Freedom*. Visitors could select from 17 acquisition success stories featured in an interactive, multimedia format. These success stories can also be found on ASC's Web site at **http://asc.army.mil/goodnews**.

CW2 Cevilla Mosby guided visitors through the multimedia kiosk quiz and educated visiting NCOs about career opportunities in the AAC.

Army AL&T magazine debuted its new look at the convention, earning rave reviews from current readers and those who had never seen the publication before. Many became new subscribers on-the-spot after paging through the newly redesigned magazine.



Army civilian Roosevelt Ingram, of AHRC's AMB, answers career management and professional development questions at the ASC booth.

Information cards that announced the location of Program Executive Office (PEO) booths at the convention were given to visitors at the ASC booth. PEOs that also exhibited at AUSA included PEO Air, Space and Missile Defense; PEO Combat Support and Combat Service Support; PEO Enterprise Information Systems; PEO Intelligence, Electronic Warfare and Sensors; PEO Simulation, Training and Instrumentation; PEO Soldier; and PEO Tactical Missiles.

ASC military and civilian personnel actively recruited the next generation of acquisition professionals, logisticians, contractors and technologists. ASC representatives included COL Mary Fuller; Craig Spisak; LTC Dwayne Green; MAJs Joy Kolhoff, Jonathan D. Long, Michelle Nassar and Andrea Williams; CW2 Cevilla Mosby; MSG Terry Graves; Tomasine Coleman; Tom Evans; Ancel Hodges; John Kelly; Heather Kohler; Kevin Maisel; Jan McGriff; Mary McHale; Garet McKimmie; Roberta McMillen; Mara Mucciolo; Robert Neff; Nicole Perella; Mike Roddin; Joan Sable; Meg Williams and Barbara Wright.

Industry representatives to learn more about ASC from Joan Sable, PEO/PM Support Manager, ASC Force Structures.

Representatives from the U.S. Army Human Resources Command's (AHRC's) Acquisition Management Branch (AMB), including MAJ William Boruff, MAJ Jeanette Jones, Bruce Dahm, Chandra Evans-Mitchell, Roosevelt Ingram, Cathy Johnston, Gloria King, Giselle Whitfield and Richard Yager, updated folks on how to apply to board-select programs and answered other human resources-related questions.

MEG WILLIAMS is a Senior Editor/Writer and provides contract support to the Acquisition Support Center through BRTRC's Technology Marketing Group. She has a B.A. from the University of Michigan and an M.S. in marketing communications from Johns Hopkins University.

From the Acquisition Support Center Director

Many of you have spent the last year in a whirlwind of activity for the U.S. Army before, during and after *Operation Iraqi Freedom*. I appreciate the energy, creativity and dedication you put forth for our warfighters. Now it is time to replenish your own intellectual stores. As your mission allows, I hope you will schedule time to attend training, a professional conference or seminar, or undertake self-study. To find a course of study right for you, go to the Acquisition Support Center's (ASC) *Acquisition Education, Training & Experience* catalog at **http://asc.army.mil/pubs/aete**. The discoveries you make while learning enable you to better research, manage, develop, test, evaluate, contract, field and sustain our warfighting systems as we help transform an entire Army for the future good of our great Nation.

ASC recently celebrated its first anniversary as a field-operating agency formed under the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT). ASC has accomplished much over the past year and I would like to share just a few of the team's numerous contributions.

U.S. Army Acquisition Workforce Campaign Plan. The Campaign Plan was an initiative developed to ensure that the Acquisition, Logistics and Technology (AL&T) Workforce is responsive to Army requirements, sized and trained properly and equipped with the right tools to support the Army's transformation. This initiative includes three strategic objectives: (1) Strengthen the relationship between the AL&T Workforce and the operational Army, the warfighter; (2) Ensure that ASC provides a clearly defined environment that offers career opportunities and leadership development at all levels; and (3) Ensure that the AL&T Workforce remains technically competent and responsive to the Army's current and future transformation needs. The full plan, with current and future action items, can be viewed at **http://asc.army.mil**.

ASC Communication and Outreach Plan (COMPLAN). An overarching ASC COMPLAN was developed and implemented by our new Strategic Communications Division to directly support ASC programs, missions, goals and initiatives. Effectively communicating ASC's messages to its target audiences is critical to the success of our collective missions. Implementing a comprehensive communication and outreach plan, carefully aligned with a sound branding strategy was a priority endeavor during FY03. Brand recognition, messaging and high-quality communications, to include a massive ASC Web site redesign and a larger tradeshow presence at the October 2003 Association of the United States Army (AUSA) Annual Meeting, all served to get specific ASAALT, DACM, AAC and ASC messages out to greater target audiences and will continue to be of utmost importance in FY04.

> ASC played a key role in PEO and Project Manager (PM) reorganization of PEO Simulation, Training and Instrumentation; PEO Soldier and JPEO Chemical and Biological Defense.

Program Executive Office (PEO) Reorganization. ASC played a key role in PEO and Project Manager (PM) reorganization of PEO Simulation, Training and Instrumentation; PEO Soldier and JPEO Chemical and Biological Defense. This reorganization established a total of 12 PEOs. Additionally, ASC absorbed nearly 1,000 new faces and spaces from Army Materiel Command as a part of this reorganization.

Expanded Resource Stewardship for ASC. ASC's responsibility for resources has also expanded both as a direct result of the PEO reorganization as well as for the administration and oversight for Global War on Terrorism funding. ASC's total Operation and Maintenance (OMA) funding alone grew from $367 million at the beginning of FY03 to more than $2.2 billion by the end of FY03. When considering OMA funding, ASC is now the Army's 6th largest MACOM, with expectations being that ASC will continue to take on an even greater funding role as the Army transforms for the future.

PM Post-Utilization Task Force. ASC identified problems associated with the post-utilization of civilian product and project managers. To date, 24 actions have been formulated and ASC is implementing solutions.

See "Update: AAC Civilian PM and Post-Utilization Task Force" in the September-October 2003 *Army AL&T* magazine, page 8.

Uniformed Army Scientist and Engineer (UAS&E) Program. The Army is in the midst of establishing a truly remarkable program leveraging the collective intelligence and experience of select Army officers for scientific, engineering and leadership positions. The UAS&E is a subset of the Army Acquisition Corps (AAC) Area of Concentration (AOC) Functional Area (FA) 51S (Research and Engineering). The ASAALT announced the program Aug. 4, 2003, and inducted the initial cadre of officers during a ceremony at the United States Military Academy, West Point, NY, on Oct. 1, 2003.

***Army AL&T* Magazine Redesign.** *Army AL&T* magazine was totally redesigned to modernize it as a delivery platform for AAE/ASAALT, DACM, AAC, ASC and AL&T Workforce information relative to processes, procedures, techniques and management philosophy. The magazine will continue to disseminate information pertinent to professional development, but do so in a more eye-catching, reader-friendly layout and design.

Army Acquisition Lessons Learned Management System (ALLMS). The Acquisition Branch of the Center for Army Lessons Learned transitioned this past summer from Fort Leavenworth, KS, to Fort Belvoir, VA. ALLMS' mission is to provide relevant lessons learned to the AL&T Workforce and provide a Web-based tool to record and query lessons learned in Army acquisition, logistics and technology. This effort succinctly aligns with the U.S. Army Acquisition Workforce Campaign Plan objectives and initiatives, and can be accessed via the ASC Web site portal or directly by pasting this address into your browser: **http://acquisitionll.leavenworth.army.mil/**. A searchable version of ALLMS is projected to be online and available to the AL&T Workforce by Spring 2004.

ASC Web Site Redesign. ASC's Web site provides user-friendly navigation and encompasses the goals and structures that make up the organization. Site visitors noticed the striking bronze and green design of the newly branded site, **http://asc.army.mil**, which reflects the dynamic face of the AL&T Workforce and reinforces ASC's ongoing support to warfighters and acquisition professionals. Also, our home page was streamlined to focus on the latest acquisition-related news and events impacting the AAC and ASC communities.

Human Capital Strategic Plan (HCSP). Human Capital Strategic Planning is a top priority because of DoD downsizing, an aging AL&T Workforce and minimal new hires into Army acquisition career fields. The HCSP's goals include open communication between the Office of the Secretary of Defense (OSD) and the Components and a commitment to provide a valuable product that can be used to shape the workforce. The 2003 cycle focused on two career fields of interest to OSD: Systems Engineering and Life Cycle Logistics. The HCSP working group estimated current inventory and future desired distribution in FY08 for these two career fields, and will continue to assess such factors across the AL&T Workforce.

> The Army is in the midst of establishing a truly remarkable program leveraging the collective intelligence and experience of select Army officers for scientific, engineering and leadership positions.

CP-14 Intern Program. ASC reengineered and implemented the CP-14 Management Development (Intern) Program. Also, the Army Civilian Training, Education and Development System (ACTEDS) Plan was revised for CP-14.

2003 Acquisition Senior Leaders' Conference. The conference, held Aug. 12-14 in Seattle, WA, attracted more than 300 participants. The conference theme was "Strengthening Our Link with the Warfighter." Conference attendees visited Fort Lewis, WA, and observed demonstrations by the Stryker Brigade and other Army PEOs/PMs.

2003 Army Acquisition Workforce Conference. ASC conducted its annual conference Feb. 10-13, 2003, at Trump's Marina Hotel in Atlantic City, NJ. This year's theme was "Reenergizing and Revitalizing the AL&T Workforce."

ASC Tradeshow Multimedia Kiosk/Booth. A multimedia kiosk was developed for the AUSA Annual Convention in October 2003 and will be the centerpiece for future AAC/ASC tradeshow, recruiting event and workshop participation. The kiosk, which can be set on auto run

or interactive modes, includes acquisition good news stories (audio and pictures); facts, "did you know" information and quotes; a quiz section that tests the individual's knowledge of acquisition-related topics and career management issues; a personal quiz that can be tailored to the event with the outcome downloaded for review; and a high-energy, Soldier-centric ASC video was using the theme, "People, Teamwork, Partnership, Leadership: Making a Difference Every Day." The video was introduced at this year's AAC Ball and then infused in the multimedia kiosk's design. The entire kiosk/booth design proved to be on target based on the high-volume of traffic (more than 6,000 visitors) that came to ASC's display during the 3-day convention.

Special Workforce Buyout Authority Program. ASC managed this program for the PEOs in FY02 and FY03, resulting in the voluntary retirements of 54 individuals in FY02 and 66 in FY03. This allowed the PEOs to restructure their workforce to meet new mission requirements, improve supervisor-employee ratios and provide for career development.

Acquisition Career Experience (ACE) Program. The ACE Program helps address the human capital crisis via paid, academic/government summer employment. The ACE program recruits high-potential, full-time undergraduate sophomore and junior college students into the Army's civilian AL&T Workforce. Now in its third year, the first graduating ACE students were placed noncompetitively into HQDA intern and local intern programs. For organizations looking to place ACE students into upward mobility/internships or for additional information on securing ACE students for your organization during the summer months, please contact your Regional Director: **maxine.maples@amd.army.mil**, Southern and Western Regions; **kelly.terry@us.army.mil**, Northeast and Central East Regions; or **kenneth.wright1@us.army.mil**, National Capital and Central West Regions. For more information about ACE, visit **http://asc.army.mil/programs/ace**.

New Assimilation. Regional Acquisition Career Managers worked closely with newly assimilated personnel to explain AL&T Workforce requirements and benefits. They also updated the Acquisition Career Record Brief (ACRB) for many newly assimilated people and helped them draft their Individual Development Plans (IDP). Assimilation was based on Refined Packard Assimilation Guidance approved May 13, 1999, and subsequent OSD guidance issued April 6, 2001. The ongoing assimilation being conducted by the Army has recently resulted in more than 37,000 positions being reviewed by commands, with 27,000 people being assimilated into the AL&T Workforce.

Intermediate Level Education (ILE). ILE's goal is to produce operations career field warfighting experts and functional area specialists capable of operating in an execution-centric environment across the full spectrum of operations. ILE provides quality, tailored education for all majors and prepares officers for success over their next 10 years of service. ASC is working toward the ILE achieving MEL 4/Joint Professional Military Education level I mandates per Title X and meeting Defense Acquisition Workforce Initiative Act level II certifications and the Army Chief of Staff's intent on leader development (The Bench). The AAC ILE approach will consist of the Army's ILE Core Course and an AAC follow-on Complement Course.

COL Mary Fuller
Director
Acquisition Support Center

AHRC Notes

SSC Selection Board Results

Results of the Senior Service College (SSC) Selection Board were released Sept. 16, 2003. The board selected 27 members of the Army Acquisition Corps (AAC) to attend SSC during academic year (AY) 04/05. Five officers were revalidated from the AY03-04 list and are not included in the selection statistics below.

The AAC had 355 officers eligible for selection, and 27 officers (7.6 percent) were selected. The overall Army selection rate was 7.6 percent. Twenty-six of the 27

selectees were former or current product managers (PMs) or acquisition commanders (ACs) (the one officer not in command was on orders to a Command Select List position). One officer retired before the release of the board's list, and that name will not be published in this article.

This SSC Selection Board was the second one held by career field. AAC officers are in the Operational Support career field. The Foreign Area Officers (FA48) are the only other functional area in this career field. Below is an overview of Acquisition Corps selectee profiles:

- 1.67 PM/AC Officer Evaluation Reports (OERs) in board file (up from 0.9 last year).
- 0.6 above-center-of-mass (ACOM) PM/AC OERs in board file.
- 81 percent of selectees had at least one PM/AC OER in board file (up from 53 percent last year).
- The average number of DA Form 67-9 OERs for the selectees was 5.4, with an average of 65.8 percent ACOM in board file.
- Selectees belonged to year groups (YGs) 82 (19 percent), YG83 (56 percent), YG84 (22 percent) and YG85 (3 percent). This year, 78 percent of the officers (up from 57.2 percent last year) were in what historically have been the "primary" year groups for the AAC (e.g., YGs 83 and 84 for this year).

Each officer selected for attendance at SSC was sent a letter from the U.S. Army Human Resources Command (AHRC)-Alexandria Acquisition Management Branch (AMB) explaining how to access the AHRC Officer Career Management Knowledge Center. The letter also contains a synopsis of each SSC and fellowship available. Officers will provide their preferences for SSC online through the Knowledge Center. Selectees may choose to attend resident SSC, enroll in the Army War College Distance Education Program for AY 04/05 or decline. SSC selectees normally attend the Army War College, the Air War College, the Acquisition Fellowship at the University of Texas (UT)-Austin, or the Industrial College of the Armed Forces (ICAF). The latter three have limited seats. ICAF and UT-Austin tend to be the two programs for which we have more officers wanting to go than seats available. ICAF has special considerations: officers who are already a Joint Service Officer and have been awarded an additional skill identifier of 3L are ineligible to attend, and 50 percent +1 of attendees (by branch) must go to a joint position immediately following school. Therefore, it is very important selectees give as much consideration to their second and following choices as they do to their first choice.

The SSC alternate list is not published. However, officers who were selected as alternates will receive a letter informing them of their status in the December timeframe. AMB will only be given the list of officers who are considered high alternates. High alternates are those officers who are most likely to be activated to attend SSC. AMB does not expect to receive the high alternate list until mid-December 2003 or January 2004.

The names of the selectees and revalidated officers are listed below:

Bass, James D.
Bass, Joseph L.
Bedell, Cynthia M.
Besch, Thomas M.
Billington, Robert B.
Carpenter, Robert C.
Coffman, Thomas D.
Cottrell, Daniel T.
Cunnane, John L.
Dukes, Beatrice S.
Edwards, Keith R.
Ellis, Carl M.*
Fletcher, James P.
Gallagher, Daniel J.
Giunta, Joseph A. Jr.
Kunkel, George D.
Lamb, William L.*
Lambert, Charles S.
Lockhart, David E.
Manning, Barry G.*
McGuiness, John J.
Miller, Scot C.
O'Day, Sean P.
Rice, David J.*
Ross, Christopher M.
Shifrin, Scott E.*
Stockel, Eugene F.
Turner, Thomas E. Jr.
Wilson, Jeffrey K.
Winters, Brian C.
Yacovoni, Philip M.
* Revalidated from AY 03/04 SSC List

FY04 Army Experimental Test Pilot Board

The FY04 Army Experimental Test Pilot (XTP) Board will convene on or about Feb. 18, 2004, to select those aviators best qualified to participate in the Army Aviation XTP Training Program. This board will review and select both commissioned and warrant officers. Commissioned officers selected to attend the U.S. Naval Test Pilot School (USNTPS) are automatically accessed into the Army Acquisition Corps, where they will serve for the remainder of their careers.

The Army Human Resources Command-Alexandria must receive applications for the FY04 Army XTP Board by Jan. 9, 2004. Applications should be mailed to Commander, U.S. Army Human Resources Command-Alexandria, ATTN: AHRC-OPF-Q (MAJ Donovan), 200 Stovall St., Alexandria, VA 22332-0411. Applications must include the following:

- Application memorandum signed by the officer and endorsed through the chain of command (O-6 level).
- Current Department of the Army photo.
- Officer Record Brief.
- Official transcripts of college credits.
- Copy of most current DA Form 759, Individual Flight Record and Flight Certificate-Army.
- Endorsements by instructor/standardization pilots with specific comments on the applicant's flying ability.

XTP utilization assignments will be based on the Army's needs. Most initial tours are served at the Aviation Technical Test Center at Fort Rucker, AL. USNTPS graduates will serve in XTP or organizational staff positions that directly influence the type, design and configuration of Army aircraft.

For additional information or to request a sample application memorandum, contact MAJ Sharlene Donovan at (703) 325-5479, (DSN) 221-5479 or e-mail at **Sharlene.Donovan@hoffman.army.mil**. Warrant officers should contact CW4 Lee Tutin at (703) 325-5228, (DSN) 221-5228 or e-mail at **Lee.Tutin@hoffman.army.mil**.

NEWS BRIEFS

TACOM/Industry Logistics Symposium

The 13th annual U.S. Army Tank-automotive and Armaments Command (TACOM)/Industry Logistics Symposium will be held April 6-8, 2004 at the Hyatt Regency hotel in Dearborn, MI. This logistics symposium brings together government and industry personnel to discuss issues and concerns relevant to the constant changes in the logistics environment. The symposium will offer formal presentations, workshops, exhibits, demonstrations and open discussions and will emphasize how logistics contributes to transforming the Armed Forces. Symposium speakers will discuss logistics transformation, lean logistics, recapitalization and Army transformation. Speakers will also discuss the impact of logistics on Homeland Defense, U.S. Joint Forces in combat, technology development and exploitation, logistics support to *Operation Iraqi Freedom*, Future Combat Systems, sense-and-respond logistics and resetting the Army structure back to pre-war conditions. For additional information on the symposium, call Cherice Carter, TACOM Symposium Chairperson, at (586) 574-4175, or go to the National Defense Industrial Association (NDIA) Web site at **http://www.ndia.org**.

New Spatial Decision Support System Coming to U.S. Army Yuma Proving Ground

Intricately detailed, astonishingly beautiful poster-size maps of the terrain on and around U.S. Army Yuma Proving Ground, AZ, lay across a large table at the Range Scheduling Office. The breathtaking work involved in each and every computerized map, printable from any of the many plotters throughout the Proving Ground, speaks impressively.

Gary Burris, Range Safety Officer and Range Controller, pours over the multitudinous reproductions of colorful ridges, gullies, washes, gorges, flatlands and hills

throughout the Proving Ground's Cibola Firing Range, squinting at what looks like an old airfield never before shown on a map. "These maps are part of a system getting a life of its own," Burris said. "This new system is the Spatial Decision Support System (SDSS) and will soon be accessible from the desktop of all Yuma Test Center personnel, as well as fire and police personnel," he continued.

Providing project focus, guidance and direction is Dave Lashlee, Geographic Information Systems (GIS) manager. The SDSS system features a database of maps for Yuma Proving Ground and the adjacent vicinity covering several thousand square miles. The maps included in the new database will all be standardized. The old system's maps, though done well, were overlapping, redundant and without a common scale.

Gary Burris, Range Safety Officer and Range Controller, draws a safety fan by hand for a recent test, knowing the process will soon be computerized.

Under SDSS, the new universalized maps will be top-driven from the state of Arizona using a Data Share Agreement with the following agencies: the U.S. Department of the Interior; Bureau of Land Management; Yuma Field Office Bureau of Indian Affairs; Bureau of Reclamation; U.S. Fish and Wildlife Service; National Park Service; U.S. Border Patrol; U.S. Geological Survey; Marine Corps Air Station, Yuma; Arizona Department of Transportation; Arizona Game and Fish Department; Arizona Department of Corrections; and City of Yuma, Yuma County for Digital Geospatial Data Sharing and Integration.

"Having all test and rescue personnel maps equivalent will be a great asset to the Proving Ground," Lashlee said. "There will be many software tools from which to interact with the mapping database that will allow a person to zoom in to an area down to the meter. Unexploded ordnance on test sites will be able to become part of the history of a test, stored on the test's CD, archived for use should a similar test come up," Lashlee explained.

Intricate maps of danger zones — or what is called safety fans — surrounding test areas, will be a key feature of the system unique to Yuma Proving Ground. A safety fan, or unsafe area, extends along the trajectory of all airborne projectiles. As the projectile reaches its target, the safety fan is at its maximum width. When a trajectory is rerouted because of safety concerns, the safety fan goes along with the rerouted trajectory path. The new mapping software will have tools that can drag a safety fan to an adjacent or new area.

Software developer Heather Knight said she is excited about the new interactive software specific to safety fan manipulation. "We will be able to use what we do at the Proving Ground as a prototype for other installations needing this kind of maneuverability with their safety zones," Knight remarked.

The faster a projectile, the greater the safety fan is at the impact area. When working with ordnance at Yuma Proving Ground, there are other factors to take into account when determining the area of a safety fan, such as the rate of projectile spin, type of fuse, as well as the amount and kind of ammunition and explosives used. The use of a standard computerized map base will allow rescue personnel to see exactly what route to take to bypass tests in progress and go as quickly as possible to the scene of an accident or unexploded munition.

Burris, who is acquainted with the routing and rerouting of safety fans to accommodate the most tests in the shortest amount of time, said he really likes the idea of involving rescue personnel when it comes to using a standardized mapping database. His office will be the focal point for all incoming test agendas proposed through the mapping software. Digitizing the range maps will make his duties a lot easier and quicker, he said. It will be a lot different than using pen and wall-long, hand-drawn maps.

Isabel Goode, Test Director at the Proving Ground's Munitions and Weapons Division, said testers knew it was time to update the Proving Ground's 1973 mapping system by incorporating GIS capabilities. "We were trying to take baby steps to get there," she said, "but we

just have had too much to do, so the effort went by the wayside."

"With SDSS," she said, "we're looking to the future. Instead of erasers and markers, we will have state-of-the-art maps depicting all of our firing ranges so we can pull up by date and see what is being used that day and what is not. And the best part is, we will be able to access it from our desktops," she concluded.

This article and the accompanying photograph were submitted by Marcia Chavez, Writer-Editor, Public Affairs Office, U.S. Army Yuma Proving Ground.

The 21 Irrefutable Laws of Leadership

On May 22, 2003, the Detroit Arsenal at Warren, MI, hosted the *21 Irrefutable Laws of Leadership*, a program sponsored by the Acquisition Support Center as part of its FY03 Regional Training Plan. With help from the U.S. Army Tank-automotive and Armaments Command (TACOM) Learning Center (TLC), more than 250 Warren associates attended the leadership program.

The *21 Laws* program is based on the popular book by John C. Maxwell, founder of Injoy Inc., an organization dedicated to helping people maximize their personal and leadership potential. Maxwell is also an inspirational speaker and author of more than 22 books. The program was delivered by Richard Biggs, an inspirational speaker, author and close friend and protégé of John Maxwell.

For this 1-day seminar, Acquisition Career Manager (ACM) Bob Sivalelli and late TLC Associate Dan Osinski carefully selected 9 laws for Biggs to discuss, thereby complementing a current TACOM *Desired Traits of Leadership* initiative that the Warren community has employed during the last 2 years.

The Arsenal adopted these *Desired Traits* as a direct response to feedback from a number of survey instruments used to gage organizational climate, morale and overall employee perception of past leadership practices. More recent feedback indicates that issues of trust, personal growth, communication and personal sacrifice are still at the top of employees' concerns.

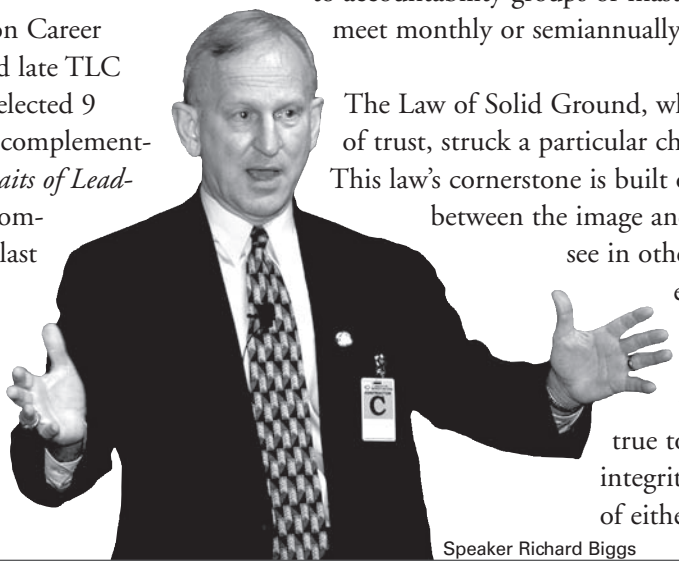
The 9 laws Biggs covered included: the Law of the Lid, Law of Solid Ground, Law of Process, Law of Buy-In, Law of Sacrifice, Law of Navigation, Law of Connection, Law of Empowerment and Law of Respect.

Biggs, who authored *Burn Brightly Without Burning Out*, provided real-life examples to emphasize the consequences of not employing each of the 9 laws covered.

During the program introduction, TACOM Acquisition Career Management Advocate (ACMA) Harry Hallock addressed the audience to communicate the command's desire to improve the leadership qualities of associates at every level of the organization, but especially of its supervisors and managers. Hallock touched on 6 desired traits including leadership, communications, strategic planning, organizational climate, teaming and employee support. He also stressed that the command expects its managers and supervisors to hold to these tenets in dealing with their subordinates, peers and superiors, and that every command employee has a right to expect no less from their supervisors. Hallock made the connection between the TACOM *Desired Traits* and the *9 Laws of Leadership* that Biggs would discuss.

Biggs asked the audience if they had a "master plan for personal growth." He gave tips on how to create routines that help forge habits that lend to personal growth. For example, he suggested making time to read from a good book at least 15 minutes every day and to belong to accountability groups or mastermind groups that meet monthly or semiannually.

The Law of Solid Ground, which addresses the issue of trust, struck a particular chord in many attendees. This law's cornerstone is built on the understanding between the image and integrity of what you see in others. Image is what others think you are, which may or may not be true, but integrity is the real you — being true to yourself. Some key integrity busters are the abuse of either money or power.



Speaker Richard Biggs

The audience was challenged to complete action items to take back home or to the workplace to implement. Afterward, audience members gave positive feedback on Biggs' presentation, citing him as an excellent speaker and motivator, and requesting that he come back again. Other attendees agreed that *21 Laws* was one of the best classes on leadership they had ever attended. A common feeling among attendees was captured best by this statement: "I came away feeling very motivated to go out and put into action that which I had just heard!"

The *21 Laws* program was a huge success and the Warren community is now equipped with additional tools to practice leadership and personal goal setting.

HARRY HALLOCK *is the Director for Research and Development and Base Operations Contracting at TACOM in Warren, MI. He has a B.S. in business administration from the University of Delaware and an M.S. in program management from the Naval Postgraduate School. He is a member of the Army Acquisition Corps and is Level III certified in Contracting, Program Management and Life Cycle Logistics. In addition, he is Level II certified in Test and Evaluation Engineering.*

ROBERT SIVALELLI *is TACOM's ACM. He has a master's degree in public administration from Central Michigan University. He is Level III certified in Contracting, Level II certified in Program Management and is Corps Eligible.*

TARDEC Becomes ISO-14001 Certified

"We can not afford to act irresponsibly when it comes to the environment. The day will come when all government labs are expected to have an ISO [International Organization for Standardization] certified environmental protection process or equivalent. Why wait for someone to make us comply when it is obviously the right thing to do?"

Dr. Richard McClelland
TARDEC Director

Echoing McClelland's remarks, U.S. Army Tank Automotive Research, Development and Engineering Center (TARDEC) associates attended a ceremony celebrating the certification of TARDEC's Environmental Management System — the first Army research and development center to become ISO-14001 certified.

Three years in the making, TARDEC achieved its goal to become third-party certified by passing both Stages 1 and 2 of a formal certification audit. Audit findings — performed by CRS Registrars Inc., Maumee, Ohio — indicated outstanding conformance to American National Standards Institute/ISO 14001: 1996. Auditors also evaluated TARDEC's self-imposed strict environmental policy, which ensures compliance to all local, state and federal environmental regulations and goes extra steps to further minimize pollution, educate employees about the Environmental Management System and reinforce commitment to a proactive environmental policy.

Noting TARDEC's proactive environmental stance, CRS President Bill Niedzwiecki stated, "TARDEC took their environmental policy to the next level by taking the initiative and adding accountability by seeking third-party certification." The certification is applicable to TARDEC's research, development and engineering of military ground vehicle systems and associated weapon systems.

Certification is not the end of TARDEC's ISO 14001 efforts, but rather the beginning of a brand new chapter in the ISO Environmental Management System journey. TARDEC is now embarking down the challenging road of maintaining the Environmental Management System. According to McClelland, "Our mission is to be proactive and to avoid non-conformances at all costs. We must continue the task of further developing the culture of our workforce to sustain this program. ISO will continue to be an integral part of our daily work environment."

Despite the challenge of sustaining the system, TARDEC is taking a few minutes to relish this tough achievement, which was not an easy thing to do and is a real accomplishment for both TARDEC and the U.S. Army.

Monica F. Kapso is a Project Officer with TARDEC's Operations Business Group. She has a B.S. from Oakland University, Rochester, MI.

TARDEC Robotics Mobility Lab's ODIS Robot

Figure 1.

One of the Army's leading research and development centers, the U.S. Army Tank Automotive Research, Development and Engineering Center (TARDEC), recently participated in an experimental study with the Omni Directional Inspection System (ODIS) robot in Long Beach, CA. Members of the TARDEC Robotics Mobility Lab team conducted the test in cooperation with the California State University Long Beach (CSULB) Center for International Trade and Transportation, the California Highway Patrol (CHP) and the U.S. Coast Guard (USCG).

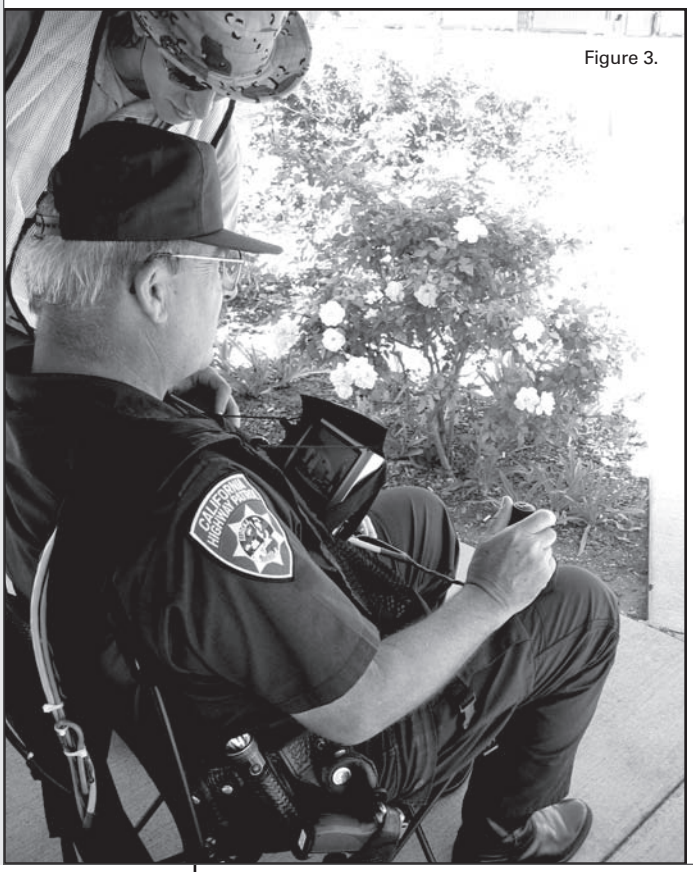


Figure 3.

The Ports of Los Angeles and Long Beach are responsible for moving more than 30 percent of U.S. trade goods. Routinely, queues of more than 100 54-foot container trucks extend for more than a mile from port entrances. These vehicles represent a considerable portion of local area traffic. This location is a prime target for terrorist attacks. A 10-lane U.S. Customs inspection point where a portion of the ODIS study was conducted is shown in Figure 1.

The CHP is responsible for inspecting these vehicles for roadworthiness, a dangerous and dirty job. Inspectors currently check container truck undercarriages using a "mirror on a stick." In many cases, the lack of resolution and clarity from the mirror requires the guard to further examine suspicious areas by physically getting under the truck as shown in Figure 2. In this line of work, the guards and inspection personnel put their lives in harm's way when examining suspicious vehicles.

Obviously, potential danger exists if the vehicle is armed with explosives or if the driver forgets to engage the parking brake correctly. Currently, such inspection checkpoints are the only method for securing and clearing trucks before they enter public roads or shipping docks/terminals.

During this study, ODIS demonstrated the capacity to rapidly and continuously screen convoys of trucks and exposed assets through the use of robotics. Onboard nuclear, biological and chemical (NBC) and hazardous materials (HAZMAT) sensors provided the guards with standoff capability, allowing them to remain a safe distance away from the vehicle while it's being inspected.

Figure 2.

Along with NBC and HAZMAT sensor data, ODIS also remotely communicates visual and thermal sensor data to operators using radio signals. Operators can use a hand-held Operator Control Unit (OCU) or a wearable vest-like OCU to teleoperate the robot. For a prototype robot 1 1/2-years-old the ODIS-T performed better than exemplary. Figure 3 depicts a CHP officer and a CSULB student using an OCU.

Use of advanced robotic platforms such as ODIS would be a force multiplier and measurably improve base and force protection at both inbound and outbound DOD and commercial logistics and transportation facilities. Robots continue to show great potential in providing this standoff security and inspection capability. CHP Officer Les Chambers stated, "I couldn't do what ODIS can with this particular rig." Inspection times with the robot versus the manual inspection are comparable but are much more thorough with the robot. During this study, 164 trucks were inspected with ODIS robots. Primarily, CSU students operated the robots, but several CHP and USCG operators participated as well. These seaport scenarios are representative of U.S. Transportation Command operations at the Port of Basra during current operations in Iraq.

DR. GRANT GERHART *is a Science and Technology Expert in unmanned ground vehicles. He is the director of all programs at TARDEC's Robotics Mobility Lab.*

BILL SMUDA *is a Research Engineer at TARDEC's Robotics Mobility Lab, Research Business Group. He is the Lead Engineer for the ODIS robot and is a Ph.D. candidate in the Software Engineering Department at the Naval Postgraduate School.*

JOSEPH ALEXANDER *is an Intern at TARDEC's Robotics Mobility Lab. He has a B.S. in electrical engineering from Kettering University.*

Vann-Olejasz Receives 2003 Hite Award

MAJ Sandra L. Vann-Olejasz received the *LTG Ronald V. Hite Award* at a ceremony held June 4, 2003, at Fort Leavenworth, KS. The award, established in March 1999, recognizes the outstanding Army Acquisition Corps (AAC) student attending the resident Command and General Staff Officer Course (CGSOC). COL Mary Fuller, Acquisition Support Center (ASC) Director, Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology, presented the award.

COL Mary Fuller, ASC Director and Deputy Director of Acquisition Career Management, presents the *LTG Ronald V. Hite Award* to MAJ Sandra L. Vann-Olejasz during a ceremony at the U.S. Army Command and General Staff College, Fort Leavenworth, KS.

Vann-Olejasz received an individual plaque, a three-star AAC coin and congratulatory note from LTG John S. Caldwell Jr., Director, Acquisition Career Management (DACM). Additionally, Vann-Olejasz's name was placed on a plaque permanently displayed at the U.S. Army Command and General Staff College (CGSC).

The award is named in honor of former DACM and AAC Director LTG Hite who was instrumental in establishing the Acquisition Education and Training Program (AETP) at CGSC. Vann-Olejasz was selected from 69 Army Acquisition Corps students attending the academic year 2002-2003 CGSOC. All AAC officers attending the resident CGSOC are eligible to compete for the award. Selection is based on a student's grade point average, contribution to group work, leadership skills, written communications, oral communications, research ability, recommendation of his or her academic counselor/evaluator and acquisition faculty consensus.

The AETP consists of a distinct AAC area of concentration within CGSOC and a fully funded master of arts degree-producing Acquisition Graduate Degree Program (AGDP) offered in conjunction with CGSOC.

AAC Officers Earn Graduate Degrees

In other Fort Leavenworth news, 22 AAC officers received acquisition-related master of arts (M.A.) or master of business administration (M.B.A.) degrees at a commencement ceremony held June 4, 2003, at CGSC.

Randy Wright, Associate Vice President for Academic Affairs and Director of Military Programs, gave the commencement address. Webster University conferred the degrees as part of the AGDP, a fully funded program that permits selected AAC students to complete an acquisition-related advanced degree concurrently with their attendance at the resident CGSOC.

M.A. in Procurement and Acquisitions Management

Blanchette, Robert MAJ
Broek, Harold MAJ
Chambers, Floyd MAJ
Fry, Christopher MAJ
Hughes, Frederick MAJ
Jamison, Vernon MAJ
Nelson, Scott MAJ
Oyler, Douglas MAJ
Peel, Kevin MAJ
Peters, Jeffrey MAJ
Robinson, W. Earl MAJ
Starostanko, Timothy MAJ

M.A. in Computer Resources and Information Management

Bennis, Darrell MAJ
Kelley, Thomas MAJ
Kerish, John MAJ
Stewart, Maurice MAJ
Tice, Michael MAJ
Terrell, Paul MAJ

M.B.A.

Cote, Courtney MAJ
Maloney, Patrick MAJ
Sloane, Michael MAJ
Spencer, Gary MAJ

AAC officers selected for resident CGSOC and interested in the AGDP should contact the Chief, Acquisition Education and Training Program, CGSC, Fort Leavenworth, at (913) 684-5330/5329 or DSN 552-5330/5329.

New Program to Develop Army Scientists and Engineers

Newly inducted Uniformed Army Scientist and Engineer Program officers. (Photo by MAJ J.D. Long)

On Oct. 1, 2003, GEN Paul J. Kern, Commander, U.S. Army Materiel Command, welcomed the first cadre of 33 officers into the Uniformed Army Scientist and Engineer (UAS&E) Program at the U.S. Military Academy. The Army of the future will have more than advanced technology and equipment. It will have advanced scientists and engineers.

"The uniformed Army scientist and engineer officer, equipped with field experience and an advanced engineering or hard-science degree, provides the Army with specialized technical skills and understanding," Kern said. "These officers enable our Army to make informed decisions on new and emerging technology and then to rapidly transition that technology from the laboratory to warfighters on the battlefield."

The UAS&E Program provides promotion opportunities through colonel and beyond. Approved in August 2003 as an area of concentration within the Army Acquisition Corps, the program enables the Army to develop and grow future leaders for its research and development communities and organizations charged with providing rapid, technological solutions to warfighters, such as the Rapid Equipping Force and the Agile Development Center.

The program will provide a cadre of military experts who will effectively bridge combat development, materiel development and technology implementation in field operations. These officers will search for cutting-edge technology to use on existing programs, thus

achieving real-time solutions to immediate battlefield requirements while providing technical leadership to meet future combat system program needs.

Kern noted that, historically, officers in the scientific or engineering fields could not compete with their operational peers and were eventually passed over for promotion. However, the Army's modern weapon systems and technology requires trained, technology-literate line officers and science, math and engineering-educated officers.

Kern credited Assistant Secretary of the Army for Acquisition, Logistics and Technology Claude M. Bolton Jr. with making the program a reality. He said that Bolton's support and the hard work from many others led to the program's successful implementation.

The officers inducted at the ceremony hold doctorate degrees and experience in biology, chemistry, computer science, engineering management, biomedical, chemical, computer, electrical, materials, mechanical, robotics and software engineering.

"From their uniforms, it is also clear that they are soldiers with combat and field experience," Kern added. "Within this group are four Bronze Stars, one Bronze Star with a V device, one Purple Heart, deployment experience in *Operations Desert Shield*, *Desert Storm*, *Enduring Freedom* and *Iraqi Freedom*."

Kern sees these officers as spearheading the Army's efforts to connect combat development, materiel development and technology implementation with rapid integration into field operations.

Kern challenged the members of the program to get vital technology and solutions to the field quickly. "Remember, our soldiers do not complain. They go to war and win with the equipment they are given," he said. "They are counting on you to provide them the best solutions and the best equipment in the shortest time possible. Together, we won't let them down," Kern concluded.

UAS&E officers will also serve in Army and DOD laboratories; the Army's Research, Development and Engineering Command (RDECOM); the U.S. Military Academy; and Army, joint staff and key scientific and engineering advisory positions.

The above article was written by Karen Jolley Drewen, RDECOM Public Affairs Office.

Natick Workforce Given Opportunity to Laugh — at Themselves

As part of the Regional Training Program, the Natick Soldier Systems Center's Acquisition, Logistics and Technology (AL&T) Workforce enjoyed a Sept. 30, 2003, seminar by nationally known humorist, Loretta LaRoche, on how to be part of a team in today's environment.

LaRoche is an acclaimed speaker, consultant, author and television personality. She is an international stress management and humor consultant whose wit and irreverent humor has raised the humor potential in all of us. She spoke to the workforce on teaming, comically helping folks to recognize their own potential for disaster when trying to be a member of a successful team. Her wisdom and humor provide a common-sense view of life that leaves audiences inspired, motivated and roaring with laughter. Often irreverent — always hilarious — LaRoche helps people discover how thoughts, feelings and behaviors can affect work performance, relationships, success and self-worth.

She shows how humor can benefit the health of an organization and its employees and improve productivity in the workplace. There was an excellent turnout and the AL&T Workforce thoroughly enjoyed themselves, while taking away a fresh perspective on how to be successful in a teaming environment.

Center Celebrates Golden Anniversary

The Soldier Systems Center (SSC) in Natick, MA, celebrated its 50th anniversary with cake, music and stories from the battlefield at a packed Hunter Auditorium Oct. 21, 2003.

Kicked off by the singing of the national anthem by Massachusetts State Trooper Sgt. Dan Clark, a prayer by Chaplain (MAJ) John Wheatley and selections from the

Massachusetts State Pipes and Drum Corps, the program was a time to reflect on the past, speak about today and look to the future of what started as the Quartermaster Research Laboratory in 1953.

"All of you remain true to your mission — supporting the warfighter," said COL David Bongi, Acting Deputy Commanding General for Operational Readiness, Research Development and Engineering Command, and installation commander, in his opening remarks. "You make our warfighter more efficient, improve the quality of life and, indeed, save their lives by the work you do every day."

LTC Charles Dean, moderator, narrated a brief slide show highlighting achievements such as food irradiation and improvements made to boots. The show was sprinkled with video clips from former SSC employees discussing their work.

In one video segment, a helicopter pilot in Vietnam recalled how a steel protective plate strapped to his body stopped a .50 caliber bullet, saving his life. In another clip, a former Ranger and SSC employee recounted how his PASGT (Personnel Armor System, Ground Troops) helmet saved his life while in combat in Panama.

Judging from audience reaction, the stars of the morning were the soldiers invited to give testimonials of how the equipment developed at Natick affected them. Body armor was the common thread.

Caught in an ambush during fighting in *Operation Iraqi Freedom*, SGT SirVantis Dennis, 3rd Infantry Division, was struck squarely in the front of his Interceptor Body Armor vest by an unexploded rocket-propelled grenade, causing a bruise the size of the ceramic plate insert tucked inside the vest. In the same firefight, he was struck again, this time by a rifle round that was stopped by the plate.

"I guarantee you two strikes and I'm out," Dennis said. "I'd like to thank the Lord and the people who invented this piece of equipment. I'd like to thank you for all that you've done for us."

His tank getting pounded by Iraqis in a separate battle, SGT David Dellenbaugh, a gunner also with the 3rd Infantry Division, left the cabin to return fire and was struck by a rifle round on the outer edge of his protective plate, the vest itself absorbed some of the impact. After discovering he was all right, he kept on firing. "There are no right words to say," Dellenbaugh told those assembled. "I just want to thank you for saving my life and keeping me in the fight."

Jumping into northern Iraq along with 1,000 fellow soldiers, PFC Christopher Taffoya, 173rd Airborne Brigade, 2nd Infantry, 503rd (Airborne) Battalion, benefited from the airdrop mission at the Soldier Systems Center. On the ground, his unit was tasked with starting a police force. When a grenade exploded nearby during a patrol, he was wounded in the legs but his body armor caught shrapnel in the lower back that would have severely injured or killed him. The equipment developed here "got me in safely and got me out," Taffoya said.

1ST SGT Colin Rich, 504th Parachute Infantry, survived a strike in the rear of his Modular Integrated Communications Helmet from a sniper rifle. He's still suffering from the injury's effects, but said he is amazed at how a helmet not designed to stop a large, high-velocity round protected him. "This facility has a profound impact on everybody in the military," Rich said. "Continue to increase our odds. Continue to make (our advantage) as lopsided as possible."

Dean showed a few animated clips depicting the future, with new and advanced ways to fuel, protect and equip warfighters to provide an overwhelming edge on the battlefield. "As with any anniversary celebration, we look ahead to the next half century, and the Soldier Systems Center will continue its tradition of excellence in all of our areas," Dean concluded.

This article was written by Curt Biberdorf, a writer and editor for the U.S. Army Soldier Systems Center Public Affairs Office, Natick, MA.

WORTH READING

Supplying War:
Logistics from Wallenstein to Patton

Martin van Creveld
Cambridge University Press, 1977

Reviewed by Geoffrey French, a Counterintelligence Analyst with General Dynamics and former Logistics Specialist for the U.S. Marine Corps Reserve.

The typical image of Napoleon is not one where he remains 60 miles behind his advancing troops, personally overseeing the army's supplies. Nor does the thought of the Prussian army in 1870 usually conjure images of thousands of soldiers gathering the harvest around Paris, processing and distributing food. Yet these images would be historically accurate. The study of logistics is often an afterthought, but to armies in the field, it is of paramount importance, and often, as in the two instances illustrated above, becomes the single most important task the military must address. Martin van Creveld — a renowned historian whose works have been used to educate U.S. Army and Marine Corps officers — brings logistics to the forefront in this military classic, *Supplying War: Logistics from Wallenstein to Patton*.

Just as the instances above may change the reader's notions of how two great militaries actually functioned, van Creveld challenges a number of ideas perpetuated in military history. His book describes campaigns in five military periods: 17th and 18th century warfare, Napoleonic warfare, the Franco-Prussian War, and World Wars I and II. In each, he uses detailed accounts of food, ammunition, transportation, requests and deliveries to study "the practical art of moving armies and keeping them supplied."

In this way, van Creveld wins his first victory. Whereas others who address logistics tend to rely on theories and concepts, van Creveld thoroughly documents the seemingly mundane to craft well-supported arguments about the feasibility of certain campaigns or retrospective criticisms (such as the *Schlieffen Plan* and critics of Moltke's changes). This makes his arguments — such as after the immediate mobilization, the railroads provided no advantage to the Prussians in 1870 because the supplies delivered to the railheads could not then be transported to the troops in the field — very convincing.

Van Creveld's writing style makes his ideas easy to absorb. Each chapter is highly organized, describing the commonly held thoughts of the era he is about to explore and the methods he will use to examine them. In each, he reviews salient points and draws conclusions from the research. This said, van Creveld assumes a working knowledge of military history. Those familiar with the battles he explores will get much out of his work. Those who are not students of military history may need a supplementary text to describe the strategy, maneuver and tactics of the battles, which are of secondary importance in this particular study.

Supplying War validates the importance of logistics to those who work at it daily. It is important for them, therefore, to use this book as a way of getting a firm understanding of the role logistics has played in military history. For those involved in military strategy, it is equally important. Van Creveld shows that inattention to logistical considerations have undone many commanders in the past. If military success rides on taking risks when opportunities present themselves, *Supplying War* shows that commanders can only take those risks if they have already addressed operational logistics.

The Next War Zone
Confronting the Global Threat of Cyberterrorism

James F. Dunnigan
Citadel Press, 2002

Reviewed by Scott Curthoys, a Counterintelligence Analyst contracted to a federal law enforcement agency and retired Army military intelligence and foreign area officer.

The prognosticators of cyberterrorism were wrong this time. By their reckoning, the war in Iraq should have resulted in major computer attacks against the United States. It was, after all, if not an appropriate time for a

symbolic and devastating "digital Pearl Harbor," then certainly the right time for smaller cyber-attacks against electric power distribution, transportation networks and banks. Despite the fact that the number of defaced Web sites increased significantly over prewar levels, no second front in cyberspace was ever opened.

This lack of a cyberwar, however, does not translate into the absence of threats to U.S. computer systems. Similarly, it does not mean that U.S. computer systems are not vulnerable. But it does raise questions about how extensive is the threat and what would be the impact of a serious cyber-attack? In his book *The Next War Zone*, James Dunnigan attempts to answer these questions by describing the battlefield, identifying the warriors and putting forth his ideas on how to survive what he envisions to be the coming cybercataclysm.

Dunnigan has taken on a daunting task. In addition to personal computers (PCs), there are thousands of computer systems that most Americans never hear about, such as process control systems or supervisory control and data acquisition systems that electronically oversee water systems, electric grids, railroad switches and other components of America's infrastructure. Despite the ubiquitous and benign nature of computers in our lives, many people are still mystified by how they work, how they connect with each other and how they can be threatened from great distances.

Dunnigan tries to bridge this knowledge gap by introducing the reader to the concept of cyberwar and how this emerging warfare method affects the average American. He does this by sequencing the chapters in his book to take the reader through an introduction to cyberwar, its history and components, and finishes with a hopeful chapter titled "Surviving Cyberwar." While the book's organization is sound, it is difficult to cut through Dunnegan's shrill rhetoric and find a reasoned and consistent description of who or what is threatening the United States.

The Next War Zone is straightforward in its theme: there is a real threat of a cyber-attack against the United States; the United States is vulnerable to such an attack; and the impact of such an attack could be very grave. The book's premise is based on the thought that the United States is a digitally homogeneous society. It is not. There are millions of networks, some linked with others through the Internet or private nets, some not linked at all, and each with different vulnerabilities. Unless coupled with a physical attack on key assets, a digital attack on one of these networks, or even several large networks, will not likely have a devastating impact on the United States. In making his argument, Dunnigan cannot escape the hyperbole and misconceptions that usually characterize discussions by subject matter experts on this topic.

The assertion that a cyber-attack can alter the orbits of satellites belies a lack of understanding of satellite telemetry, tracking and control, as well as the digital security that surrounds these national assets. The author makes several unsubstantiated assertions that "Cyberwarfare is a battle for control of the Internet ... " (the Internet is not something that can be occupied and defended as if it were the objective in a digital king-of-the-hill game); and that banks, big corporations and large Web sites have the resources to protect themselves from cyber-attack, but PC users and small businesses don't, leaving them as potential cybertargets.

The clearer understanding and more careful use of relevant terms and definitions might have restrained the author's use of "bogeyman" tactics. However, the author fails in this aspect as well. Dunnigan ignores extant doctrinal concepts over what constitutes information operations, information warfare and cyberwar. In chapter two he refers to Alexander the Great as a cyberwarrior because he attempted to control what was released to the media of the day. This muddles the concept of cyber — having to do with digitized information communicated over computer networks — and contradicts his own definition of cyberwarrior presented on page one.

Perhaps the biggest frustration with *The Next War Zone* is its total absence of footnotes, endnotes or a bibliography. This absence of references is indeed odd coming from an experienced author and part-time television analyst. The reader should meet the author's request for faith, as well as his dramatic prose, with extreme skepticism.

Correction

In the September-October 2003 *Army AL&T* article, "FY04 LTC/GS-14 PM/AC Slate," LTC Dwayne A. Morton should have been listed as becoming Product Manager for Test, Measurement and Diagnostic Equipment. We regret this error.

CONTRACTING COMMUNITY HIGHLIGHTS

I hope that you are finding the Deputy Assistant Secretary of the Army for Policy and Procurement segment to be rewarding as well as informative. This issue's feature article, *"Baghdad — A Contracting Officer's Perspective"* focuses on the real-life, day-to-day experiences of a contracting officer supporting the Coalition Provisional Authority efforts in Baghdad, Iraq. From the intense heat of the sun, the thick dust in the air and what were once elaborate Hussein presidential palaces, life in Iraq as it was once known, is changing.

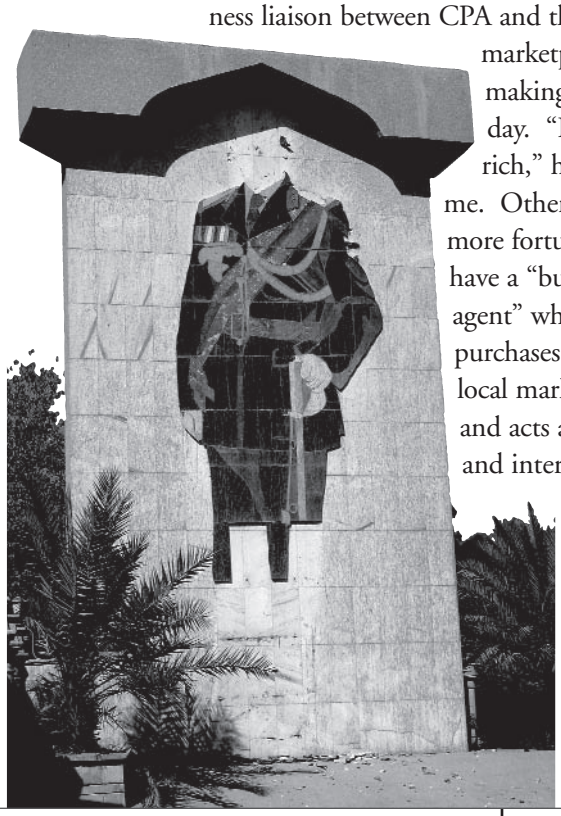
We are pleased to have individuals from the Army's contracting community supporting the rebuilding efforts in Iraq. Dennis Longo, a Contracting Officer from the U.S. Army Robert Morris Acquisition Center, and other dedicated contracting folks are working hard and very long days to support this ongoing effort. The contracting issues are often complex because of various funding and time constraints, communication barriers, equipment malfunctions and availability of sources and materiel just to name a few. Also, the living conditions and the water problems pose a constant challenge for our people. We applaud these individuals who are dedicated to this great effort and honor them for their tenacity to get the job done and to see real change.

Ms. Tina Ballard
Deputy Assistant Secretary
of the Army
(Policy and Procurement)

Baghdad – A Contracting Officer's Perspective

Baghdad, Iraq — Great place to work on a tan, if you can get past the thick dust in the air. We take malaria pills and drink lots of bottled water, but don't drink water out of the tap. In fact, I don't let the tap water near my toothbrush. The sun is so intense that thick draperies cover the windows to keep the building cool. I share a trailer with three other guys. Each trailer is divided into two rooms, two bunks per room with a bathroom in between. I work on the second floor in what was one of Hussein's several elaborate presidential palaces.

Everyone working here has, it seems, a personal stake in the outcome of the Coalition Provisional Authority's (CPA's) efforts. I have never seen such dedication. The days are long and the work very complex because of the diverse issues: availability of sources and material, funding, time constraints, communications, equipment malfunctions and lives that are often at stake. In a contingency operation, contracting officers are like surgeons in a Mobile Army Surgical Hospital unit. There is a lot of work to do and little time to get everything "perfect." "Sufficiency" is now a relative term, resources are limited to determine responsibility of the prospective contractor and every contractor wants advance payments or letters of credit. My supervisor says we work a 3-day workweek: they wanted it yesterday, you work on it today, it gets here tomorrow. The resources that we're used to in the United States simply don't exist here, so you rely on your experience and exercise sound judgment. There are no electronic fund transfers to pay contractors because no local banks are sophisticated enough to accommodate the system. So many times an armed finance officer and I pay contractors in cash. One of my interpreters is a business liaison between CPA and the local marketplace making $15 a day. "I am rich," he tells me. Others are more fortunate. I have a "buyer's agent" who makes purchases in the local marketplace and acts as liaison and interpreter making $500 per month.



A mural defaced by Iraqi citizens.

The Iraqis I talk to are very bitter about Hussein and his regime. As Tahir, an interpreter, and I were walking past the palace one day, he explained how much things had changed since the war. "Before the war, if you look at the palace while walking, they stop and question you why you are looking." Another now-successful businessman told me he was imprisoned for 9 months for doing business outside of Iraq without Hussein's permission. No one knew where he had been or what happened to him during those 9 months.

Wahab is an interpreter and liaison working under contract for the CPA. As we sat together eating lunch in a cafeteria, I asked Wahab what the typical Iraqi citizen would say about the current conditions in Iraq.

"We have been taught to hate," he said. "Forty years of hate is not easy to erase. It is like walking in a long, dark tunnel. For what we have experienced in the past, we now have much to look forward to. But we are afraid you are here to suck the oil from us, and I tell them that America pays for oil the same price as everyone else.

"During the war, a woman was in much pain from burns all over her body. The American Marines were trying to help her. When she would yell in pain, they would raise their hands to stop hurting her. They could not find a vein in her arms because of the burns. They tried to help her for 45 minutes and finally found a vein in her neck to give the injection. I saw this and I believe they were sincere. We need to see these things."

After he finished speaking, I thought about the elaborate palace Saddam had built for himself in Baghdad. The walls and floors elaborately decorated with several types of highly polished granite and marble. A huge bust of Hussein himself is positioned at each corner of the rooftop outside the palace, his eyes under the helmet seemingly keeping stern watch over the countryside. On the highway about half a mile beyond the palace stand two walls joined together at a 90-degree angle. On each wall is a quartz mural of Hussein: one, the statesman — dressed in shirt and tie with a flower in his lapel; the other, a military commander wearing a helmet with his hand resting on the sword strapped to his side. Both murals are intact except for the head, now replaced with bullet holes.

I wonder how the change will come. Like Wahab's experience, change will come one person at a time. Even, perhaps, through the acts of one person. Like those Marines, it has to be sincere.

Working here is an extremely challenging experience where the achievements, or even the outcome, may not be fully comprehended except by the citizens being directly affected. I believe all of us are honored to be here and to be a part of this effort.

This article was written by Dennis P. Longo, Contracting Officer, Coalition Provisional Authority, Baghdad, Iraq.

Career Broadening Opportunities

The Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology is offering developmental assignments for all DA employees who are GS-12 and Level III certified in the Contracting and Acquisition Career Program (CP-14). Assignment durations are 6 months to 1 year. The formal developmental program is run through the Contracting Career Program Office, which funds travel and temporary duty costs.

For more information on CP-14 developmental assignments, go to **http://asc.army.mil/docs/programs/cp/FY04CPDAnnouncement.doc**. For Contracting Career Program Office information, contact Sally Garcia at (703) 704-0112.

Contracting Successes

AMCOM's Contracting Professionals of the Quarter. A U.S. Army Aviation and Missile Command (AMCOM) Acquisition Center contracting team is recognized for its efforts in awarding a Program Executive Office Air and Missile Defense Common Hardware/Software-3 requirement. The 5-member team used various acquisition reform measures to successfully negotiate and award, in an unprecedented 45 days, a competitive best-value, indefinite delivery/indefinite quantity, time and materials contract with a potential value of $2 billion over a 10-year period of performance. The AMCOM team placed special emphasis on encouraging and maximizing small-business participation. The winning proposal has a 29.1 percent goal established for small business and 24.6 percent goal for small disadvantaged businesses.

Pictured from left are AMCOM Commander MG Larry Dodgen, Dorphelia Wherry, Acquisition Center Executive Director Marlene Cruze, Rod Matthews, Ted Arterberry, Detra Battle-Blue, Milt Petersen and CSM Gregory Lunn.

Army Contracting Agency (ACA) Northern Region. COL Steven R. Boshears, Director, ACA Northern Region, recently announced that the Northern Region Contracting Center (NRCC) awarded master contracts for Security Guard Services for all Tier II installations in late September. Earlier this year, awards were made for all Tier I installations. Six contracts totaling $126 million for the 20 high-priority installations have been awarded to four different contractors. Under the direction of NRCC Commander LTC Fred Roitz, contracting team members Barbara Blair, Abra Smith, Joe Farrell and Laurie Avery were recognized for their expeditious contract awards and expertise.

TACOM-Watervliet Socioeconomic Programs. Hats off to Melanie Keith of the U.S. Army Tank-automotive and Armaments Command (TACOM)-Watervliet Arsenal Contracting Office. Melanie placed 100 percent ($2.7 million) of the 8(a) awards, 99.9 percent ($1.3 million) of the HUBZone awards and 83 percent ($1.5 million) of the woman-owned awards for Watervliet Arsenal in FY03. Through the use of several Blanket Ordering Agreements for construction with 8(a) and 8(a) HUBZone woman-owned businesses, Melanie made it possible for Watervliet to achieve outstanding performance in these socioeconomic areas. This is no small feat for one contract specialist/contracting officer. Great effort!

Joint Munitions Command (JMC). JMC's Armament Retooling and Manufacturing Support (ARMS) Team is recognized for using acquisition reform to transform Army ammunition plants. In 2002, the ARMS program saved the Army $48 million by using incentives and innovative acquisition techniques to attract commercial tenants onto idle portions of Army installations. Revenues from these tenants reduce the Army's cost of ownership and overhead rates, thus lowering ammunition unit costs. The ARMS program has lowered the future disposal cost of facilities, increased the value of facilities, retained critical industrial skills, provided $461 million in economic impact to local communities and sustained more than 3,400 jobs.

U.S. Army Medical Research Acquisition Activity (USAMRAA). USAMRAA is recognized for its excellent leadership and commitment to supporting the Industries for the Blind. USAMRAA personnel dedicated time and effort to establish the Base Supply E-commerce program within the U.S. Army Medical Research and Materiel Command. An intense marketing effort, classroom training and distribution of literature to establish the Industries for the Blind as an acquisition solution was initiated by USAMRAA. The Industries for the Blind provides all office supply needs (more than 37,000 items) in one simple desktop delivery system with next-day delivery. This successful program is embraced by the customers who now use its exceptional services.

SPS Army Users' Conference: Updates on Upgrades

On July 15-18, 2003, the U.S. Army Contracting Agency (ACA), the Army Business Center for Acquisition Systems (ABCAS), and the American Management Systems (AMS) Army Response Team hosted a Standard Procurement System (SPS) Army Users' Conference in Las Vegas, NV. More than 380 procurement professionals attended the event, which featured business system leaders from ACA, SPS and other DOD programs.

Stephanie Mullen, Deputy Director, Business Systems Management Directorate, ACA, welcomed participants to the conference. She stated that Adapter technology being inserted into the soon-to-be deployed versions of the Procurement Desktop Defense (PD2) software (which powers SPS), must be uploaded by Army procurement professionals themselves to their

Debbie Rice, Contract Specialist/Systems Administrator (SA), Florida National Guard U.S. Property and Fiscal Office; Bob Parillo, SPS User Satisfaction Manager; and MaryAnn Maynard, SA, U.S. Army Corps of Engineers, enjoyed this year's SPS Users' Conference.

desktops. Both of these topics formed the conference's theme, "Adapting to the Future."

SPS Background

In 1996, DOD took an important first step to streamline its contract-writing and acquisition processes when it purchased PD2, a commercial off-the-shelf solution based on proprietary software developed by AMS, based in Fairfax, VA. DOD enhanced readiness and support to warfighters through the standardization and optimization of procurement systems and activities using SPS.

Today, 23,000 DOD procurement professionals (nearly 8,000 of them Army) use SPS. It's the first — and still the only — electronic business system designated for department-wide deployment.

ACA Director Keynote Address

The conference's keynote speaker, Sandra Sieber, ACA Director spoke of ACA's transformation progress and its impact on Army business systems. ACA was initiated in January 2002 to support the Army's centralized installation management plan. Activated just 9 months later, ACA is a field operating agency under the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology. ACA is one of the three largest contracting organizations in the Army and has more than 2,300 employees worldwide.

During her address to Army SPS users, Sieber — ACA's first Director — said the organization's focus is on enterprise buying opportunities facilitated by Armywide business processes. In less than 1 year, ACA has made significant progress, including awarding a new master license agreement with Microsoft© and awarding a master blanket purchase agreement for cell phones and pagers. Both achievements leveraged the buying power of Armywide purchases and contracting vehicles and resulted in substantial cost savings for the Army.

Sieber said ACA will continue to make progress and refine itself as it faces the challenges all new offices face, including merging cultures from several organizations. The most daunting challenge Sieber faces is coordinating the Army's automated business systems with other DOD automated systems. "The government needs to ensure adequate coordination with affected systems before implementing new systems," she continued.

To that end, ACA is working closely with SPS and Business Management Modernization Program (BMMP) leaders. "We've learned a lot from SPS from an IT [information technology] program management standpoint," Sieber continued. "Process changes need to be addressed before they can be automated. We're real good at automating old systems, but we're finding that paper works better if we don't change the processes behind the old systems," she added.

Responsibility for SPS Armywide falls under the purview of ACA. Sieber said ACA is working closely with SPS at several levels to ensure that Army users' needs are addressed in upcoming versions of SPS software and integration with existing Army systems is incorporated.

SPS Program Manager

SPS Program Manager COL Jake Haynes followed Sieber's address with an update on the program and thanked the Army for its continued — and growing — support of SPS. For example, Fort Lee, VA, volunteers ran the latest version of PD2 (v4.2 Increment 2)

COL Jake Haynes, SPS Program Manager, fields a question from Angelica Moshammer, ACA Germany, during his presentation.

through its paces, performing actual contracting functions that SPS users experience every day.

"Thanks to Fort Lee, we got real-time feedback about v4.2.2," Haynes remarked. "We were able to make adjustments immediately. As a result, customer satisfaction is at an all-time high and our deployment schedule was cut in half."

Haynes also noted that the teamwork between the Army, other military services and agencies, the SPS Joint Program Management Office (JPMO) and DOD leaders, results in cost savings. These cost savings allowed a long list of requirements to be addressed in the developing version of PD2 (v4.2 Increment 3).

Addressing new requirements, many of which come from users themselves, is an involved process and one that must meet the needs of a growing number of stakeholders, Haynes explained. While Army users have specific requirements they want to see implemented right away, other users, including DOD, have requirements to be fulfilled as well.

The SPS Joint Requirements Board (JRB) weighs these competing requirements and prioritizes the list. JRB is comprised of representatives from the military services and other defense agencies. JRB stratifies requirements using the industry-accepted prioritization standard of the Industry of Electrical and Electronics Engineers (IEEE). The decision to use the IEEE was a significant change Haynes made when he came to the program 2 years ago to ensure processes addressed the needs of users and DOD leaders.

"The JRB members are your SPS congressmen," Haynes continued. "If you've got a change you'd like to see in the software, contact your JRB rep and get it on the table. That's the most effective way for users to change SPS."

Adapter: Coming Soon

Amy Taylor, Technical Division Chief, SPS JPMO, provided participants with an in-depth look at upcoming PD2 technology, focusing on the Adapter, which is part of a software solution that will provide a more "open" interface to simplify integration between PD2 and external systems.

JPMO will be working with the Army and other military services to replace the existing proprietary SPS-Integration interfaces with the more open Adapter interfaces, which are based on Extensible Markup Language technology and commercial software products. Users are looking forward to the changes the Adapter will bring. "Let me tell you, the Adapter is good. You can really see what's going on in the system from end-to-end," said Dan Rolle, an Army contracting officer in Weisbaden, Germany, and a volunteer tester for v4.2.2.

Army Self-Upgrade

Users are excited about the Adapter and other expanded functionality in v4.2.2, but deployment methodology is going to be different than past deployments, warned SPS Desk Officer George M. Chavis Sr., whose briefing followed Taylor's. Chavis is the primary point of contact for Army users and is a direct liaison between the Army and the SPS JPMO.

"This upgrade [to v4.2.2] is going to be a self-upgrade, occurring on the database and application servers … and will be performed by system administrators or [other] personnel. Client software will be upgraded at users' desktops by system administrators," said Chavis. The upgrade is scheduled to begin in mid-2004. Prior to the upgrade, Chavis will conduct regional pre-upgrade conferences to remind users of the information provided at the conference and to ensure individual sites are prepared for the upgrade.

Other Sessions

Other informative sessions included briefings by ACA Business Intelligence and BMMP officials.

SPS Positive Feedback

Users at the conference were positive and upbeat about SPS. Charlene Duncan, Procurement Analyst, U.S. Army Corp of Engineers, Walla Walla, WA, district, liked the ability to go totally paperless. "The end document is a better document, and you have a lot more 'flexibility' with SPS versus the old SAACONS [Standard Army Automated Contracting System]. But there's still room for improvement," Duncan said. She added that SPS was designed to be too restrictive for a contract specialist and that if contract specialists really know their job, they shouldn't have a tool tell them they can't do something."

Bob Parillo, SPS User Satisfaction Manager, addressed Duncan's comments. He said that SPS is a standardized system, and the goal is to standardize the procurement process across DOD. Parillo added that it can mean less

flexibility in some instances, but the payoff will be for DOD as a whole because procurement data will be accessible and transferable to a number of related business systems across DOD's acquisition and financial communities.

Shared Information

Users said they came to the conference to get information and share lessons learned with other users. Jim Capuzziello, Army Materiel Command, said that he's come to every conference since 1999. He added that the amount of information you get and the networking are what these conferences are all about.

Comments like Capuzziello's reflected the upbeat mood of users, who, through a conference communications survey, said they appreciated the Army hosting SPS conferences. The Las Vegas conference was the seventh Army SPS Conference since 1999.

For more information about the conference (including a copy of the presentations), go to **https://www.armysps.sdcl.lee.army.mil**.

Linda Polonsky-Hillmer is President, CorpComm Inc., and has worked with SPS since its inception.

Army Awards Aviation Simulation Services Contract

The Army Program Executive Office for Simulation, Training and Instrumentation (PEO STRI) announced the award of a service contract to provide aviation simulation services to the U.S. Army Aviation Center at Fort Rucker, AL, to Computer Sciences Corp. (CSC) Federal Sector-Defense Group, Falls Church, VA. Flight School XXI Simulation Services will permit the U.S. Army Aviation Center to conduct individual and crew training in a computerized synthetic environment and collective, combined-arms training in a real-time, interactive computerized battlefield. CSC will provide a comprehensive suite of contractor-owned and operated helicopter simulators, enabling the Aviation Center to teach basic and advanced flight techniques to student pilots and rated aviators training on "go-to-war" aircraft.

The contract awarded to CSC is a fixed price contract with award-term provisions, with a potential value of $1.1 billion over performance period of 19 1/2 years. CSC will provide, manage, test, install, integrate, operate, maintain and upgrade simulators concurrent with the latest fielded aircraft at the home of Army aviation. CSC will also be responsible for future concurrency updates and total life-cycle support costs of the simulators throughout contract life.

PEO STRI is headquartered in Central Florida's Research Park in East Orlando, FL. In addition to research, development and program management, the PEO provides life-cycle support and operations for most of the Army's training systems around the world. PEO STRI is dedicated to putting the power of simulation into the hands of warfighters.

Secretary of the Army Awards Presented for Contracting Excellence

The annual Secretary of the Army Awards for Excellence in Contracting Ceremony was held Aug. 11, 2003, in conjunction with the Army Acquisition Senior Leaders' Conference in Seattle, WA. Army Acquisition Executive/Assistant Secretary of the Army for Acquisition, Logistics and Technology Claude M. Bolton Jr. and Deputy Assistant Secretary of the Army for Policy and Procurement (DASA P&P) Tina E. Ballard presented the awards. MAJ Joy N. Kollhoff, Acquisition Support Center, Fort Belvoir, VA, was the master of ceremonies.

The Secretary of the Army Awards for Excellence in Contracting commend exemplary contracting organizations and individuals. This Armywide award honors excellence and leadership in a variety of contracting activities, and distinguishes contracting individuals and organizations that excel in customer satisfaction, productivity, process improvement and quality enhancement. Hard work and dedication have placed these winners in an elite class.

Nominating Process

This year, 61 nominations were received. A letter requesting nominations is issued at the end of the current fiscal year. Nominations are submitted online at **https://apps.rdaisa.army.mil/saaec/awards.htm**. Each nomination is endorsed by the nominee's major command/major subordinate command (MACOM/MSC)

principal assistant responsible for contracting (PARC), the program executive officer or other appropriate official. There is no limit on the number of nominations that may be submitted. However, when more than one nomination is submitted by an organization, the endorsing official will rank order the nominations within specific categories before submitting them to the Department of the Army. An evaluation board consisting of senior-level contracting personnel, convenes, reviews and evaluates all selection packages and reconvenes for the final award determination.

This year's award recipients represented seven commands: the U.S. Army Pacific Command (USARPAC), the U.S. Army Forces Command (FORSCOM), the U.S. Army Space and Missile Defense Command (SMDC), the U.S. Army Corp of Engineers (USACE), the U.S. Army Contracting Command Europe (USACCE), the U.S. Army Tank-automotive and Armaments Command (TACOM), and the U.S. Army Communications-Electronics Command (CECOM). A list of the FY02 award recipients follows:

Unit/Team Awards

- *Unit/Team Award for Installation-Level Contracting Center*
  Recipient: Fort Hood Contracting Command, Fort Hood, TX (FORSCOM)
- *Unit/Team Award for Installation-Level Contracting Satellite*
  Recipient: Directorate of Contracting, Fort Campbell, KY (FORSCOM)
- *Unit/Team Award for Systems Contracting*
  Recipient: Brigade Combat Contracting Team, Warren, MI (TACOM)
- *Unit/Team Award for Specialized Contracting*
  Recipient: Residential Contracting Initiatives Performance Delivery Task Force (RCI PDT), Washington, DC (USACE)

Outstanding Contracting Officers

- *Outstanding Contracting Officer at Installation-Level Center (Military)*
  Recipient: MAJ Willard G. Zbaeren, (USARPAC), 9th Theatre Support Command, Okinawa, Japan (FORSCOM)
- *Outstanding Contracting Officer at Installation-Level Center (Civilian)*
  Recipient: Yvonne S. Land, Anniston Army Depot, Anniston, AL (TACOM)
- *Outstanding Contracting Officer at Installation-Level Satellite (Military)*
  Recipient: MAJ Scott F. Bruner, Directorate of Contracting, Fort Campbell, KY (FORSCOM)
- *Outstanding Contracting Officer at Installation-Level Satellite (Civilian)*
  Recipient: Phyllis Y. Poyhonen, SMDC, Huntsville, AL
- *Outstanding Contracting Officer in Specialized Contracting (Civilian)*
  Recipient: Dr. James J. Rich, USACE, Baltimore District, MD
- *Outstanding Contracting Officer in Systems Contracting (Civilian)*
  Recipient: Lynn Selfridge, SMDC, Huntsville, AL
- *Outstanding Contracting Officer in Contingency Contracting (Military)*
  Recipient: MAJ Stephen J. Conaway, FORSCOM, Fort Drum NY
- *Outstanding Contracting Officer in Contingency Contracting (Civilian)*
  Recipient: Pamela Runyon, USACE, Europe, Grafenwoehr, Germany

Special Awards

- *Secretary of the Army Professionalism in Contracting (Military)*
  Recipient: COL Charles J. Guta, FORSCOM, Fort McPherson, GA
- *Secretary of the Army Professionalism in Contracting (Civilian)*
  Recipient: Kathleen T. Walk, CECOM, Fort Monmouth, NJ

Secretary of the Army Award for Exceptional Support of the Javits-Wagner-O'Day (JWOD) Act Program

The JWOD Program is one of the most important programs that the Army uses to help blind and severely disabled people. This award recognizes commands, installations or activities that successfully initiate significant additions of products or services to the Procurement List of the Committee for Purchase from People Who Are Blind or Severely Handicapped.

Recipient: Barbara G. Maxwell, 63rd Regional Support Command, Directorate of Contracting Cell, Los Alamitos, CA (FORSCOM)

Bolton was delighted to recognize the performance of such outstanding contracting professionals and organizations and encourages all commands to continue to support this prestigious recognition of Army contracting personnel. Nominations for FY03 awards can be submitted from October through December 2003.

DTIC Annual Users Meeting

The Defense Technical Information Center's (DTIC's) 30th annual user's meeting will be held March 29 – April 1, 2004, at the Hilton Old Town, Alexandria, VA. DTIC's customers include scientists, engineers and professionals in the federal technology research, development, information science and acquisition communities. Conference participants represent DOD, other federal agencies, contractors and potential contractors. Government and commercial exhibitors will demonstrate their latest information technologies, and the conference agenda will address changing information sources and technologies in support of research, development, test and engineering programs. For more information, or to register for this year's conference, go to **http://www.dtic.mil/dtic/annualconf/**.

Air Travelers Give up Seats for Soldiers

Nearly everyone has experienced an airport bogged down by bad weather, delayed and cancelled flights, and overtired travelers wanting nothing more than to get to their destinations.

That was exactly what Will Ross, an Administrative Judge for the Defense Department's Office of Hearings and Appeals in Los Angeles, encountered Oct. 27 at the Baltimore/Washington International Airport. But he said what he witnessed that day made him proud to be an American.

"(It) also told me why we will win this war (on terrorism)," Ross said. Like many of his fellow passengers, Ross had been forced to spend the night in Baltimore. The California wildfires had forced the Los Angeles International Airport to close, and the ripple effect drove domestic travel nationwide into a tailspin.

When Ross reported to the airline counter the following morning for the next scheduled flight to Los Angeles, bad weather and aircraft mechanical problems made the prospect of a timely trip even grimmer. In the terminal, Ross noticed many servicemembers in their desert camouflage uniforms, arriving from Southwest Asia and awaiting connecting flights. In the servicemembers' case, it was to begin two weeks of rest and recuperation leave.

By the afternoon, one particular flight to Denver had been delayed several hours. Airline agents kept asking for volunteers to give up their seats and take another flight, but with few takers, Ross said. Finally, Ross said an airline spokeswoman for the Denver flight got on the public address system and made a desperate plea. "Folks, as you can see, there are a lot of soldiers in the waiting area," the agent said. "They only have 14 days of leave and we're trying to get them where they need to go without spending any more time in an airport than they have to.

"We sold them all tickets knowing we would oversell the flight. If we can, we want to get them all on this flight. We want all the soldiers to know ... we respect what you're doing, we are here for you and we love you," the agent continued.

"The entire terminal of cranky, tired, travel-weary people — a cross-section of America — broke into sustained and heartfelt applause," Ross said. "We're talking about several hundred people applauding, a whole terminal. The soldiers looked surprised and very modest. Most of them just looked at their boots."

Many of the travelers in the terminal wiped away tears. "And, yes," Ross said, "30 to 40 people lined up to take the later flight and all the soldiers went to Denver on that flight. "I think people realized that this fight is going to be long and drawn-out, and these kids are in the thick of it," he said. "It was heartwarming to see their outpouring of support."

This article was written by Donna Miles, American Forces Press Service.

ARMY AL&T Writers Guidelines

http://asc.army.mil/

Army AL&T is a bimonthly professional development magazine published by the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology. The address for the Editorial Office is DEPARTMENT OF THE ARMY, ARMY ALT, 9900 BELVOIR RD, SUITE 101, FORT BELVOIR, VA 22060-5567. Phone numbers for the editorial staff are as follows:
(703) 704-0114/DSN 654-0114
(703) 704-0111/DSN 654-0111
(703) 704-0129/DSN 654-0129
(703) 704-0128/DSN 654-0128
Fax: (703) 704-0135/DSN 654-0135

Purpose

To instruct members of the acquisition, logistics and technology (AL&T) community about relevant processes, procedures, techniques and management philosophy and to disseminate other information pertinent to the professional development of the Army AL&T Workforce.

Subject Matter

Subjects may include, but are not restricted to, professional development of the Army's AL&T Workforce, AL&T program accomplishments, technology developments, policy guidance and acquisition excellence. Acronyms used in manuscripts, photos, illustrations and captions must be kept to a minimum and must be defined on first reference. **Articles submitted to *Army AL&T* will not be accepted if they have been scheduled for publication in other magazines.**

Article Length

Articles should be approximately 8 double-spaced typed pages, using a 20-line page, and must not exceed 1,600 words. A**rticles exceeding 1,600 words will not be accepted.** Do not submit articles in a layout format or that contain footnotes, endnotes or acknowledgement lists of individuals.

Photos and Illustrations

A maximum of 3 photos or illustrations, or a combination of both, may accompany each article **in files separate from the manuscript.** Artwork must be accessible for editing and not embedded in the manuscript. Photos may be black and white or color. **Illustrations must be black and white and must not contain any shading, screens or tints. All electronic files of photos must have a minimum 300-dpi resolution (JPEG or TIFF). If they do not meet this requirement, glossy prints of all photos must be submitted via U.S. mail, FedEx, etc.** Photos and illustrations will not be returned unless requested.

Biographical Sketch

Include a short biographical sketch of the author/s that includes current position, educational background, acquisition certifications and AAC membership if applicable.

Clearance

All articles must be cleared by the author's security/ OPSEC office and public affairs office prior to submission. The cover letter accompanying the article must state that these clearances have been obtained and that the article has command approval for open publication.

Individuals submitting articles that report Army cost savings must be prepared to provide detailed documentation upon request that verifies the cost savings and their reinvestment. Organizations should be prepared to defend these monies if higher headquarters has a higher priority for them. All articles are cleared by the Acquisition Support Center Director.

Submission Dates

Issue	Author's Deadline
January-February	15 October
March-April	15 December
May-June	15 February
July-August	15 April
September-October	15 June
November-December	15 August

Submission Procedures

Article manuscripts (in MS Word) and illustrations/ photos (300 dpi JPEG or TIFF) may be submitted via e-mail to **army.alt.magazine@asc.belvoir.army.mil**, or via U.S. mail to the address in the first paragraph at the top of this page. All submissions must include the author's mailing address and office phone number (DSN and commercial).

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ARMY AL&T

OUR ARMY AT WAR RELEVANT AND READY

Our Army is at war with nearly 50 percent of its forces engaged in combat. We will continue to be so for the foreseeable future.

Our Army is a proud member of the Joint Force expertly serving our Nation and its citizens as we continuously strive toward new goals and improve performance.

Our Soldiers, their training, readiness and welfare, are central to all we do.

Our individual and organizational approach to our duties and tasks must reflect the seriousness and sense of urgency characteristic of an Army at war. Our Soldiers and our Nation deserve nothing less.

We are at war.

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