

ARMY AL&T

November - December 2004



Life Cycle Management Commands



From the Army Acquisition Executive

Life Cycle Management Commands and the Industrial Base

Within the acquisition, logistics and technology (AL&T) community, our constant first priority is equipping the individual Soldier. Since March 2003, we have produced more than 400,000 sets of body armor. We have increased our industrial base capacity from making 1,200 sets of body armor a month to 25,000 sets per month. Today, no Soldier, Sailor, Airman or Marine enters combat without body armor. In the summer of 2003, we had fewer than 250 up-armored Humvees in *Operation Iraqi Freedom*. We have increased production from about 30 armored Humvees a month to more than 450. We have now manufactured more than 5,600 M1114s or up-armored Humvees to meet a growing requirement in theater of roughly 8,100 vehicles. In addition, we're hardening another 13,800 Humvees with Armor Survivability Kits (ASKs). As of Nov. 22, we have applied armor protection to nearly 1,500 medium and heavy trucks. It is our intention, with the help of Congress and industry, to armor all of the 30,000-plus vehicles in theater today.

We are very proud of the courage, steadfastness and professionalism of our Soldiers. We are also very proud of the continuing responsiveness of the industrial base in meeting the needs of our Soldiers. The defense industrial base has responded magnificently to meet urgent needs in *Operations Enduring* and *Iraqi Freedom*, and in other ongoing operations throughout the world. Providing body armor for our Soldiers is a great illustration of how our government challenged industry and industry responded superbly. The other exceptional example of industrial response is in adding slat armor and ASKs to our tactical and support vehicles.

Rapid Fielding Initiative (RFI)

Our RFI is another excellent example of industry's commitment to the Soldier. RFI ensures that all components deploy to Iraq and Afghanistan with the latest available equipment. In coordination with field commanders and Soldiers, RFI now provides Soldiers with more than 40 mission-essential equipment and clothing items, including the Advanced Combat Helmet and accessories, knee and elbow pads, close-combat optics, hydration systems and much more.

In Iraq, we see the enemy evolving in its response to our efforts to maintain peace. Attacks have become more sophisticated. Beginning with truck bombs and suicide bombers, we are now encountering remotely controlled mines, improvised explosive devices and well-planned assaults. Industry is playing a key role by rapidly fielding countermeasures to stay ahead of the enemy. Through RFI, we are able to equip Soldiers wherever and whenever necessary, providing improved force protection, mobility, situational awareness and lethality.



The paradigm is shifting though. Now, and in the future, the weapon systems and equipment we buy must be responsive to evolving and anticipated threats. We, along with our industry partners, must be agile enough to anticipate requirements and surge expedited contracting of services and fielding of equipment. In addition, we must take advantage of lessons learned and adjust the entire process to correct mistakes, overcome materiel weaknesses or procure commercially available products and components.

Life Cycle Management Commands (LCMCs)

Materiel development is a special challenge for an army at war, because we must not only anticipate and address future needs, we must meet pressing current demands. The health of our industrial base is the key to our success and will ensure our forces have the weapons and communications systems they need to dominate the full operational spectrum of conflict for many years to come.

It is imperative that we provide products to the Soldier faster, make good products even better, minimize life-cycle costs and enhance the synergy and effectiveness of our Army's AL&T community. To accomplish this, we are integrating significant elements of AL&T leadership responsibility and authority and enabling a closer relationship between the Army Materiel Command's major subordinate commands and the program executive offices. The life-cycle management initiative that is currently being institutionalized is designed to provide an integrated, holistic approach to product development and system support.

In early October 2004, we established the Aviation/Missile LCMC at Huntsville, AL. There are a number of excellent articles in this issue that will provide you with additional insights on this as well as other LCMCs. We are also establishing the Soldier/Ground Systems LCMC at Warren, MI; the Communications/Electronics LCMC at Fort Monmouth, NJ; and the Joint Ammunition LCMC at Rock Island, IL. Our plan is to grow the staffs and processes together.

We have program evaluation groups (PEGs) for the development and management of budgets in our separate functional areas — equipping, manning, installations, sustaining and training. What we are doing with our LCMCs is bringing the equipping and sustaining PEGs together. It makes good sense, and we are going to make this initiative work effectively over all program life cycles.

Claude M. Bolton Jr.
Army Acquisition Executive



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**ACQUISITION, LOGISTICS &
TECHNOLOGY**

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**Exclusive Interview
With General
Paul J. Kern**

Cynthia D. Hermes

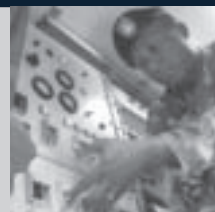
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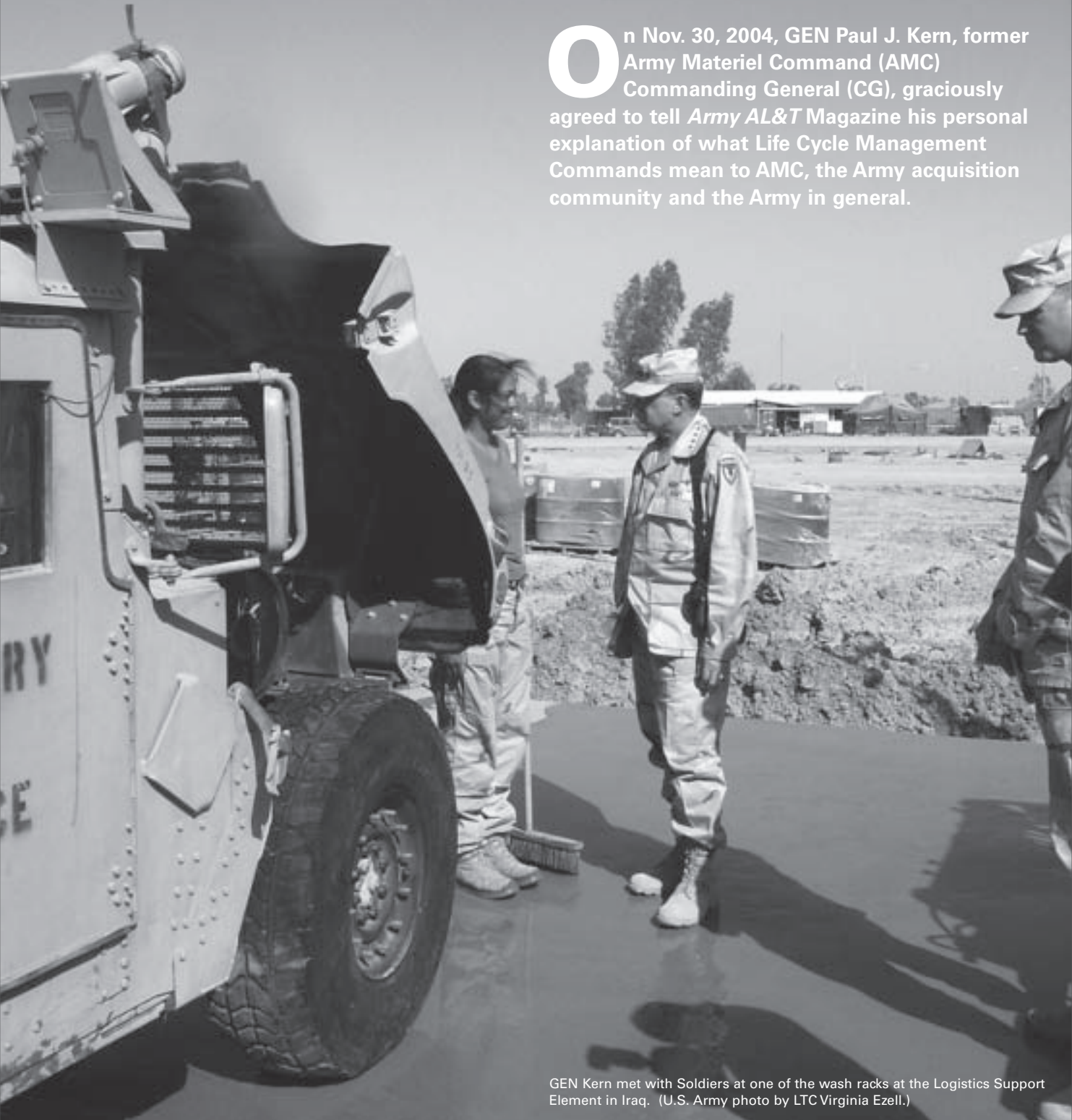
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Exclusive Interview With General Paul J. Kern

Cynthia D. Hermes

On Nov. 30, 2004, GEN Paul J. Kern, former Army Materiel Command (AMC) Commanding General (CG), graciously agreed to tell *Army AL&T Magazine* his personal explanation of what Life Cycle Management Commands mean to AMC, the Army acquisition community and the Army in general.



GEN Kern met with Soldiers at one of the wash racks at the Logistics Support Element in Iraq. (U.S. Army photo by LTC Virginia Ezell.)

Army AL&T: Of the 12 program executive offices (PEOs), why were Aviation/Missiles, Communications/Electronics, Joint Ammunition and Soldier/Ground Systems selected to become the first four Life Cycle Management Commands (LCMCs)?

Kern: You have to start somewhere, so we looked at the major subordinate commands (MSCs) within the Army Materiel Command and the PEO structure's acquisition, logistics and technology side to determine where we could make the best use of the talented people we had and where we thought we could make the most progress. That's how we chose those four. And if you look at those PEOs, you'll see they are a significant focal point in the U.S. Army. The future of these LCMCs will depend on how each progresses and the estimate that is made by [Assistant Secretary of the Army for Acquisition, Logistics and Technology] Claude M. Bolton Jr., Military Deputy LTG Joseph L. Yakovac and [AMC CG] GEN Benjamin Griffin on what will be the best combinations to go forward with in the future.

Army AL&T: Are the other PEOs scheduled to become LCMCs as well? If so, what is the integration plan?

Kern: It wouldn't be correct to say they are scheduled right now. That's an assessment that Secretary Bolton and GEN Griffin will have to make. When they assess the LCMCs we started with, I'm sure it will result in future reorganization. As for the integration plan, LTG Yakovac and LTG [Richard A.] Hack [AMC DCG] have been working on developing that plan, which will be presented to Secretary Bolton and GEN Griffin for further action. There is a plan in the process of being built, but it hasn't been approved yet.

Army AL&T: What was the overriding factor or rationale that pointed to the need to establish the LCMCs?

Kern: When we say the words 'life cycle,' which we've used within the PM [program manager] community and within our review of logistics, it becomes clear that we really need an integrated approach from the research piece all the way through the disposal piece. And in today's Army, where the

FCS [Future Combat Systems] is evolving very quickly, we also see the need to bring some of that technology back into the current platforms. So the life cycle isn't something that we started with an Abrams tank in 1980 and then put on the shelf to dispose of in 2004.

In fact, the Abrams tanks are going to be in our inventory for probably another 20 years at least, maybe more. Therefore, we need to continually update the technology and make them adaptable so they can fit into the network battlefield and units of action and employment. That really drives us to look at a life-cycle approach to both old equipment, which will continue in operation for many years and needs to be upgraded, and new equipment that's coming onboard to ensure that we get the best performance-based contracts in place now that we're going to fit into this integrated life-cycle management.

Army AL&T: LCMCs are based on ever-greater collaboration among the acquisition, logistics, sustainment and technology communities. How are the Army Acquisition Executive (AAE), AMC CG and AMC DCGs encouraging collaboration?

Kern: It has been troubling to me for many years that we haven't had better integration processes, structures and so on. I'm thrilled to see that we are making progress. That is coming about through a series of reviews we began a few years ago that were jointly held between PEOs and AMC's MSCs, and held on a quarterly basis. Over a year's time, Secretary Bolton and I sat in on them. That evolved into the establishment of the LCMCs. Later, we'll make our assessments on how that will evolve through the communications between those two



GEN Kern made frequent trips to Southwest Asia during his command at AMC. (Photo by LTC Joe Bass.)

organizations and the continuously integrated metrics they use, the contracts that are written and the research that is introduced into future systems as well as current systems that need updating.

Army AL&T: For this issue of *Army AL&T Magazine*, each LCMC submitted an article about itself. Each LCMC will seek to improve its processes and encourage collaboration among its participating organizations. In your opinion, how will the LCMC commanders accomplish these two objectives?

Kern: I think they're off to a good start. To accomplish the objectives, they must continue the communications, mature those organizations and establish feedback mechanisms. Many of our metrics are historical rather than forward-looking, so we have to develop metrics that will allow us to see the impacts that we would like to see and look forward rather than backward. Currently, we need some metrics that reflect history to determine whether we're making improvements or not. But, it's a combination then of establishing the right metrics. I think we're making progress in that area after a long struggle of trying to know the right metrics in terms of measuring readiness and contract performance — not just how we're doing as far as parts on the shelf or percentages.

Lean allows us to eliminate waste and look at the process side, and Six Sigma gives us the metrics needed to manage production quality standards and outputs. ... We started Lean/Six Sigma in AMC depots at the production level, but the process is being used on the management side as well. There's a tremendous amount of improvement that can and should be made in how we manage our processes.

effective commander's tool to manage life cycles.

Army AL&T: Some of the four new LCMCs have already been using Lean/Six Sigma concepts. Tell us your experience with Lean/Six Sigma at AMC and your view of it.

Kern: I'm enthusiastic about Lean/Six Sigma. We started it at AMC with a Lean production

Army AL&T: How will reestablishing the Deputies for Systems Acquisition (DSAs) in the four LCMCs lead to better inclusion of sustainability issues?

Kern: We've gone through a number of evolutions of this and learned that in some cases DSAs were successful and in some cases they were not. What the DSAs give us is an across-the-board life-cycle approach now as opposed to a few systems. This gives the life-cycle management commander the ability to rely on someone who can look across the entire spectrum of the life cycle and the acquisition process — not just at a Black Hawk, a 113 family or an old truck. So I see that as a real advantage — to take the lessons learned and apply them now to make a truly

In my view, this RESET operation, as we've labeled it, must focus not just on rebuilding something to an *old standard* but on taking advantage of the fact that we're rebuilding it to a *new capability* that will fit into the future network units of action.

focus. We already had some Six Sigma work being done through the GE T700 engine rebuild in Corpus Christi, TX. When we laid that out across all our depots and at AMC headquarters, we recognized that Lean and Six Sigma must come together. Lean allows us to eliminate waste and look at the process side, and Six Sigma gives us the metrics needed to manage production quality standards and outputs. I think when the two are put together, there are many different definitions of what people expect. The part that I get enthusiastic about is that it's not a static view of how we're doing, in fact, it's a measurement of continuous improvement. We're always looking for better ways to go. We started Lean/Six Sigma in AMC depots at the production level, but the process is being used on the management side as well. There's a tremendous amount of improvement that can and should be made in how we manage our processes.

Army AL&T: Military equipment being used in Iraq and Afghanistan — from helicopters, Humvees and tracked vehicles to heavy trucks, Strykers and generators — have seen extensive use, which may require extensive overhauls or, quite possibly, lead to replacing portions of the fleet altogether. How will this scenario affect LCMCs in the future?

Kern: It gives us an opportunity to focus on the older equipment in our inventory, which will be in use for many more years, and to bring in the technologies from FCS and other areas into the current fleet of

equipment. It's a fleeting opportunity. In my view, this RESET operation, as we've labeled it, must focus not just on rebuilding something to an *old standard* but on taking advantage of the fact that we're rebuilding it to a *new capability* that will fit into the future network units of action.

Army AL&T: Secretary Bolton has advocated using a Life Cycle PEG [Program Evaluation Group] that looks at equipping, manning, installations, sustaining and training as a metric. What kinds of metrics do you think would help determine how well the LCMCs are performing their respective missions?

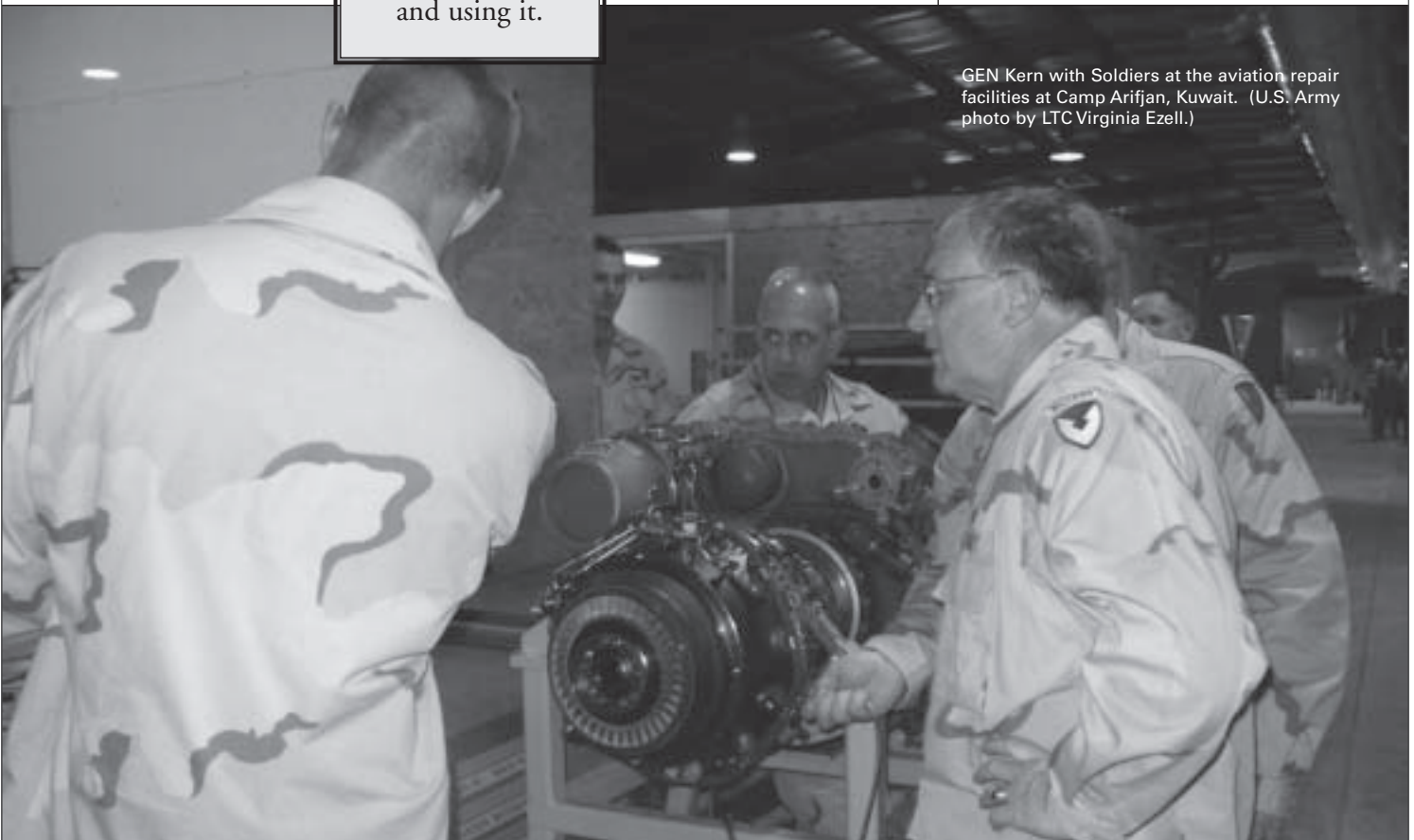
We must better manage the life-cycle programming and budgeting process, not just the equipment. ... The lesson we've learned from the commercial sector is that if we have a good data management system, we really must automate it or spend all our energy collecting data and not really analyzing and using it.

Kern: There are two parts. On the PEG, we've tried to do that for some years. If you go back and look at some of the logistics task force reviews of where we were about 3 years ago and look at where we are today, I think you'll see a convergence on the same thought of how we must better manage the life-cycle programming and budgeting process, not just the equipment. The life cycle implies that you have a programmatic view over a long time period, so I fully support that aspect of what Secretary Bolton has proposed.

Getting the right metrics also means that we must ensure that we are looking

forward. We've worked diligently to automate the data collection process in many of our digital systems, which is much easier to do now than it was in our old analog systems. The lesson we've learned from the commercial sector is that if we have a good data management system, we really must automate it or spend all our energy collecting data and not really analyzing and using it. We've got to get that process shift as well. But I think that Secretary Bolton has exactly the right idea in trying to bring the PEG piece together with the metrics to ensure that we're doing the right work. Another aspect that we've looked at for some time is the J.D. Powers approach to assessing input from the field — the real customers who are using our equipment — and how to feed that back into the system. That's a piece that we need to capture as well.

Army AL&T: When could we expect to start measuring results?



GEN Kern with Soldiers at the aviation repair facilities at Camp Arifjan, Kuwait. (U.S. Army photo by LTC Virginia Ezell.)

Kern: We've got to do it now. We can't wait. We must establish a baseline of where we are and work to continuously improve, so we've got to start with data collection and metrics right away.

Army AL&T: As you look back over your military career, what do you consider to be your crowning achievement, the legacy you will leave the U.S. Army?

Kern: I don't know that I could say that there's any one crowning achievement. I would like to believe that it's the people whom I've influenced into having an appreciation that change is a

good, not a bad, thing and that they may embrace continuous improvement as a way of life. This is a little bit counter to the culture of government, which likes to codify everything in regulations and policies that generally take more time to write than they do to actually derive benefits. If there's anything that I hope for, it's that people accept change and look for continuous improvement.

Army AL&T: What words of advice would you give to captains just beginning their careers in Army acquisition, logistics,

Pay attention to Soldiers. ... It's easy to get caught up in the processes, but what we do has only one outcome: to allow Soldiers to accomplish their jobs at winning America's wars. The real evaluation tool we should be using for ourselves ... is paying attention to what Soldiers say about how we provide them the resources they need to do their jobs.

sustainment or technology?

Kern: "Pay attention to Soldiers." I think that piece of advice would be the same regardless of where they decided to make their career. It's easy to get caught up in the processes, but what we do has only one outcome: to allow Soldiers to accomplish their jobs at winning America's wars. The real evaluation tool we should be using for ourselves — whether a captain, a general, a wage-grade worker, an SES or anywhere in between — is paying attention to what Soldiers say about how we provide them the resources they need to do their jobs.


Army AL&T: If I can be so bold as to ask, what are your retirement plans?

Kern: Work. The lesson to me is to work as long as you possibly can until

your body no longer allows you to. People who I've seen do that live longer and generally feel a lot happier about themselves. I'd caveat that with trying to spend a little more time with family than I have in the past 40 years.

CYNTHIA D. HERMES is the Executive Editor of *Army AL&T* Magazine. She has 25 years of government service with the U.S. Army and U.S. Navy. She is working toward a degree in business management.

(U.S. Army photo by SGT Scott Meinhardt, DA Staff Photographer.)



The Life-Cycle Management Approach— Team C4ISR Delivers New Equipment and the Joint Network Node to the 3rd Infantry Division

MG Michael R. Mazzucchi and Timothy L. Rider

Revolutions are not made,
they come. ... It [revolu-
tion] comes out of the
past. Its foundations are laid
far back."

—Wendell Phillips, 1852

SSG Clayborne Taylor, network switching systems operator for 3ID's Detachment 2, 3rd Signal Co., powers up switching equipment inside the JNN at Fort Stewart, GA. (U.S. Army photo by Timothy L. Rider.)

Revolutions might be thought of as noisy affairs — clashes of arms or ideals — but on Oct. 1, 2004, a doorway to revolution was quietly opened at Fort Stewart, GA. To the casual observer, it was just another day, otherwise noteworthy only as the new fiscal year's first day. It all happened when a deadline was met, unnoticed by many, to replace the 3rd Infantry Division's (3ID's) combat communication shelters with new Humvee-borne shelters, wheelborne satellite dishes and Soldiers trained to use them. One would be hard-pressed to believe that the new camouflage-painted gear had anything to do with revolution, but a closer look reveals much more. Those satellite dishes signal both space and change — change that impacts how Army units collaborate within Joint and coalition realms and how the Army collaborates to provide new capabilities using a life-cycle management perspective.

Untethering the 'Rock of the Marne'

Oct. 1 was the deadline for equipment to be in place for the 3ID to prepare for a Mission Readiness Exercise, having wholly reorganized as the Army's first "modular" division. The 3ID went into *Operation Iraqi Freedom (OIF)* in 2003 with seven brigades — three for maneuver and four separate brigades for aviation, engineering, artillery and support. By October 2004, much had changed. The 3ID now has four maneuver brigade combat teams (BCTs) and an aviation brigade but no artillery or engineering brigades. Each BCT has internal engineering, artillery and support battalions and companies to provide military intelligence and signal support. All BCTs under the new 3ID formation can fight and train as holistic units under a single commander, and each can operate autonomously.



The new Humvee-borne communications shelter, will enhance Soldier communications and mobility for maneuver-based organizations such as 3ID's BCTs. (U.S. Army photo by Steve Smith.)

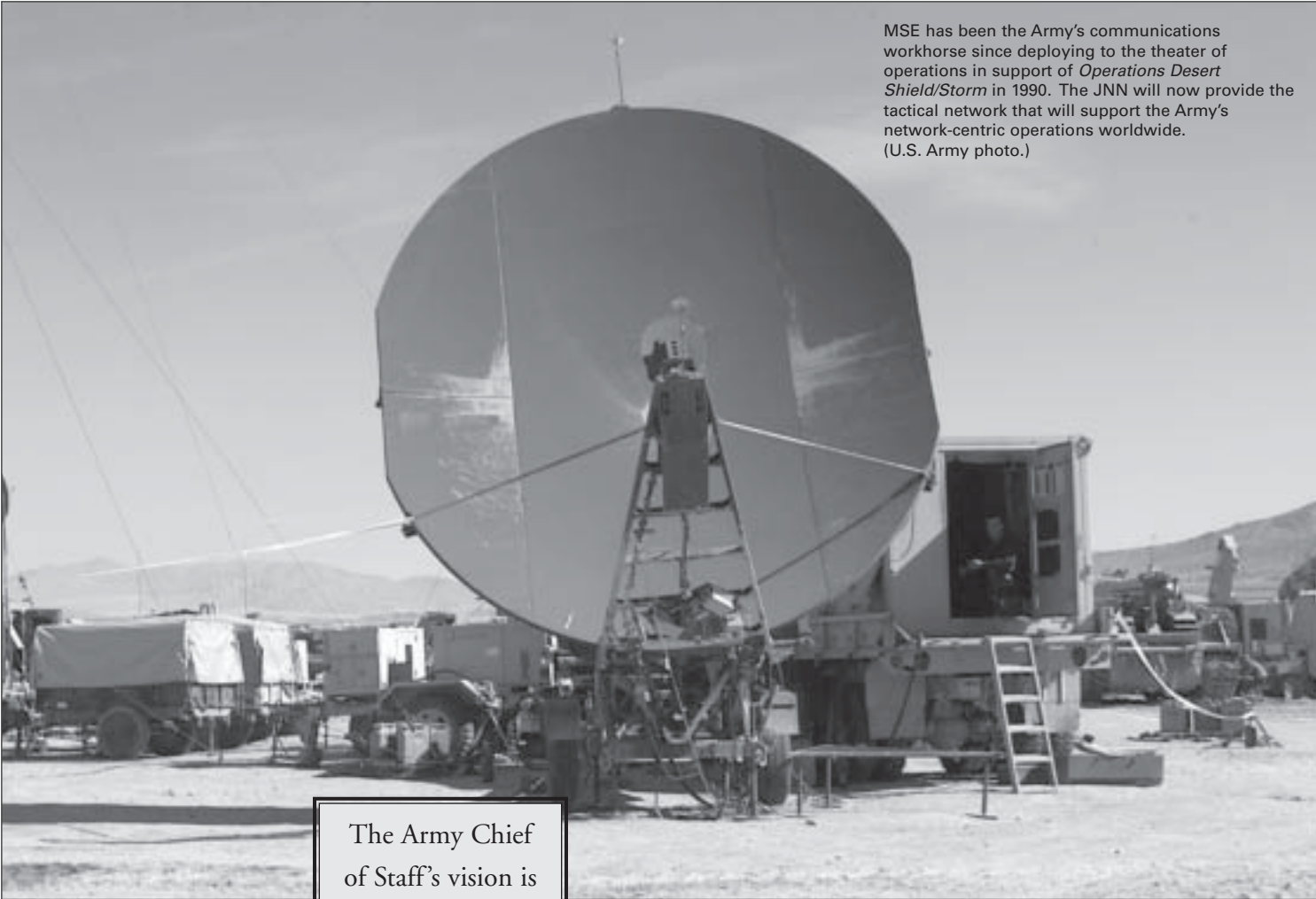
To enable the BCTs to operate autonomously while continuing to maintain their lines of communications, each received new communications shelters that provide network transport connectivity via satellite — and for good reason based upon recent history. During *OIF*, 3ID division and brigade command posts occasionally lost connectivity during the rapid, 150-plus kilometer push north to Baghdad because their communications systems were designed to operate in a linear manner, tethered to terrestrial lines of communication. The tactical network provider that the 3ID relied on was based on Mobile Subscriber Equipment (MSE). MSE was breakthrough gear when fielding began in 1988, and it proved successful when it deployed for *Operation Desert Shield*

Desert Storm in 1990 because of its extended range and increased throughput using line-of-sight radio links. Considering that 1990 was, according to Internet historian Robert H. Zakon, 2 years before the phrase, "surfing the

Internet," was coined, it is plain to see that much has changed between then and now in terms of communications and networks.

In the late 1980s and early 1990s, the Army began exploring revolutionary new concepts, laying foundations to leverage the dramatic conceptual and technological advances inspired by the exploding growth in telecommunications technology. By conducting Advanced Warfighting Experiment field trials, developing systems to support the first "digital" division — the 2nd

In the late 1980s and early 1990s, the Army began exploring revolutionary new concepts, laying foundations to leverage the dramatic conceptual and technological advances inspired by the exploding growth in telecommunications technology.



MSE has been the Army's communications workhorse since deploying to the theater of operations in support of *Operations Desert Shield/Storm* in 1990. The JNN will now provide the tactical network that will support the Army's network-centric operations worldwide. (U.S. Army photo.)

The Army Chief of Staff's vision is that modular organizations will conduct interdependent network-centric warfare and be supported by sense-and-respond logistics capabilities while they operate within Joint, interagency and multinational configurations.

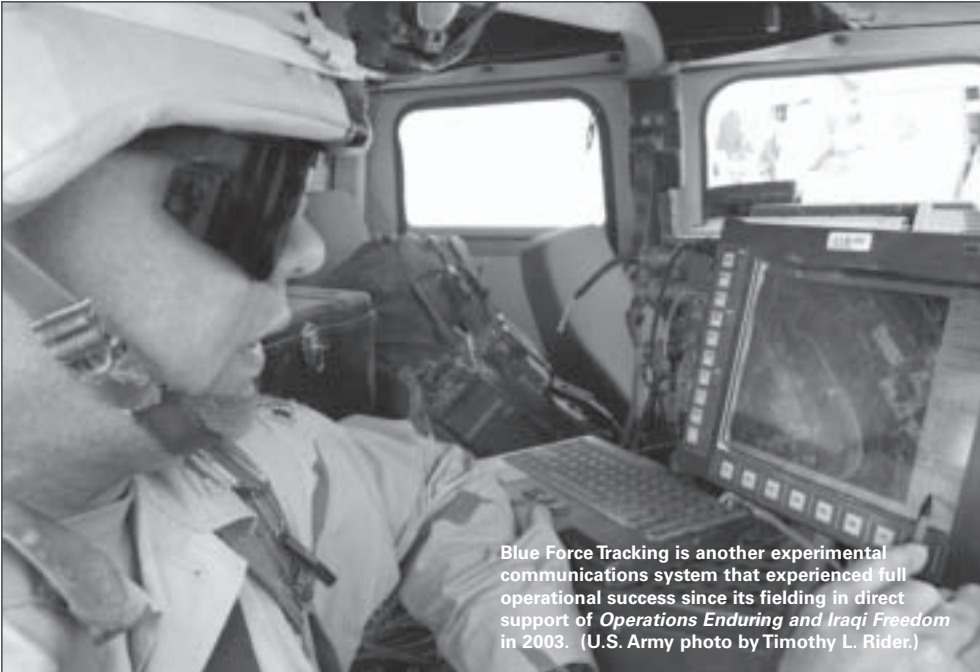
Armored Division later redesignated as the 4th Infantry Division (4ID) — and through Division Capstone Exercises I and II, the Army gained experience and refined its “digital” tactics. Leap forward to 2003 and *OIF* and some of these experimental systems became fully realized operational successes as demonstrated by automated battle command systems nurtured in the 4ID, including Blue Force Tracking, the Advanced Field Artillery Tactical Data System (AFATDS), the Global Command and Control System-Army and Battle Command on the Move.

The Army Chief of Staff's vision is that modular organizations will conduct interdependent network-centric warfare and be supported by sense-and-respond logistics capabilities while they operate within Joint, interagency and multinational configurations. The 3ID's new trailers and satellite antennas, which make up the Joint Network Node (JNN), are a key enabler for this vision. JNN forms the tactical network that supports network-centric operations. JNN and other network-enabling capabilities will make the new formations modular and network enabled.

Tethering Together a Team Effort

The foundation for 3ID's network capability was laid in the product and manner of production. Just compare the following timelines:

- MSE development began when operational requirements were approved in 1979.
- The MSE acquisition plan was approved in 1983.
- In 1988, the first Army unit was equipped.
- JNN development began in fall 2003 without operational requirements documents. However, an operational need was identified by the Combined Arms Center, Fort Leavenworth, KS, based on *OIF* lessons learned.
- Production began during spring 2004.



Blue Force Tracking is another experimental communications system that experienced full operational success since its fielding in direct support of *Operations Enduring and Iraqi Freedom* in 2003. (U.S. Army photo by Timothy L. Rider.)

- Ten JNNs were delivered to the 3ID between Aug. 9 and Sept. 19.

JNN moved forward quickly because of high demand by Army leadership to support modularity. This type of accelerated responsiveness must remain the norm to keep pace with the exponentially increasing pace of technological growth.

Such are the realities that accompany the “Internet Revolution,” which is making a major impact at Fort Monmouth, NJ, the Army’s center of gravity for the life-cycle management of command and control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) capabilities. Monmouth is home to “Team C4ISR,” which includes the U.S. Army Communications-Electronics Command (CECOM); Program Executive Office (PEO) Command, Control and

JNN moved forward quickly because of high demand by Army leadership to support modularity. This type of accelerated responsiveness must remain the norm to keep pace with the exponentially increasing pace of technological growth.

JNN’s tight deadline and continues to rely on that team effort as the JNN network is improved. For example, CERDEC, which developed the Network Operations Center-Vehicle-V, and PM Warfighter Information Network-Tactical, which developed the Brigade Baseband Node, have created

Communications-Tactical (C3T); PEO Intelligence, Electronic Warfare and Sensors; and Program Management Offices for PEO Enterprise Information Systems (EIS) and Communications-Electronics Research, Development and Engineering Center (CERDEC).

The JNN effort is led by one Project Manager (PM) from Team C4ISR — PEO C3T’s PM for Tactical Radio Communications Systems (TRCS). PM TRCS, in turn, has relied heavily on other members of Team C4ISR to meet

concepts and found available commercial technologies that were invaluable to PM TRCS in designing JNN. CECOM’s Logistics and Readiness Center added value by selecting existing environmental control units and generators for JNN. CECOM’s Software Engineering Center provided configuration management support, developed strategies for network management during deployment and provided software loading support. PEO C3T’s Special Projects Office (SPO) continues to develop and refine the network architecture. In turn, the SPO relies on support from engineers in the CERDEC. PEO C3T’s Central Technical Support Facility at Fort Hood, TX, tested and made corrections to the 3ID/JNN architecture and its interoperability with Army Battle Command System (ABCS) Version 6.3 Delta in an environment that simulates field operations. They also drew support from personnel across Team C4ISR. Simply stated, providing JNN to 3ID by Oct. 1st was truly a Team C4ISR “all-hands” effort.



AFATDS, depicted here on a ruggedized Tadpole personal computer will provide maneuver forces with critical real-time information and enable dynamic network-centric operational capabilities. (Photo by Dave Kirk.)

JNN is a representative example, but it's just one of many Team C4ISR teamwork examples that has provided new or improved C4ISR capabilities enabling 3ID's modular deployment. Other significant efforts include a PEO EIS-led project to provide network support using the Combat Service Support Very Small Aperture Terminal, which provides network transport capability to support sense-and-respond logistics. CERDEC is providing a highly mobile satellite-based system — Trojan Special Purpose Intelligence Remote Integrated Terminal (SPIRIT) — to support the secure transmission of sensitive intelligence materials gathered by intelligence units and Joint surveillance capabilities. Trojan SPIRIT provides communications transport capability support for new systems, such as Prophet, and for existing systems that previously had been only corps and division assets but are now part of the Units of Action (UAs) core. PEO C3T is also involved in an effort to provide the ABCS's 11 component systems to the entire Army within a decade so that Units of Employment and UAs will have a single software baseline for all battlefield operating systems. As the Team C4ISR efforts move forward, it will continually "spiral in" improvements while managing the transition to future efforts.

Coordinating the 3ID effort is LTC Vincent Amos, the 3ID C4ISR "trail boss." Although Amos works for PM TRCS, he is 3ID's "go-to" person for scheduling all Team C4ISR equipment deliveries, even as the division conducts a highly condensed training schedule. Amos is a problem solver and

coordinator backed by Team C4ISR's engineers, developers, acquisition specialists and sustainers. Over a 5 ½-month period that ended Sept. 15, the 3ID trail boss had successfully fielded 3,814 individual equipment items and trained 2,682 soldiers. The trail boss efforts culminated in an in-process review (IPR) on Sept. 15, which included representatives from all of Team C4ISR, as well as representatives from Army Test and Evaluation Command, U.S. Army Forces Command G-6, U.S. Army G-6 and the 3ID. The IPR provided an open forum for representatives from throughout the life cycle to engage. It was also an excellent opportunity to focus everyone on a key mission and share information and lessons learned about modularity for follow-on efforts.

Managing It All From a Life-Cycle Perspective

Any changes anywhere on the network might impact something else unexpectedly. To Team C4ISR, it means

The emerging concept of life-cycle management reinforces this team concept by providing senior leaders the flexibility to assign expertise to high-priority efforts.

we could not field a viable, operational network, one that incorporates automated battle command and ISR capabilities, and provide training and field support, without maximum collaboration. Team C4ISR realized this long ago as its organizations began the effort to build materiel support to network-centric operations. Meeting the challenge of modularity was made possible with the

high level of expertise that has grown in our organizations, and that value can only be unlocked in a truly collaborative "Team C4ISR" environment. The emerging concept of life-cycle management reinforces this team concept by providing senior leaders the

flexibility to assign expertise to high-priority efforts. Organizations under the life-cycle management construct, even though it is yet in its conceptual stage, are demonstrating that they can now collaborate where they once competed, yet still retain a competitive drive to excel in supporting our warfighters.

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TIMOTHY L. RIDER is the Media Relations Officer at Fort Monmouth. He served for 8 years in the Army as a Public Affairs Specialist/Photojournalist, and has a B.S. in liberal studies through Excelsior College.



PM DWTS Fields CSS VSAT/CAISI

Stephen Larsen



WO2 Angel Montero, CSS AMO technician for 3ID, trains SPC Tony Robinson how to use the CSS VSAT satellite communications system's additional capabilities beyond the ability to transmit data — including text messaging, text conferencing, collaboration software and VOIP telephone capability.

Continuing the march forward in implementing the Army Deputy Chief of Staff for Logistics' (G-4) initiative to "Connect the Logistician," the Project Manager for Defense Communications and Army Transmission Systems' Product Manager for Defense Wide Transmission Systems (PM DWTS) completed fielding the Combat Service Support Very Small Aperture Terminal (CSS VSAT) satellite communications systems and the CSS Automated Information Systems Interface (CAISI) to the 3rd Infantry Division (3ID) (Mechanized) at Fort Stewart, GA, on Oct. 8, 2004. PM DWTS is now fielding the system to the 101st Airborne Division (AD) (Air Assault) at Fort Campbell, KY, and the 10th Mountain Division (MD) (Light Infantry) at Fort Drum, NY, as well.

The combination of CSS VSAT and CAISI increases readiness by giving CSS Soldiers in the field the ability to electronically transmit supply requisitions and receive near-real-time status reports on their orders. The system also enhances

force protection by greatly reducing the need for Soldiers to convoy into or through high-risk locations to deliver detailed logistical orders. Likewise, maintenance meetings can now be conducted "virtually" via CSS VSAT/CAISI.

All told, PM DWTS fielded 40 CSS VSAT systems to the 3ID and nondivisional support units, replacing the 11 prototype systems that they had previously fielded for 3ID's use during its rotation through the National Training Center (NTC), Fort Irwin, CA, from May 22 to June 18, 2004.

CSS VSAT and CAISI increase readiness by giving CSS Soldiers in the field the ability to electronically transmit supply requisitions and receive near-real-time status reports on their orders.

System Improvements

According to John Andrews, Program Readiness Manager for PM DWTS' Assistant Product Manager, DWTS-Belvoir, Fort Belvoir, VA, the new CSS VSAT model requires less radio frequency energy and allows for manual pedestal positioning. It also features a slightly larger antenna dish — a two-piece dish with interlocking connections that is 1.2 meters in diameter, compared to .96 meters for the prototype model.

"It might seem like a small increase," said Andrews, "but that increase allows for greater beam coverage and means less rain-fade degradation." Rain-fade degradation is the

weakening of transmission caused by raindrops absorbing and scattering electromagnetic signals traveling through the atmosphere.

WO2 Angel Montero, CSS Automation Management Office (AMO) technician for 3ID, ran the prototype CSS VSATs through their paces during 3ID's NTC rotation. He gives the system high marks as "a beast — a combat multiplier," and agreed that the new dish antenna is an improvement "to an already-robust system."

"Across the water, in Iraq, the bigger (1.2 meter) dish offers better performance because there will be no degradation of service such as you could have with a smaller dish," Montero explained.

Andrews said that the new CSS VSAT model has a smaller logistics footprint on the battlefield. It fits into four transit cases, as opposed to five cases for the prototype model, and weighs 519 pounds versus 609 pounds for the prototype.

"These small improvements will reap big dividends," Montero remarked. "The system is a whole lot more transportable. It's easier for the maneuver units to load the system and, since we (CSS AMO personnel) are carrying spares, it makes it easier for us to move around as well," Montero continued.

During 3ID's NTC rotation, Montero and Logistics Assistance Representative Bill Flynn, U.S. Army Communications-Electronics Command, took the spirit intended by the term "connect the logistician" and went even further, adding additional capabilities beyond the ability to transmit data. These capabilities include text messaging, text conferencing, collaboration software, Voice Over Internet Protocol (VOIP)

telephone capability and the ability to remotely monitor and correct users' problems — often before users even know they have a problem. They've now documented what they accomplished so that new units getting CSS VSAT will have a rock-solid foundation.

"We started at NTC as a 'test' system," Montero reflected. "Now we have a fixed infrastructure in place, all dia-grammed out, every brigade that goes out can start at the same point. Every brigade now has the same capability."



Shown here is the new model of the CSS VSAT satellite communications system, featuring a slightly larger antenna dish — a 2-piece dish with interlocking connections that is 1.2 meters in diameter, compared to .96 meters for the prototype. That small increase allows for greater beam coverage and means less rain-fade degradation, which translates into better performance.

Units that can immediately benefit from the foundation laid by Montero, Flynn and the 3ID are both the 101st AD and the 10th MD to which they started fielding CSS VSATs Oct. 13, 2004.

According to MAJ Michael Devine, APM DWTS-Belvoir will field 32 CCS VSATs to the 101st AD and 24 CCS VSATs to the 10th MD. They

expect to complete fielding to the 101st AD in January 2005 and to the 10th MD by July 2005.

'Communication-on-the-Move' Architecture

In the big picture, Devine said, his team's fielding of CSS VSAT/CAISI ties in with the Army's 3-tiered Joint Network Transport Capability-Spiral initiative, which includes the "Connect the Logistician" program, the Joint Network Node (JNN) and the Trojan Special Purpose Integrated Remote Intelligence Terminal (SPIRIT).

"These systems are all designed to give the Army the ability to communicate reliably in a nonlinear battlespace," Devine forecasted. "These programs will increase bandwidth available to our troops, provide Internet protocol architecture and give warfighters and their commanders access to the .mil network."

As a Soldier in a "tip-of-the-spear unit," Montero looks forward to when this comes to fruition. "What does CSS VSAT tie together with JNN and Trojan SPIRIT for the warfighter?" asked Montero. "If everything works as advertised, it's going to give us the most robust communications capability in the history of warfare — from there, the only limits are your imagination."

STEPHEN LARSEN is the Public Affairs Officer for the Project Manager, Defense Communications and Army Transmission Systems at Fort Monmouth, N.J. He has more than 20 years' experience writing about Army systems. Larsen has a B.A. in American studies from the College of Staten Island of the City University of New York.

Life-Cycle Management Underway at Redstone Arsenal

MG James H. Pillsbury and Paul Bogosian

Claude M. Bolton Jr., the Army Acquisition Executive (AAE) and Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT), and GEN Paul J. Kern, then Commanding General, Army Materiel Command (AMC), signed an implementation directive Oct. 5, 2004, establishing the Army's first Life Cycle Management Command (LCMC) at Redstone Arsenal, AL.

The Aviation/Missile LCMC will initially comprise all

elements from the current Aviation and Missile Command (AMCOM) and Program Executive Office (PEO) Aviation. Likewise, PEO Tactical Missiles and PEO Air, Space and Missile Defense are working on plans to merge into a single PEO. Effective June 1, 2005, the merged PEO organization will become part of the Aviation/Missile LCMC.



AMCOM Commander MG James H. Pillsbury assumed command of the LCMC, and Paul Bogosian, PEO Aviation, gained additional duties as LCMC Deputy to the Commander, Aviation. When the newly merged PEO joins the LCMC in June, BG Michael Cannon will assume additional duties as LCMC Deputy Commanding General (DCG), Missiles.

The LCMC concept will better integrate Army acquisition, logistics and technology efforts through closer alignment of AMC's major subordinate commands (MSCs) with their associated PEOs under a single commander who will be the focal point and have primary responsibility for the life cycle of entire groupings of systems

The LCMC concept will better integrate Army acquisition, logistics and technology efforts through closer alignment of AMC's major subordinate commands with their associated PEOs under a single commander who will be the focal point and have primary responsibility for the life cycle of entire groupings of systems assigned to the LCMC.

assigned to the LCMC. Today, *system development* and *acquisition responsibilities* reside within the PEOs, and *sustainment* falls to the AMC MSCs. The PEOs remain the single point of accountability for accomplishing program objectives through the integration of total life-cycle systems management.

The LCMC will involve all command and PEO elements in a more integrated environment that will influence near-term readiness, future modernization and sustainment.

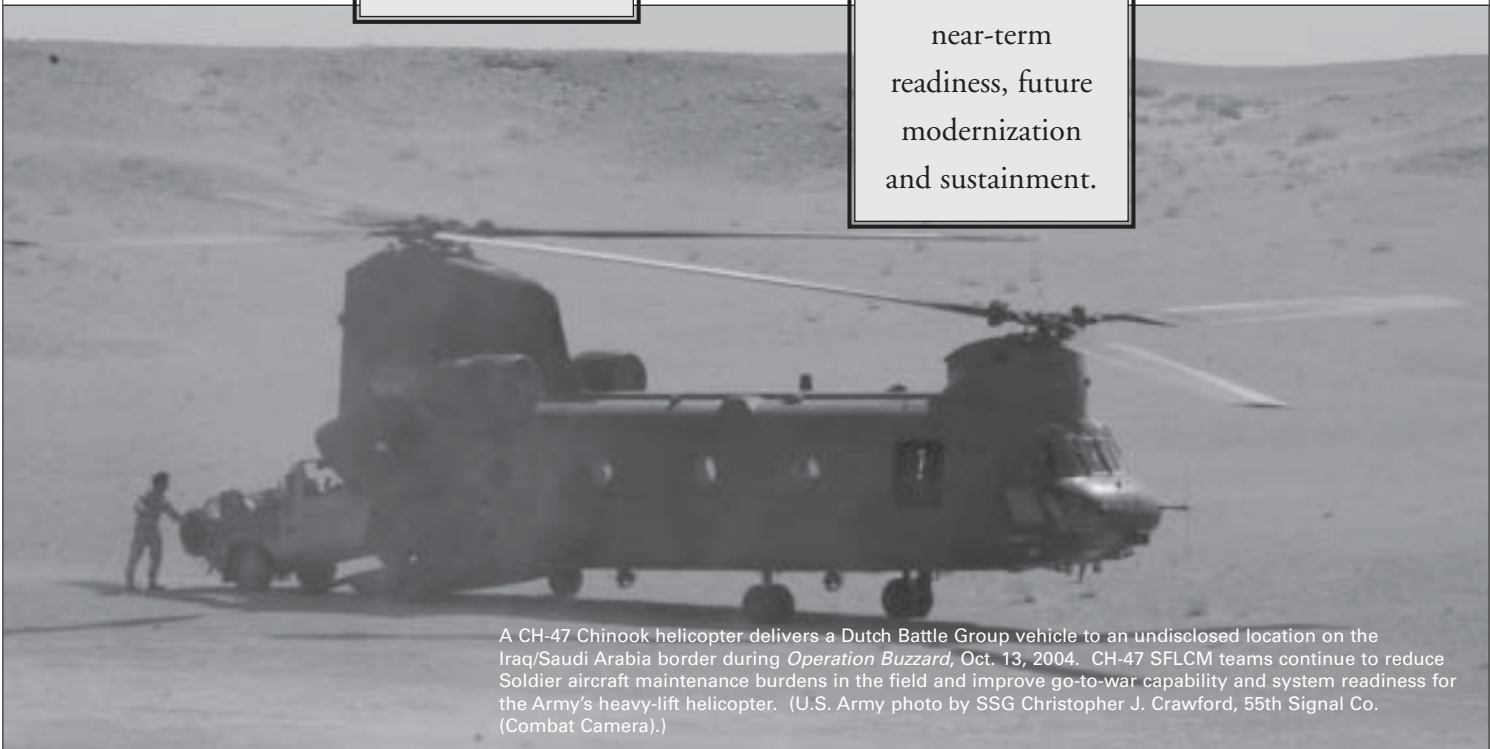
PEOs will have closer ties to the sustainment community — ensuring the smoother flow of better products

to the field — while retaining direct links to the AAE, in full compliance with the provisions of the *1986 Goldwater-Nichols Act, Title 10*, and the *DoD 5000* series. The PEOs will be able to work as an integral part of the AMC MSCs, while continuing to report directly to the AAE. AMCOM elements will have enhanced input into acquisition processes to influence future sustainment and readiness requirements.

The AMCOM staff will initially form the nucleus of the LCMC coordinating staff. PEO staffs will remain unchanged initially, but an in-depth review of AMCOM and PEO staff functions is planned to identify functions that are candidates for consolidation. Consolidated staff functions may re-

side at the command or PEO staff level, as determined by the “bottom-up” review. Following this review, a General Officer Steering Committee comprising AMCOM and PEO senior leaders will make the final

The LCMC will involve all command and PEO elements in a more integrated environment that will influence near-term readiness, future modernization and sustainment.



A CH-77 Chinook helicopter delivers a Dutch Battle Group vehicle to an undisclosed location on the Iraq/Saudi Arabia border during *Operation Buzzard*, Oct. 13, 2004. CH-77 SFLCM teams continue to reduce Soldier aircraft maintenance burdens in the field and improve go-to-war capability and system readiness for the Army's heavy-lift helicopter. (U.S. Army photo by SSG Christopher J. Crawford, 55th Signal Co. (Combat Camera).)

determination on which functions, if any, are consolidated. The intent is to develop LCMC and PEO staff structures that provide maximum support to the PEOs and Weapon System teams as they manage the Weapon System life cycles.

The AMC Research, Development and Engineering Command (RDECOM) will coordinate the support provided to the Aviation/Missile LCMC from all Research, Development and Engineering Centers, the Army Research Laboratory (ARL) and the Army Materiel Systems Analysis Activity (AMSAA). The Aviation and Missile Research, Development and Engineering Center (AMRDEC) will continue to provide life-cycle engineering and technology transition to the LCMC through integrated support to Weapon System teams. The matrix support concept depicted in Figure 1 on Page 18 will provide functional specialists to the project managers (PMs) from AMCOM and AMRDEC, and will continue as the preferred method of configuring the support elements required by the PMs to perform their total life-cycle management responsibilities.

The LCMC provides the organizational structure to support integrated weapon system teams. The first of these teams, initiated by the Cargo Helicopter Project Manager in 2002, was named Soldier

Focused Logistics, and will become the model for future Soldier Focused Life-Cycle Management (SFLCM) teams. The teams will be developed over time and tailored to meet the unique needs and requirements of each PM and the weapon systems supported. The envisioned end-state has SFLCM teams being established for all PMs within the command, covering every aspect of life-cycle management for supported systems.

The LCMC provides the organizational structure to support integrated weapon system teams. The first of these teams, initiated by the Cargo Helicopter Project Manager in 2002, was named Soldier Focused Logistics, and will become the model for future SFLCM teams. The teams will be developed over time and tailored to meet the unique needs and requirements of each PM and the weapon systems supported.

Under SFLCM, the PM will provide the day-to-day operational direction for the decision-making processes that affect the weapon system, including AMCOM supporting activities, such as the Integrated Materiel

SFLCM is an organizational and management transformation for weapon systems management that focuses on integrating AMCOM, related PEOs and supporting functions at the operational level to make significant improvements in readiness and the go-to-war capability for each weapon system.

Management Center (IMMC), Acquisition (ACQ) Center, Security Assistance Management Directorate (SAMD) and AMRDEC. Matrixed personnel will maintain a strong and clear relationship with their "owning" organization. The initiative is based on robust actionable information flow about equipment status, beginning at the weapon system and flowing back to a combined PM/AMCOM team as highlighted in Figure 2 on Page 19. SFLCM enablers are being designed to provide the PM with the necessary information and inputs with which to make decisions that will maximize system performance and minimize the sustainment burden on Soldiers.

What Is SFLCM?

SFLCM is an organizational and management transformation for weapon systems management that focuses on integrating AMCOM, related PEOs and supporting functions at the operational level to make significant improvements in readiness and the go-to-war capability for each weapon system.

Why Are We Doing This?

SFLCM will maximize both the service provided to Soldiers and each weapon system's go-to-war capability. In the field, Soldiers care little about how the acquisition and sustainment communities are organized or managed. What's important to them is: "Does it work and is it better than the system or component it's



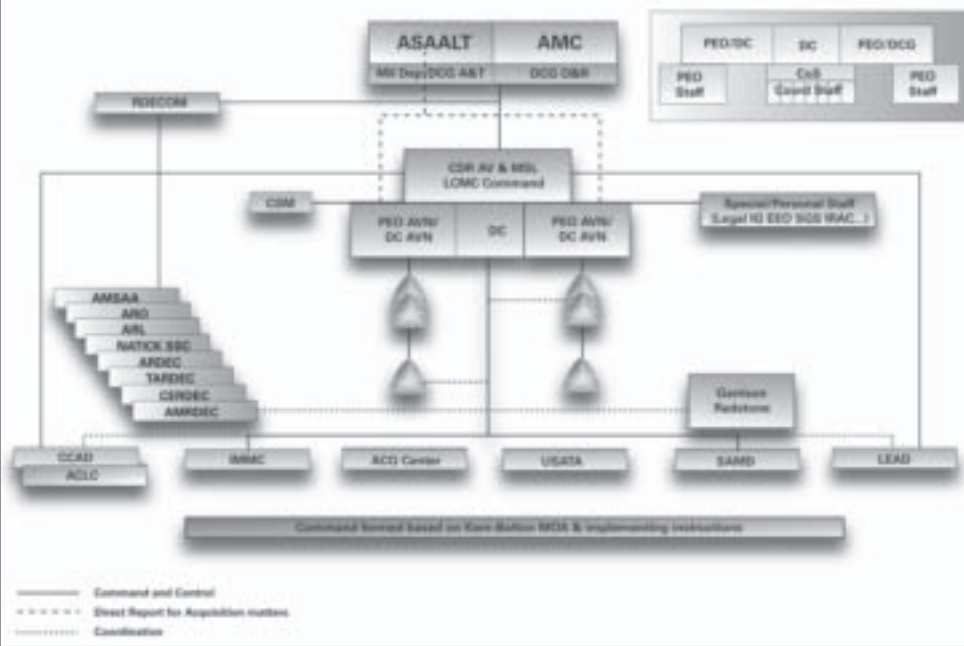


Figure 1. Aviation/Missile Life Cycle Management Command

replacing?” Soldiers care about having a functional, reliable and effective weapon system; having a single point of contact when help is needed; and having the folks back home do everything possible to minimize their burdens. The AMCOM Logistics Assistance Representative (LAR) and the AMRDEC Aviation Engineering Directorate (AED) Liaison Engineers (LEs) are the Soldier’s direct interface in the field for support from the acquisition and sustaining bases. The SFLCM team will improve system readiness by giving the LAR/LE a direct conduit to the total support structure for the system. SFLCM teams will improve system go-to-war capability by improving communication, decision making, system optimization and response times to Soldier needs. The SFLCM concept solves many coordination and optimization problems

The SFLCM concept solves many coordination and optimization problems that have resulted from the separation between the weapons system acquisition and sustainment communities.

that have resulted from the separation between the weapons system acquisition and sustainment communities. The concept provides for a single person to be accountable for and in control of weapon system readiness, while also conforming to all organizational requirements under the *1986 Goldwater-Nichols Act*.

How Will This Work?

The activities necessary to support the life cycle of a weapon system have previously been divided between two Army elements, and within those elements, multiple organizations and directorates. The SFLCM concept will integrate each activity necessary to support the weapon system life cycle under the day-to-day management of a single PM team. These weapon system teams will be composed of elements from the PM, ACQ, IMMC, SAND and

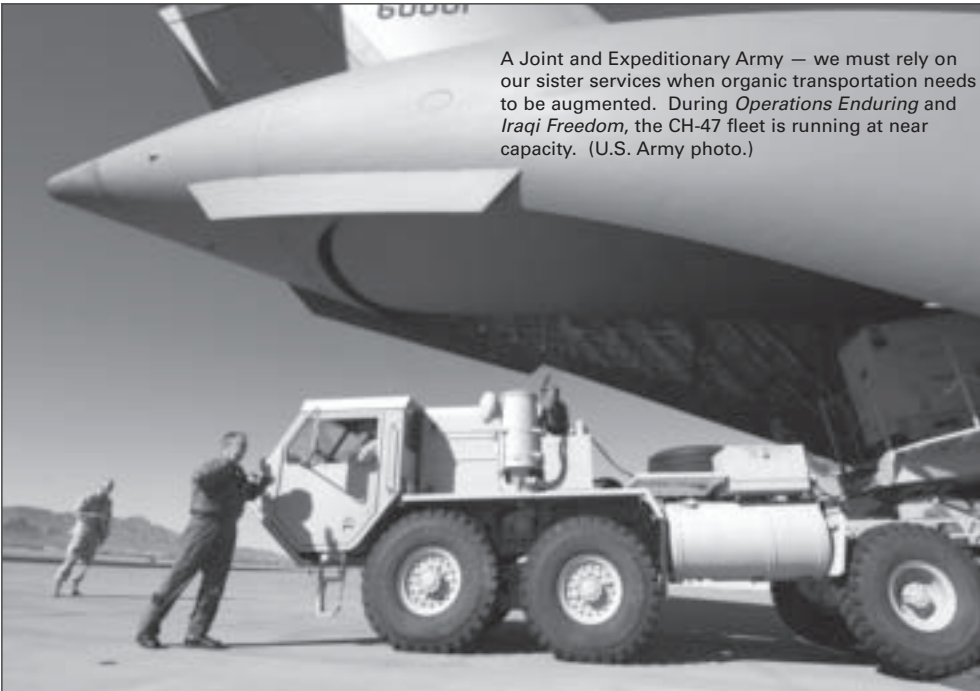
AMRDEC, with a majority of personnel physically collocated with the PM.

However, SFLCM is much more than collocation. Collocation only sets the stage for efficient, effective management and coordination. *Integration* is the desired state and is expected to produce significant improvements in weapon system support to the warfighter and equally significant improvements in life-cycle management effectiveness and efficiency. Integration will be attained by:

- Collocating supporting personnel with a single weapon system authority.
- Establishing common metrics and process improvement tools such as robust information flow from the field.
- Readiness modeling capability.
- Lean and Six Sigma.

When Will It Happen?

The plan is to incorporate the SFLCM Weapon System Management concept in each of the aviation and missile weapon systems in the next 18-24 months. An ideal situation would be one where lessons learned from the CH-47 Chinook pilot program could be used to develop a “model” for SFLCM implementation that could be used for each weapon system. However, in reality, all SFLCM implementations will not look alike. Differences in weapon system life cycles will affect the form of the SFLCM teams and differences in the matrix structures of the missile and aviation teams may result in different SFLCM team structures. Ultimately, the general principles of consolidating the activities of a weapon system life cycle and giving the PM control and authority to execute the life-cycle management mission will remain the same.



A Joint and Expeditionary Army — we must rely on our sister services when organic transportation needs to be augmented. During *Operations Enduring and Iraqi Freedom*, the CH-47 fleet is running at near capacity. (U.S. Army photo.)

SFLCM implementation is providing unparalleled weapon system support that reduces the burden on Soldiers, meets the Army's transformation goals and affords PMs an unprecedented capability to manage their combat systems and accurately predict a true go-to-war capability. This effort's focus is improved system availability and readiness, continuous performance improvement, reduced operations and support cost and integrated life-cycle management.

MG JAMES H. PILLSBURY is the Commander, U.S. Army Aviation/ Missile Command and the Aviation and Missile LCMC. He has a B.A. in history from Trinity University and an M.S. in international relations from Troy State University. His military education includes the U.S. Army Command and General Staff College and the Army War College.

PAUL BOGOSIAN is the PEO Aviation and LCMC Deputy to the Commander, Aviation. As the PEO, Bogosian is responsible for management, direction and supervision over all materiel phases for assigned program/project/product management offices. He is a member of the Senior Executive Service and has a B.A. in English literature from the University of Georgia.

How Will We Know If It Is Working?

For the CH-47 SFLCM team, the best measure of our ability to meet Soldier needs is the readiness of the system as measured by its go-to-war capability. For the CH-47 pilot, the metrics used to measure the weapon system are being correlated to three primary vectors:

- Reduction in downtime rates
- Reduction in demand rates
- Reduction in total cost of ownership

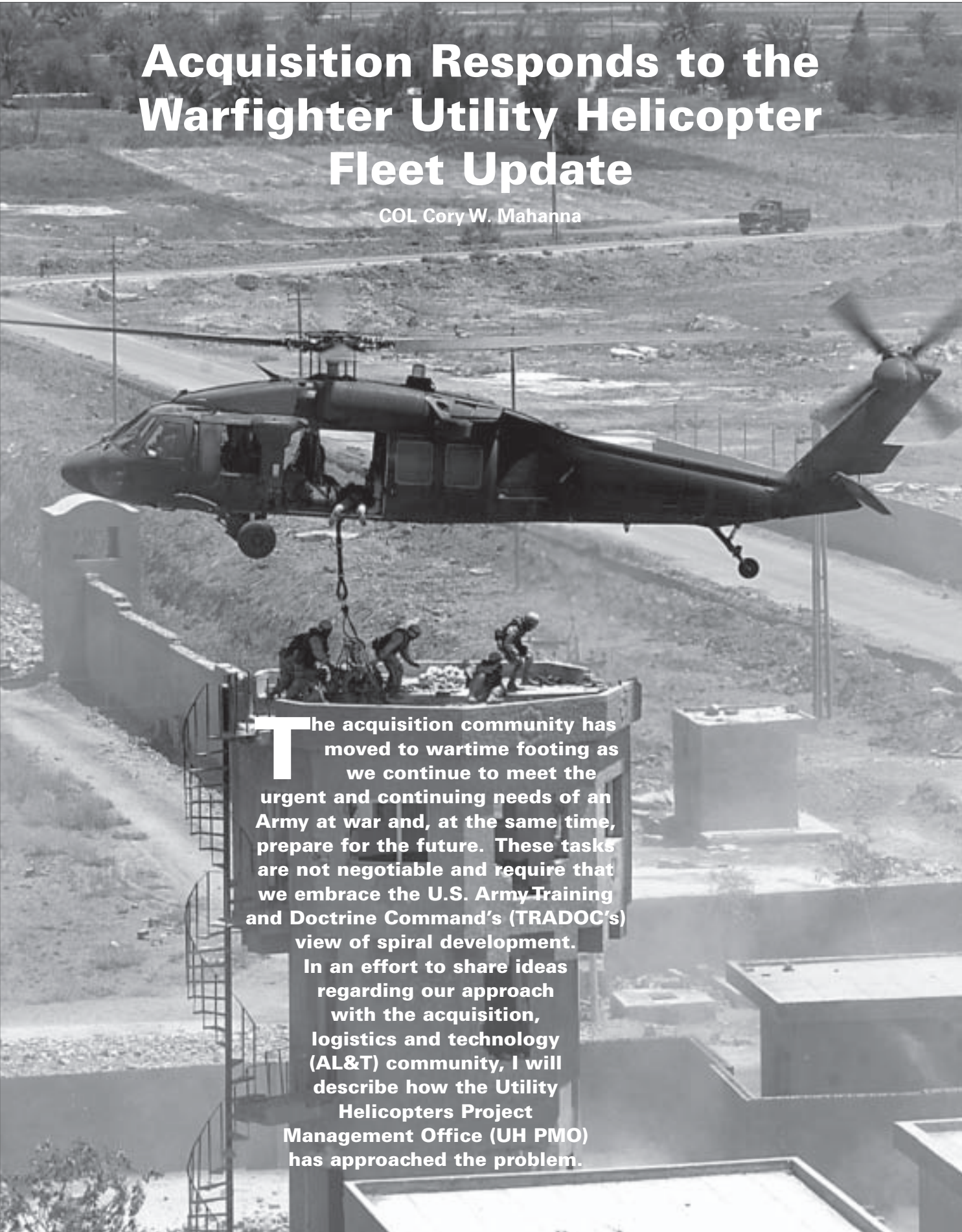
By managing and improving the activities that most significantly improve these three areas, the CH-47 SFLCM teams are reducing Soldier maintenance burdens in the field and improving the go-to-war capability and system readiness. A cross-functional integrated product team consisting of PEO, PM, AMCOM and AMRDEC has been established to develop the system of measurements that will be used to assess the SFLCM pilot's effectiveness.



Figure 2. Aviation/Missile Life Cycle Management Command PM Is the Total Life-Cycle System Manager

Acquisition Responds to the Warfighter Utility Helicopter Fleet Update

COL Cory W. Mahanna



The acquisition community has moved to wartime footing as we continue to meet the urgent and continuing needs of an Army at war and, at the same time, prepare for the future. These tasks are not negotiable and require that we embrace the U.S. Army Training and Doctrine Command's (TRADOC's) view of spiral development. In an effort to share ideas regarding our approach with the acquisition, logistics and technology (AL&T) community, I will describe how the Utility Helicopters Project Management Office (UH PMO) has approached the problem.

Current Status

The UH PMO has been the workhorse of the global war on terrorism. The numbers bear this assertion out with an operations tempo (OPTEMPO) of more than 111,000 hours and counting in support of *Operation Iraqi Freedom*. This is more than twice our planned Army program. Medical evacuation hours alone exceed 17,000 flight hours and the died-of-wounds rate is at an all-time low. These figures reflect the dedication of our aviation crewmen and the reliability of their aircraft. The lives they saved were not limited to U.S. personnel, but included those of our allies and adversaries as well. These actions win more than battles. Moreover, the UH fleet has been used in all phases of combat including sniper operations. The mission list is remarkable and we have seen assault, VIP, reconnaissance, resupply, quick-reaction force and even more specialized roles executed. Despite these diverse mission requirements, the UH fleet has been able to surge when required to meet operational requirements.

Immediate Shortfalls

We've assessed what field commanders have told us about their current struggles. For example, LTG David H. Petraus, Chief of Security Transition-Iraq, recently said, "We face a tough, tenacious and sometimes suicidal foe." Accordingly, along with remarkable successes, we have suffered losses. One of our greatest losses could have been prevented with improved situational awareness (SA). This is a critical UH PMO area of concentration. Beyond network SA issues, we are faced with accelerated erosion of both rotor blades and engine turbines because of the inhospitable desert environment we must operate in. Although we have been able to meet warfighter needs, our OPTEMPO remains at

U.S. Army OPTEMPO remains at unprecedented levels and the Black Hawk helicopter has risen admirably to the challenge transporting troops, supplies and equipment to the front lines. (U.S. Army photo.)



unprecedented levels. Sustainment issues have become a constant concern.

A PM has to look beyond the current fight. LTG John M. Curran, TRADOC Futures Center Director, provided the following vision. "Our Army will be increasingly Joint, modular, network-centric, deployable and rotation-based to meet a 360-degree threat. It is likely that we will trade mass for connectivity and knowledge," he explained. "Quick adaptation to changing events will enable us to fight effectively in a global battlespace against nonstate actors. We must anticipate that our enemies will use niche technology areas to attack and that they will attack asymmetrically. Thus, our standard operating procedure will become simultaneous distributed operations," he concluded.

Revising the Game Plan to Meet the Threat

Given current battlefield realities now and in the future, UH PMO's acquisition strategy has been revised. The tenets of our new strategy include:

- Acquire more utility helicopters.
- Use new technology (range, agility, payload, digitized non-line-of-sight communications and improved sustainment).
- Improve survivability (aviation survivability equipment, crashworthy external tanks, etc.)
- Recapitalize the fleet.

In spite of many UH-60A, Q and L model aircraft victories, the simple truth is that our Army is drastically under-resourced in the UH arena. The Army's recent aviation study underscored this fact. Accordingly, UH PMO has begun a rapid program to acquire both new UH-60 series aircraft and a new Light Utility Helicopter (LUH). We have activated a new product management team under LTC Brent Horrocks' leadership to head the LUH effort. Program Executive Officer for Aviation Paul Bogosian has already testified before Congress, and we are on a fast track to success in this area, planning to field new aircraft in 2005. Our goal is to rapidly acquire LUH aircraft for homeland defense



A solution to brownout is one of the program's priorities. (U.S. Army photo.)

and some Table of Distribution and Allowance (TDA) units. This should free up more UH-60s for combat and combat support in the theater of operations.

New Technology and Improved Survivability

We have begun numerous airframe, propulsion and cockpit improvements for the UH-60 fleet. These upgrades address emerging Future Combat Systems requirements, such as health-management capabilities, lift and interoperability as well as safety issues that involve operations in degraded visual environments and handling qualities. We have an immediate solution to solve the brownout SA problem.

Our first fix provides hover symbology for the crew. We will follow the hover symbology with more efforts to integrate man and machine, such as fly-by-wire controls. Regarding survivability, the self-sealing, single-point

pressure, external auxiliary fuel system is crash-worthy, has undergone extensive testing and is now being sent to the field. We are building more durability into our engines and adding an engine and auxiliary power unit barrier system aimed at mitigating the desert environment. These improvements will come with a new infrared suppressor system.

Additionally, large numbers of Blue Force Tracking systems have already been installed and more communications improvements are on the way. The integration of multifunctional displays, digital maps, Global Positioning Systems/inertial navigation, dual digital flight control computers with coupled flight control functionality and an enhanced laser warning system will mark the UH-60M.

Likewise, other aviation survival equipment is under review. Eventually, we intend to upgrade to a common cockpit compatible with the

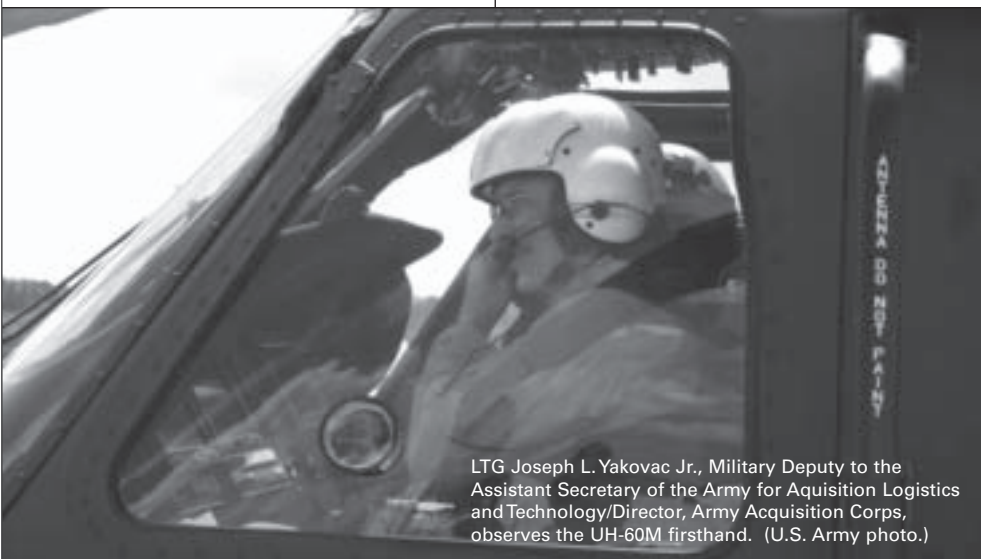
Our current timeline is to recapitalize 193 UH-60s before 2013 ... To date, we have completed nine airframes and inducted 23 more into the program. Recapitalization will help improve our readiness and maintain our combat overmatch.

CH-47 Chinook. We also have a new wide-cord blade, stormscope and cockpit voice recorder/flight data recorder or integrated vehicle health management system rounding out the fully bussed UH-60M. We have two UH-60Ms undergoing testing. Mike Herbst is the Acting Product Manager responsible for the balance of these improvements.

Our current timeline is to recapitalize 193 UH-60s before 2013. This is a major rebuild effort. To date, we have completed nine airframes and inducted 23 more into

the program. Recapitalization will help improve our readiness and maintain our combat overmatch. We will upgrade these aircraft with planned modification work orders and through modernized spares while they are in the program. I am working closely with COL Ray Woolery, Project Manager for Aviation RESET, to complete this program with minimal impact on our fighting force.

The bottom line: our fleet of 1,572 UH-60s will increase, we will RESET/recap and modernize the fleet and we will add an LUH for homeland security and TDA missions.



LTG Joseph L. Yakovac Jr., Military Deputy to the Assistant Secretary of the Army for Acquisition Logistics and Technology/Director, Army Acquisition Corps, observes the UH-60M firsthand. (U.S. Army photo.)

COL CORY W. MAHANNA is the PM UH. He has a B.S. in criminology from the University of North Dakota, an M.B.A. from Webster University and a master's in National Security Strategy from the U.S. Air War College. He is Level III certified in program management.

Streamlining Maintenance for Warfighters

Robert Russell and Marcus R. Taylor

Access to information is vital for mechanics and technicians performing maintenance on today's highly advanced Army weapon systems. In the field, maintenance on these systems must be completed with efficiency and quality to support various missions. Time constraints are a major concern when performing maintenance activities, and often a significant amount of a mechanic's time is spent looking for appropriate information from other technical experts or through various manuals and vendor documentation.

An aviation crew chief conducts an in-flight check on a CH-47 Chinook helicopter during a flight from Jalalabad in Afghanistan. The Soldier is assigned to Co. C, 159th Aviation Regiment. (U.S. Army photo by SSG Vernell Hall.)

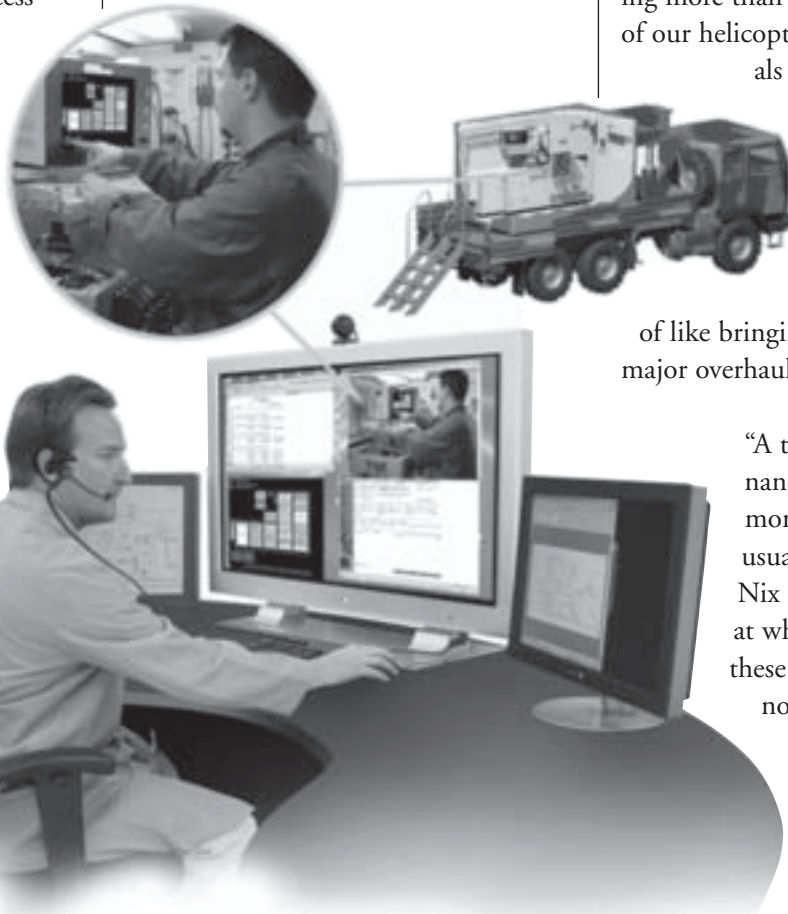
Accordingly, reports must be read and written and information sources queried and consulted before the information can be properly filed and organized. In a wartime environment, Soldiers performing these duties are pushed to the limit to get this all done. Because this takes a considerable amount of time, it often results in inconsistent updates, ad hoc written documentation and a lack of access to old but useful information resources.

To address these challenges and others, the Remote Maintenance System (RMS), currently being developed by the Army's Aviation and Missile Research, Development and Engineering Center (AMRDEC) Engineering Support Division, looks to enhance organization and information awareness for mechanics and technicians.

Lots of air time means lots of maintenance! How do Soldiers deal with equipment problems? What do they do when they must accomplish a mission and don't have the right tools for the job? It's simple. They improvise, right? Unfortunately, improvising doesn't always correlate to doing a quality job.

The following comments are from a Soldier stationed at Camp Cooke, Iraq. "A little over 4 months ago, the helicopters of the 1st Cavalry Division's 4th Brigade Combat Team (BCT) took to the air with a vengeance," the Soldier remarked. "Flying missions that included

supporting troops on the ground during combat operations, to transporting personnel between forward operating bases, the hours spent in the air quickly accumulated," he continued. "As aviation assets fly more and more missions, maintenance cycles and upkeep on the precision equipment becomes more and more crucial."



RMS will automate the functions for collecting and disseminating diagnostic information and will offer real-time human interface with SMEs anywhere around the globe. (U.S. Army photo courtesy of AMRDEC.)

Responsible for phased and unscheduled maintenance, 615th Aviation Support Battalion's mechanics are part of a 24-hour team that keeps 4th BCT's birds in the air. "Each helicopter has a number of hours it can be flown before it must be taken off-line and put into a phased maintenance cycle," explained CPT Cecil Nix, a maintenance officer with the 615th.

"For the Apache, it's 250 hours, for the Black Hawk, it's 500 and for the Kiowa, 125. After they've reached that threshold, the bird is brought into the shop and my team starts phased maintenance," he continued.

"When a bird does come in, we check everything," Nix said, resting his hand on a stack of technical manuals standing more than a foot high. "Each one of our helicopters has a series of manuals detailing the exact manners and method of phased maintenance. We take everything apart, check it over, fix it if it needs it — oil, lube, etc. It's sort of like bringing your car in for a major overhaul."

"A typical phased maintenance cycle takes about a month to complete and is usually done once a year," Nix commented. "The rate at which we've been flying these birds has been astronomical. Back in garrison, we might perform a phase maintenance once a year. Here, we've been performing them about every 4 months. In fact, in June alone, 4th BCT

pilots logged 1,700 hours of flight time, the highest amount for any of the commands in theater. Completing phased maintenance is very detailed work for my mechanics," Nix explained.

"An Apache coming into the hangar at Fort Hood, TX, might take 30 days to get through a maintenance cycle," Nix continued. "But realizing how important this all is, we've been getting the Apaches back on the flight line in

about 12 days. We have extremely tight quality control measures in place as well, ensuring that everything that goes back into operation has been checked, double-checked and triple-checked for safety.”

“Every time one of these birds comes into our shop, we know that the safety and the trust of the pilots is in our hands. If we don’t do our job, and do it right, troops on the ground don’t get support and birds fall out of the sky. That’s a lot of responsibility, but we all take it very seriously and we do it right,” he continued. “Maintenance is a very critical job in peacetime and even more so during times of war,” Nix concluded.

Remote Maintenance System

A system that could electronically organize and automate maintenance cycle processes would be very beneficial and save the Army money and time. RMS will greatly ease the complication of working with cumbersome technical manuals and the time needed to research what phased maintenance was performed last on a piece of equipment. RMS will make this information readily available to mechanics and technicians by automating the functions for collecting and disseminating diagnostic information by organizing it electronically. Additionally, it will offer real-time live human interface with subject

RMS will greatly ease the complication of working with cumbersome technical manuals and the time needed to research what phased maintenance was performed last on a piece of equipment.

RMS is a cutting-edge, breakthrough system that will greatly enhance the efficiency and cost-effectiveness of U.S. Army maintenance and weapon systems.

matter experts (SMEs) anywhere around the globe.

RMS is a cutting-edge, breakthrough system that will greatly enhance the efficiency and cost-effectiveness of U.S. Army maintenance and weapon systems.

The vision for this system is to enable weapon systems to sustain “near-zero” downtime performance through predictive and preventative maintenance. RMS’ main functions will include:

- Real-time audio and video communication.
- Remote test and troubleshooting capabilities.
- Electronic distribution of software.
- Electronic distribution of maintenance aids.
- Collection of test data for prognostic/diagnostic analysis.
- 24/7 systems monitoring.

RMS is a network-based information system consisting of a software engine,

data storage system, automatic test equipment (ATE), Internet, Internet protocol (IP) camera, communications headset and test program sets (TPSs). The main brains behind the system will be the maintenance computer platform that contains software to manage the RMS. This software engine will proactively “snuff out” potential maintenance problems in

the various weapon systems through the maintenance TPSs used on these systems. TPSs include: TPS Kiowa

Warrior, TPS Apache, TPS Avenger, TPS Multiple Launch Rocket System, TPS Dragon and TPS TOW (Tube-launched, Optically-tracked, Wire-guided).

The software engine will contain embedded computational prognostics algorithms based on the weapon system’s maintenance, troubleshooting, reliability and system life-cycle profile. These prognostics algorithms will predict degradation or performance loss, and dictate a solution for preventative maintenance or self-maintenance. In addition, the system will optimize maintenance and service scheduling and synchronize logistics support for parts and spares. This information will be consolidated in a database storage warehouse at the AMRDEC Sustainment Support Center (SSC) at Redstone Arsenal, AL. Software engine features include:

- ASP/.NET Web-enabled application software.
- Diagnostic/prognostic algorithms.
- SQL database for storage.
- 128-bit secure socket layer encryption.

RMS will allow the SSC to connect remotely to virtually any ATE, TPS or maintenance computer terminal. The system is interoperable with both Microsoft® Windows and Unix-based systems. The sustainment support technician also has the capability to remotely access a client’s machine to perform needed upgrades or run any type of special batch file/program. Typical nontactical applications will be connected via DOD wide area and local area networks. Portable/tactical application will connect to the SSC via satellite modem/phone Integrated Services Digital Network connections.

Soldiers at field locations will communicate in real time via headsets

and embedded IP cameras in the portable computer terminal. Two more additional micro IP cameras are located in the headset. The headset allows the technician to be able to place the camera in small, hard-to-reach areas and has an integrated laser pointer. RMS is user-friendly. Its main advantages are:

- Automatic location and retrieval of information for repairs.
- Storage of historical repair data on each weapon or piece of equipment.
- Increased efficiency of access to information from technical manuals and specifications documents from the manufacturer.
- Reduction in average time for repair.
- Remote monitoring and information dissemination.
- E-Maintenance support from SSC technical SMEs.

The software engine will contain embedded computational prognostics algorithms based on the weapon system's maintenance, troubleshooting, reliability and system life-cycle profile.

- Interactive real-time video and audio communication with SSC.

There are two RMS configurations in development for fielding — a tactical/portable version to be deployed at the maintenance unit level and a nontactical version to be deployed at the depot level/RMS SSC at Redstone Arsenal. For tactical units, the system is currently slated for Military Occupational Specialty (MOS) rating 35Y — Integrated Family of Test Equipment Operator and Maintainer. Additional MOS ratings will be expanded in the future.

RMS benefits are practical and will greatly aid in automating and organizing maintenance tasks for the Army. The technology is in place and the time is right to get it into the hands of our Soldiers at war. RMS will network a plethora of maintenance and reliability

information for Army equipment management and operational effectiveness. Having vital maintenance information and technical expertise when a Soldier in the field needs it greatly enhances the overall maintenance capability that directly relates to decreased downtime and reduced operating costs. Aircraft that will be likely application targets include the Apache AH-64, Kiowa Warrior OH-58, Black Hawk UH-60 and Chinook CH-47.


A beta test site for RMS evaluation and testing is being set up at Lettorkenny Army Depot, PA, for CONUS operation of the nontactical version. Also, a tactical version is being sent to Afghanistan to evaluate the system's OCONUS capabilities. For more information about RMS or related subjects, contact the author at (256) 842-2705 or Robert.Russell@rddec.redstone.army.mil.

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MARCUS R. TAYLOR, Engineer-in-Training, works for Intuitive Research and Technology Corp. as a contractor in the Engineering Support Division at AMRDEC. He is a Systems Engineer providing development support for RMS. He holds a B.S. in mechanical engineering from North Carolina State University and an M.S. in telecommunications management from the University of Maryland.

RMS will allow the SSC to connect remotely to virtually any ATE, TPS or maintenance computer terminal. (U.S. Army photo courtesy of AMRDEC.)





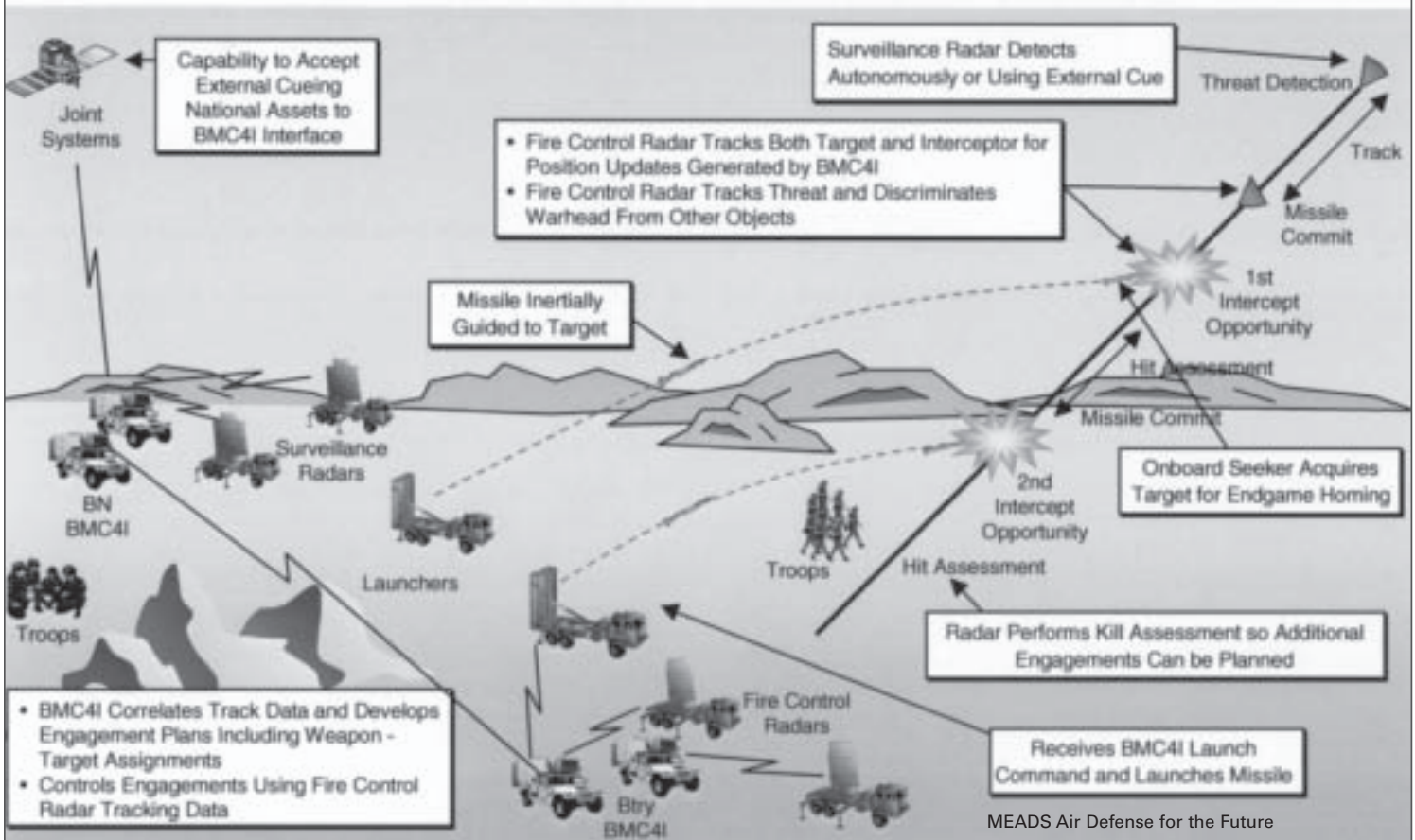
Medium Extended Air Defense System (MEADS) to Provide Strategic and Tactical Mobility to Future Force

MAJ James O. McClinnaham and Dr. Dennis G. Beeler

Designed to replace the Hawk and Patriot missile systems, MEADS is a highly mobile surface-to-air missile (SAM) system with numerous advantages over its predecessors. The system requires less manpower than either the Hawk or Patriot systems and can be rapidly deployed. MEADS' biggest advantage is its "plug and fight" flexibility — an engineered approach that allows the system to move with ground forces and interoperate with allied forces. MEADS is the air defense system for the Future Force.

The Patriot Advanced Capability-3 (PAC-3) missile is at the center of MEADS, the mobile air defense system replacing the Hawk and Patriot systems. Mounted on a wheeled vehicle, MEADS' modular design offers greater flexibility than the previous systems, enhancing protection for ground troops. (Photo courtesy of Lockheed Martin.)

Medium Extended Air Defense System (MEADS)



In the late 1980s and early 1990s, the U.S. Army teamed with the U.S. Marine Corps (USMC) to identify a replacement for the aging Hawk air defense system, which had been in service since the early 1960s. In August 1990, the Joint Requirements Oversight Council (JROC) validated the need for a Corps air defense capability. The Defense Acquisition Board (DAB) approved the program to enter the concept definition phase. During this phase, an Operational Requirements Document was jointly developed and approved by the Army and USMC. Concept definition studies were initiated and conducted through contracts with British Aerospace Defense Limited, Hughes Aircraft Co., Lockheed Missile and Space Co., Loral-Vought Corp., Martin Marietta Co. and Raytheon Co. The studies, awarded in July 1992, concluded in February

1993 with each contractor submitting concepts for the Corps SAM system. The Army was designated the final approving authority for the Corps SAM by the JROC in September 1993. Also in 1993, the Secretary of Defense conducted a Bottom-Up Review that led to a program restructure. As a result, the program was delayed until FY98. In addition to approving entry into the concept definition phase, the DAB also required the project office to explore cooperative opportunities with allied countries. The Corps SAM/MEADS program was devoted to implementing a multinational co-development program that would fill

the needs of member nations' air and missile defense forces. Eleven countries were contacted regarding the potential for international cooperation on the Corps SAM program.

MEADS' biggest advantage is its "plug and fight" flexibility — an engineered approach that allows the system to move with ground forces and interoperate with allied forces.

In 1996 the United States, Germany and Italy signed a joint statement of intent and began the MEADS program project definition and validation phase. The program was officially renamed MEADS in 1996. A Memorandum of Understanding (MOU) estab-

lished the MEADS program as an international co-development program where all three nations established operational requirements for selecting the

prime contractor and developing and producing the system. MEADS International, a trinational company, was selected as the prime contractor for the MEADS program. The MEADS concept was eventually developed as a Patriot replacement and the United States advocated using the Patriot Advanced Capability-3 (PAC-3) missile as a condition of continued participation.

In 2001, MEADS achieved a major milestone with the signing of the Risk Reduction Effort (RRE) phase contract.

The SoS program calls for transformation to a network-centric capability that integrates all sensors, weapons and battle command.

The RRE objectives were to demonstrate the system concept's validity by:

- Incorporating the PAC-3 missile into the project.
- Reducing the overall technical schedule and cost risk for the MEADS program.
- Assessing critical technology areas.
- Developing an overall program plan for the design and development (D&D) phase.

In 2002, the DAB gave direction that MEADS, in cooperative development with Germany and Italy,

would use the PAC-3 missile as its baseline interceptor. In April 2003, the DAB gave approval for the Army to pursue a combined program between Patriot and MEADS. This new plan addressed the evolution from the fielded Patriot Major End Items to a fully integrated MEADS capability. At the same time, the Army began moving toward implementation of the combined Patriot/MEADS program within a broader, system-of-systems (SoS) architecture for integrated air defense.

A successful DAB in 2004 established the funding required and gave approval for the program to enter the D&D phase. The MOU is now in national staffing and it is anticipated

MEADS Architecture on the Battleground



that it will be signed and a letter D&D contract will be awarded by end of FY04.

The SoS program calls for transformation to a network-centric capability that integrates all sensors, weapons and battle command. Implementation of SoS integration in the Future Force will reflect the culmination of ongoing system/component improvements, more effective capabilities and state-of-the-art technologies. They will be modular, more mobile, tailorable and interoperable with Army and Joint, Interagency and Multinational elements. The SoS program will use spiral development to accomplish the migration from stovepiped systems to SoS component-based architecture. Spiral development will involve fielding capabilities incrementally, closely aligned with the user's incremental timelines for required capabilities. The SoS program is designed to allow for work to be accomplished in support of each initial element simultaneously, while ensuring that each increment builds on the previous iteration.

The "battle manager" being developed is designed to interface with and control Surface Launched Advanced Medium Range Air-to-Air Missiles, Joint Land Attack Cruise Missile Defense Elevated Netted Sensor and Joint sensors and shooters.

Strategic and Tactical Mobility

MEADS, a highly mobile SAM system, uses a multicanister launcher that is mounted on a wheeled vehicle from the Family of Medium Tactical Vehicles. Advanced radars will provide for 360-degree coverage and operate in highly stressing jamming environments. MEADS is strategically transportable and tactically mobile so it can be quickly uploaded and rapidly

transported for deployment to the theater of operations and airlifted via C-130 and A400M aircraft with multiple missiles already loaded on mobile launchers.

A major advantage of deploying MEADS is its distributed architecture and modular components. This architecture will provide for increased survivability and flexibility of employment in a number of operational configurations to complement the unit of action. MEADS provides significantly increased firepower while greatly reducing the manpower and logistics requirements. With these characteristics, MEADS will have the capability to rapidly respond to a variety of crisis situations and satisfy the needs of Joint operational and tactical commanders.

MEADS will be responsible for protecting maneuver forces and fixed installations against attack by current and next-generation tactical ballistic missiles, remotely piloted vehicles, maneuvering fixed-wing and rotary-wing aircraft, as well as low- and high-altitude cruise missiles. Once the system is deployed in the forward area, it will be able to move quickly to keep pace with fast maneuvering forces. MEADS is truly the next generation of air defense to "Support an Army at War."

MEADS' plug and fight flexibility allows the system to move with U.S. ground forces and interoperate with other allied forces. The netted and distributed battle manager will permit

MEADS is strategically transportable and tactically mobile so it can be uploaded quickly and rapidly transported for deployment to the theater of operations and airlifted via C-130 and A400M aircraft with multiple missiles already loaded on mobile launchers.

battle elements to join in or break off to protect the forces as they move. MEADS is able to command a fleet of distributed missile launchers while simultaneously detecting and tracking hostile enemy targets, and launchers can be located far away from ground radar and battle management units. Doing so reduces the risk of detection by enemy forces. It also permits launcher and missile command and control hand-over to another battle management unit while systems are being moved.

The PAC-3 hit-to-kill missile is being produced by Lockheed Martin Missiles and Fire Control for the Patriot Air Defense System that MEADS is intended to replace. This missile was first deployed during *Operation Iraqi Freedom* in 2003. The missile has a solid propellant rocket motor and uses an inertial guidance unit to direct it to the target area. During the missile's terminal phase of flight, it acquires and tracks the target with its forward-looking gimbaled active radio frequency Ka-band millimeter wave seeker.

Two new radars, a Surveillance Radar and a Multifunction Fire Control Radar, are also being developed for MEADS under a contract with MEADS International by Lockheed Martin Maritime Systems and Sensors, European Aeronautic Defence and Space (EADS) and Matra Bae Dynamics Aerospatiale (MBDA). Both of these new radars will use a common design for selected areas that will facilitate testing/validation and reduce total

MEADS Plug and Fight Flexibility

BMC4I



- Plug & Fight
 - Automatic Initialization
 - Reconfigurable / Tailorable
- Netted & Distributed
 - Netted Sensors Provide Continuous & Redundant Target Track
 - Distributed Battle Elements Put Best Weapon on Target
 - Eliminates Single Point of Failure
- All Sensors and TOCS Tied to High Speed Net
- Battalion-level TOC Coordinates External Track Data

Surveillance Radar



- Pulsed-Doppler Phased-Array With Identification Friend or Foe (IFF) Sensor
- Ultra High Frequency (UHF) Operating Frequency Band
- Multi-Mode Operation
 - 360° Coverage or Fixed 90° Sector Operation
 - Self Contained Alignment
- Mobile & Transportable
 - Cross Country / Truck Mounted
 - C-130 Roll On / Roll Off



Fire Control Radar



- Large Power Aperture Active Phased-Array X-Band Radar
- Multi-Mode Operation
 - 360° All Aspect Coverage
- Self Contained Alignment
- Mobile & Transportable
 - Cross Country / Truck Mounted
 - C-130 Roll On / Roll Off

Lightweight Launcher / PAC-3 Missile

- Mobile & Transportable
 - C-130 Roll On / Roll Off
- Self Contained Alignment
- Erects to Vertical Launch for 360° Coverage
- PAC-3 / Missile Compatible
- Palletized Handling System (PHS) or Crane Reload



- Hit-to-Kill Missile
- Proven Technology
- Highly Capable

System Concept Provides *Flexible, Rapid* Response 5 C-130 or 1 C-17 → Minimum Engagement Capability

production costs for the two projects. The radars will also provide full 360-degree coverage capability.

A new lightweight launcher is being developed that comprises a prime mover, a prime mover adaptation kit, a palletized load handling/erection system, launcher electronics power generator, a missile blast deflector and launcher cabling. The launcher can handle either a 4-missile canister pack or individual single canisters. MEADS provides for critical asset protection, maneuver force protection and U.S., Germany and Italy homeland defense. The system provides supportability through the use of electronic technical manuals and kitted prognostics and diagnostics equipment.

MEADS will provide air and missile defense for vital corps and division

assets associated with Army and USMC maneuver forces. MEADS will also provide forces with defense against multiple and simultaneous attacks by tactical ballistic missiles, stressing cruise missiles and other air breathing threats. MEADS will transform Army air defense systems and strategy, helping air defenders provide a dynamic, all-inclusive umbrella of protection for U.S. and allied ground forces.

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Acquisition Transformation – Technology Transfer Programs and Advanced Concept Technology Demonstrations

MAJ Robert F. Mortlock

DoD Directive 5000.1 states that flexibility, responsiveness and innovation shall govern the Defense Acquisition System. Both DoD Directive 5000.1 and DoD Instruction 5000.2 provide program managers (PMs) direction for an acquisition policy that fosters efficiency, creativity and innovation by giving PMs intent-based guidance. Army transformation and current operations' pace and intensity have driven the need for a more

responsive acquisition process. Further, the ability to leverage mature technologies to rapidly meet critical warfighting requirements with effective, suitable, supportable and affordable materiel solutions remains central to Army acquisition transformation. One way to eliminate urgent warfighting capability gaps is through rapid prototyping and demonstration programs such as Advanced Concept Technology Demonstrations (ACTDs).



Redstone Technical Test Center (RTTC) Test Engineer Donya Jefferys and Joint Common Missile (JCM) Project Office/Aviation and Missile Research, Development and Engineering Center (AMRDEC) Warhead and Propulsion Engineer Chuck Allen explain a tandem warhead sled test to the author at RTTC, Test Area 1, Redstone Arsenal. (U.S. Army photo.)

ACTDs remain critical to transforming the acquisition process. Establishing program executive office (PEO)-level technology transfer programs (TTPs) with DA centrally selected PMs to manage ACTDs would support evolutionary acquisition strategies, provide seamless transition of technology to formal acquisition programs, support a more effective requirements-generation process and facilitate the use of demonstration results in the area of testing.

The science and technology (S&T) community currently performs basic research, applied research and advanced technology development (ATD). As part of ATD, it also manages ACTDs. ACTDs accelerate the fielding of mature technologies in response to critical military operational needs and provide a military utility evaluation of proposed technology materiel solutions. ACTDs do not develop technologies; they use mature technologies to demonstrate military utility. Fielding an initial, limited, residual capability to the sponsoring unified combatant commander (UCC) and transitioning demonstration technology to a formal acquisition program are ACTD goals. S&T programs provide ACTD managers — who are responsible for planning,

coordinating and directing all ACTD-related development activities — with an ACTD operational manager from the UCC.

The ability to leverage mature technologies to rapidly meet critical warfighting requirements with effective, suitable, supportable and affordable materiel solutions remains central to Army acquisition transformation.

Managing PEO Responsibilities

ACTDs offer a critical means to effectively transfer technology from the S&T community to a formal acquisition program within the PEO for system integration, demonstration, procurement and fielding. ACTDs also provide the foundation for successful formal programs that rely on prototyping and demonstration. The importance of ACTDs to rapid acquisition strategies requires transfer of the management responsibility from engineers in the S&T community to PMs in the acquisition community.

ACTD management requires acquisition expertise in program management, testing and demonstration, systems engineering management, integrated logistics management and integrated product and process development through integrated product teams (IPTs). PEOs have acquisition-certified, centrally selected PMs with generally more program management expertise than S&T engineers.

Early in the ACTD, PMs could emphasize the critical areas of affordability, training, supportability and life-cycle

management — areas in which S&T engineers typically lack experience or expertise. PM management and PEO oversight of ACTDs would solidify the “cradle-to-grave” mandate for the acquisition community by giving PEOs management responsibility over pre-system development and demonstration (SDD) activities that feed formal acquisition programs but do not require technology maturation. PEO management oversight of both the ACTD and follow-on acquisition program supports synchronization of efforts through economies of scope and the seamless ACTD transition into a formal acquisition program.

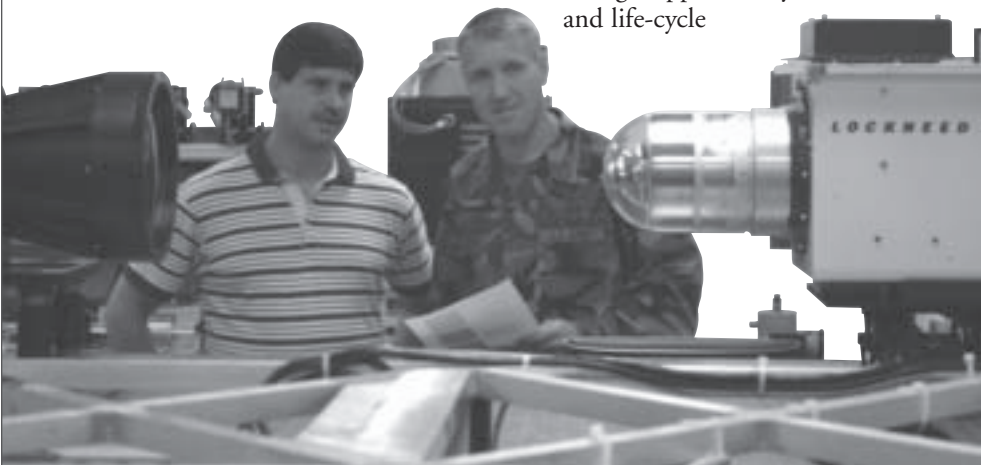
PEO Funding Control

In addition to ACTD management transfer, PEOs need to control demonstration-related funding in the 6.3/6.4 areas. Control of this funding allows PEOs to establish efficient TTPs, which provide the technical foundation for programs by facilitating the transition of mature and demonstrated technologies with significant military utility.

Currently, PEOs are not funded to establish effective TTPs. PEO TTPs promote rapid acquisition by transitioning demonstrated technologies at the appropriate times based on technology maturity, approved user requirements and adequate funding. The single PEO management of ACTD funding would give the PEO management flexibility and ensure that several project offices benefit from the ACTD. S&T programs could continue to focus on meeting S&T objectives with basic research, applied research and ATD programs. The PEO TTPs would manage ACTDs, providing a direct link to follow-on acquisition programs and easing transition difficulties. PEO management of ACTD funding through TTPs provides flexibility for PEOs to effectively meet both urgent UCC warfighting needs with an initial capability and service-approved requirements with full acquisition programs.

Promoting Evolutionary Acquisition

By managing responsibilities and funding controls, PEOs could take full advantage of ACTD benefits. The first benefit includes supporting evolutionary



AMRDEC Hardware-in-the-Loop Engineer Joe Morris (left) and the author discuss imaging infrared confidence testing taking place at Redstone Arsenal. (U.S. Army photo.)

acquisition strategies and spiral development. Evolutionary acquisition involves the rapid development and fielding of mature technologies to the user to achieve desired capability increments over time. PMs can emphasize affordability, modular design concepts and logistics supportability early in the ACTD process, greatly benefiting evolutionary acquisition approaches in the follow-on formal programs.

Spiral development relies heavily on horizontal technology integration and commercial-off-the-shelf technologies to meet time-phased requirements. ACTDs remain central to the successful spiral development of equipment by providing user military utility assessments (MUAs). PMs could ensure that the ACTD MUA affects the system design early in the process before the changes become economically unaffordable. With a heavy reliance on ACTDs to shorten acquisition life-cycle development times and decrease costs, PEO ACTD management through TTPs with PMs ensures that demonstration technologies focus on areas that have the most impact on schedule and cost such as testing and requirements generation.

In addition to supporting evolutionary acquisition, PEO TTP management of ACTDs through PMs promotes a more effective requirements generation process by starting the requirements documentation process for the capability development document early enough to support a Milestone B decision to enter SDD. PMs from PEOs lead IPTs that integrate the acquisition and requirements communities for formal acquisition programs. PEO TTPs can leverage this experience and ensure the continuity between the ACTD and follow-on program requirement documents. PMs can ensure that the ACTD supports the establishment of time-phased requirements by providing scarce MUA data and operational test data for input into the user

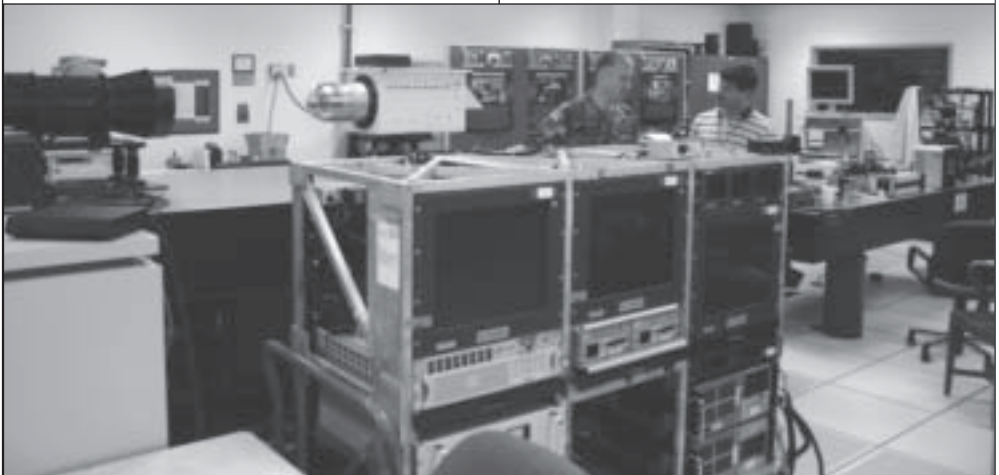
Evolutionary acquisition involves the rapid development and fielding of mature technologies to the user to achieve desired capability increments over time.

community requirements generation documents such as mission area analyses and alternative analyses.

Integrating T&E Programs

In the same way that PEO TTP management of ACTDs through PMs improves requirement generation, PEO TTPs facilitate integrated test and evaluation (T&E). PMs ensure that systems are operationally effective, suitable, supportable and survivable for their intended use, and are more prone to involve Soldiers

Army transformation requires materiel acquisition transformation. The pace of technology advances and the demand for a more responsive acquisition system requires a heavy reliance on ACTDs to shorten acquisition schedules, reduce risk, decrease costs and still develop and field effective equipment. Establishing PEO TTPs with PMs to manage ACTDs ensures synchronization of work efforts, promotes communication and data sharing and eases technology transition difficulties between ACTDs and



Morris (right) explains current imaging infrared confidence test results to the author. The testing is being conducted at an AMRDEC laboratory with a Lockheed Martin JCM prototype seeker. (U.S. Army photo.)

than S & T engineers in the testing process. PMs can leverage development-testing data to help focus operational tests on examining employment concepts.

The ACTD MUA provides development test data and feedback for employment concepts. PEO TTP management of ACTDs facilitates using ACTD MUA results in the follow-on program T&E master plan by ensuring direct communication and data sharing between the ACTD and the follow-on acquisition program. Because the PEO would have oversight over both efforts, testing costs and fielding times would be reduced by leveraging early user testing.

follow-on formal acquisition programs. PEO ACTD management through TTPs and PMs promotes evolutionary acquisition strategies, improves the requirements generation process and leverages operational testing early in the development process. PEO ACTD management supports the emphasis on "cradle-to-grave" life-cycle management for the acquisition community and supports acquisition transformation by accelerating acquisition schedules and reducing program risks.

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Improving Software-Intensive Systems for Our Warfighters

Jacquelyn Langhout and Lee "Scott" Reed

Two organizations recognized as leaders in software engineering for DOD have formed a unique association. The U.S. Army Research, Development and Engineering Command's (RDECOM's) Aviation and Missile Research, Development and Engineering Center (AMRDEC) Software Engineering Directorate (SED) and the Software Engineering Institute (SEI), the preeminent software engineering research and development (R&D) technology center, have entered into a strategic partnership that will accelerate SEI technology transition for enhancing weapon systems that support our warfighters.



In 1984, SEI was established as a federally funded R&D center sponsored by DOD. Since that time, SEI has provided the technical leadership for DOD's advancement of software engineering. Likewise, other federal agencies and non-DOD associated companies have benefited from the technologies developed and promulgated by SEI. SEI's practices and technologies — such as Capability Maturity Models — help organizations make measured improvements in their software engineering capabilities.



As an Army Life Cycle Software Engineering Center, SED, located at Redstone Arsenal, AL, supports the acquisition, research, development and sustainment for the Nation's most sophisticated weapon systems. Recognized as an early adopter of SEI's technologies, SED has distinguished itself as one of DOD's high-maturity software organizations.

Partnering for Greater Impact

The partnership — established in 2002 between SED and SEI — exploits the unique credentials of each organization to accelerate the transition and adoption of software engineering technologies to larger communities. Three specific communities — government organizations, academia and industry — are targeted to benefit from the partnership.

Accordingly, SED's well-established relationship with the Army program executive offices/program management offices (PEOs/PMOs) and federal agencies in the Huntsville, AL, area make the partnership's benefit to those organizations particularly powerful. The partnership provides accessibility to software system

SEI was established as a federally funded R&D center sponsored by DOD. Since that time, SEI has provided the technical leadership for DOD's advancement of software engineering.

SEI's Capability Maturity Models help organizations make measured improvements in their software engineering capabilities, a decided asset for SED, an Army Life Cycle Software Engineering Center.

acquisition expertise as well as best practices in software engineering for these government entities.

The partnership's effort to engage the academic community in advancing the transition of software engineering technology seeks to provide better trained engineers and scientists for the future workforce. SED's relationship with the University of Alabama in Huntsville for training SED's software engineering interns has provided these new government employees with a solid foundation in the engineering principles that have been articulated by the SEI staff throughout the last 20 years.

Lastly, the partnership benefits industry by facilitating the implementation of engineering technologies by a larger portion of the companies. Numerous reports and publications have delineated the return on investment received by organizations and companies who adopt SEI's technologies. The partnership seeks to broaden and expand the base of

organizations and companies who adopt these software engineering and acquisition technologies by:

- Improving engineering practices for the system life cycle.
- Improving engineering practices for the R&D cycle.
- Improving systems acquisition practices for Army PEOs/PMOs.
- Creating a transition bridge between R&D organizations and users.
- Improving success rates for technology insertion in Army programs.
- Creating curricula in academia that support Army engineering needs.
- Strengthening defense contractors' abilities to produce better quality products faster and more economically.

Experiencing Initial Successes

An early SED-SEI partnership accomplishment was a program designed to identify the technical enablers and barriers to Capability Maturity Model Integration (CMMI) adoption within small companies or organizations. Since small companies or organizations are increasingly involved in the development of significant components for software-intensive systems,



SED has distinguished itself as one of DOD's high-maturity software organizations and prides itself on its abilities to accelerate and transition the adoption of software engineering technologies to other government organizations, academia and industry.

their usage of reliable engineering practices has become increasingly critical.

Conversely, the resource commitment perceived for CMMI adoption provides a major barrier to many small companies. Two small companies from Huntsville participated in the pilot program, which provided noteworthy insight into the feasible approaches and techniques to use in scaling the CMMI for use by small organizations. All industry will benefit from the pilot's work products, tools and studies, which will be released through SEI by the end of 2004.

In an effort to continue its internal process improvements, SED has invested in the training and certification of two staff members in SEI's Personal Software Process/Team Software Process (PSP/TSP). These staff members now serve as the trainers and launch coaches for SED projects to best use the SEI technology that has demonstrated the most significant quality and cost savings for software development. Through the selective adoption of PSP/TSP, SED will complement its organizational process capability with the discipline, skill and performance data that developmental teams need to perform successfully.

The partnership has enabled SED — along with major customer PEO Aviation — to embark on the Army's pilot program for SEI's Integrated Software Acquisition Measurement technology. Through SED's implementation of SEI's Team Software Process technology,

the associated PMO can have greater access and insight into the development metrics. This pilot's results have the potential to change the approaches used for larger Army developments and procurements in the future. This coincides clearly with the Army Acquisition Executive's (AAE's) initiative to improve the acquisition of software-intensive systems.

By establishing the SEI Huntsville Field Office, SED can now provide products and services to a greater audience. SEI sponsors and participates in the Southeastern Software Engineering Conference held in Huntsville each spring. SEI training, which typically is only offered in Pittsburgh, PA, or Washington, DC, is now available in the Huntsville area. SEI's software architecture courses — based on its widely acclaimed practitioner books — are being offered at the SED facility through a program sponsored by the AAE.

PEO/PMO employees — including key personnel from Future Combat Systems — have received training on improving their acquisition practices through the SED-SEI partnership. An acquisition process improvement workshop developed specifically for program management office personnel was also offered through the SED-SEI partnership. Likewise, PEOs/PMOs have found SEI's resources and

expertise in acquisition improvement extremely useful in responding to or complying with recent legislation and Army directives. These directives seek to improve the acquisition community's technical and management practices, thus reaping the full rewards of software system developers' maturing capabilities.

Positioning for the Future

While benefits from the SED-SEI partnership have already been seen, many more opportunities are ahead. The problems and trials of today's Army are much different from those faced only a decade ago. Arguably, most future challenges cannot be foreseen today. The strategic partnership with SEI provides SED with a unique mechanism to quickly adapt to the ever-changing world of software system engineering. As SEI maintains a responsive and progressive approach to providing solutions for future challenges, SED continues to serve as a champion for the practical adoption of capable technologies. Together, these two leaders in software engineering will continue to embark on initiatives that will culminate in improved software-intensive systems for our warfighters.

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LEE "SCOTT" REED is the Manager for SEI's Huntsville Field Office and serves as the key technical integrator for SED-SEI partnership efforts. He earned a B.A. in political science from Presbyterian College and an M.S. in systems analysis from Webster University.

Joint Ammunition Life Cycle Management Command (JA LCMC)

BG James W. Rafferty, USAR



Soldiers from Headquarters Co., 2-7 Cavalry, 2nd Brigade Combat Team, 1st Cavalry Division, conduct combat operations near Fallujah, Iraq, Nov. 12, 2004. Digital fire control systems such as MFCS will incorporate up-to-date ballistics characteristics and significantly improve weapon systems accuracy, responsiveness and survivability. (U.S. Army photo by SFC Johancharles Van Boers.)



Acquisition and life-cycle management of ammunition as a “system” is an established practice for all Ammunition Enterprise (AE) partners. The AE was established following PEO Ammunition’s creation. The AE is a partnership between PEO Ammunition, Joint Munitions Command (JMC) and the Research, Development and Engineering Command’s Armament Research Development and Engineering Center (ARDEC). The AE concept was defined Jan. 28, 2004, by our first Memorandum of Understanding (MOU) and was the culmination of 12 months of intensive partnering workshops. The AE put in place the same tenets that are now found in the LCMC concept. The ammunition community realized the need and benefit of creating an alliance to quickly meet warfighter requirements. The AE partnership shares a common strategic plan and vision – “Battlespace Dominance for the Warfighter With Superior Munitions.”

An Aug. 2, 2004, Memorandum of Agreement formally established the four LCMCs, further reinforcing the concept already in practice within the ammunition community. Ammunition life-cycle management is executed today through the jointly established AE MOU and forms the baseline implementation plan for the JA LCMC. This AE MOU formalizes a business climate of cooperation by combining key people, components, organizations, infrastructures and processes. The AE MOU establishes partnership responsibilities, a management concept, communications, the ammunition portal, metrics, customer interfaces and business processes that are paramount to the success of integration and synchronization. The shared AE philosophy and dedication to Lean/Six Sigma principles provide a disciplined, structured approach for process and product optimization that is focused on effectiveness and efficiency. More details regarding the AE can be found in the July-August 2004 issue of *Army AL&T Magazine*.

Beyond the AE MOU, other components are necessary to ensure JA LCMC's continued success — process improvements and documentation, AE strategic planning, Lean/Six Sigma deployment and establishment of an AE management structure. These are instrumental activities that bring the three partners together for AE-wide issues and decisions.

As the AE furthers its deployment, our sister LCMCs will face common

challenges and they will benefit from our experience and our ability to identify potential obstacles during implementation. We will continue to promote common processes and the open exchange of ideas and solutions across all LCMCs.

The AE will always continue efforts to improve ammunition readiness and enhanced support to our Joint warfighters. In addition to providing munitions to the Army, the AE is also DOD's Executive Agent for conventional ammunition and has been designated as the Single Manager for Conventional Ammunition as

highlighted in Figure 1.

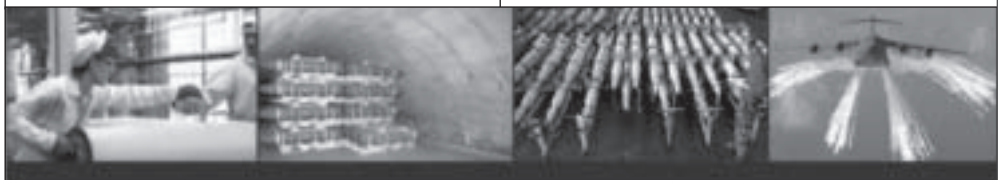
The AE partnership is committed to further enhancing integration, communication and feedback necessary for

continued process improvement. Insight into urgent and routine warfighter needs is obtained through the 24/7 Operations Center, Logistics Assistance Representatives, service liaisons, Committee for Ammunition Logistics Support workshops and periodic environmental scans. The AE also uses the Joint Ordnance Commanders Group and the Executive Director Conventional Ammunition for maintaining continuous dialogue to gain understanding of our sister service's needs as we execute the SMCA mission.

The AE has been instrumental in responding to current needs and requirements, whether it is through early fielding of concepts, purchasing additional assets or returning to service assets that have been recapitalized.

The AE, as the JA LCMC, is positioned and ready to resolve new and existing challenges. Routinely, the AE works toward implementing solutions and accepting challenges resulting

The shared AE philosophy and dedication to Lean/Six Sigma principles provide a disciplined, structured approach for process and product optimization that is focused on effectiveness and efficiency.



SMCA Mission (DoDD 5160.65 April 14, 2004)
 Manage DOD conventional ammunition and personnel and training functions

SMCA FY04 Vitals:			SMCA: Responsibilities of the SMCA and Military Services (DoDI 5160.68 Dec. 22, 2003) 15 SMCA Mission functions
Acq	Army Other Services	\$1.2 Billion \$0.7 Billion	
\$275M OMA Log	Army Other Services Total Value	2.2 Billion items 1.6 Billion items \$20.9 Billion	
Demil	Army Other Services Liability POM Generations	361,500 Stons 31,434 Stons \$1.3 Billion 450,988 Stons	
19 Locations			

Figure 1. Single Manager for Conventional Ammunition (SMCA)



This Stryker Mortar Carrier was put through its paces during a Live-Fire Exercise at St. Vith Range, Fort Knox, KY, during the annual Acquisition Senior Leaders' Conference, Aug. 12, 2004. The Stryker Mortar variant will use the PM Mortar System Mortar Fire Control System to provide fire control autonomy, navigation capability, on-board weapon pointing and location, digital ballistic calculations and digital messaging. (U.S. Army photo by Mike Roddin.)

from new development feedback, lessons learned from *Operations Enduring Freedom* and *Iraqi Freedom (OEF/OIF)*, and required and changing logistics needs — all with the single goal of providing better support to warfighters. The AE's demonstrated success in response to Sept. 11, 2001, the global war on terrorism and *OEF/OIF* are real-world examples of how an integrated approach is able to provide a better product, more quickly and at the right cost. Current AE initiatives and successes will be discussed in greater detail.

Munitions Readiness Report (MRR)

The MRR was an outcome from Sept. 11, 2001. At that time, the Army had no automated tool to assess its ability to provide ammunition to support contingency operations. The MRR was developed to portray our ability to

support warfighter readiness, and allows an assessment of current problems and areas at risk out to 24 months in 6-month intervals. The MRR currently measures readiness in four areas:

- S — On-hand assets
- R — Serviceability
- Q — Quality
- B — Industrial base

Based on senior leaders' guidance to create a clearer picture of training and warfighting capabilities, an MRR Integrated Product Team was established to review all MRR aspects. Significant methodology changes are underway that will enhance the Army's ability to assess munitions readiness. The MRR

provides a common tool for the AE to address readiness. On-hand asset posture is linked to ammunition acquisition programs. PEO Ammunition develops acquisition and funding strategies that address shortfalls in stock while ARDEC looks for technology solutions to meet readiness.

Providing Ammo Solutions and Technology to Warfighters

Reliance upon communication from the field is vital to the AE to effectively provide warfighters with the necessary technology and products to meet their current and changing needs. Routinely, ARDEC works with the program

The MRR was developed to portray our ability to support warfighter readiness, and allows an assessment of current problems and areas at risk out to 24 months in 6-month intervals.

technology and products to meet their current and changing needs. Routinely, ARDEC works with the program

managers (PMs) and other AE partners to respond to field requirements either in the form of a new development or as enhancements to existing systems. Continual product performance and product improvement is an AE priority. In fact, ARDEC has taken the lead in weapon system digitization.

Effective fire control systems are required to ensure that the full performance capabilities of ammunition are realized. Digital fire control systems that incorporate up-to-date ballistic characteristics for the full inventory of ammunition significantly improve weapon system accuracy, responsiveness and survivability.

The Mortar Fire Control System (MFCS), developed by PM Mortar Systems through an in-house effort with ARDEC, provides Soldiers with fire control autonomy for a fielded mortar weapon system. MFCS includes a capability for navigation, on-board weapon pointing and location, digital ballistic calculations and digital messaging. The first fielding of the M95/M96 MFCS in an M1064 Mortar carrier was to the U.S. Army

1st Cavalry Division at Fort Hood, TX, in May 2003. The same fire control system, with modified ballistics, was applied to the Stryker Mortar variant that will soon be fielded.

A related effort to replace the aging M23 Mortar Ballistic Computer hosts MFCS software on a totally different computer — a Personal Digital Assistant device. That successful effort led to an Urgent Material Release of the XM32 Lightweight Hand-held Mortar Ballistic Computer (LHMBC) in July 2004, providing Soldiers with the ability to accurately fire the latest 60mm, 81mm and 120mm ammunition.

Small Caliber Ammo Enterprise Solution

Over the past several years, there has been a significant increase in the demand for small arms ammunition. Since 1999, the requirements have risen by approximately 400 percent and have exceeded our organic

Reliance upon communication from the field is vital to the AE to effectively provide warfighters with the necessary technology and products to meet their current and changing needs.

industrial base's capability to produce it. The principal driver is training, which accounts for 75-80 percent of the total service small arms requirements. Following Sept. 11, 2001, the Army Chief of Staff directed an immediate increase in small arms weapons training in preparation for combat operations. The AE has risen to the challenge of meeting these demands.

Led by PM Maneuver Ammunition Systems, a 1-2-3-4 acquisition strategy was developed to position the Army to support a potential 2 billion round per year requirement as follows:

- First, Lake City Army Ammunition Plant (LCAAP), MO, production was ramped up to its current rate of 1.2 billion rounds annually. LCAAP is, and will continue to be, the primary supplier of small caliber ammunition.
- To supplement LCAAP in FY04, a series of urgent buys for more than 300 million rounds were awarded to several international commercial sources. After an upcoming FY05 award to a second source prime contractor, that contractor will provide up to 300 million additional rounds annually.
- The AE will expand the LCAAP capacity to 1.5 billion rounds annually by March 2006.
- The second source prime contractor will position to surge production of an additional 200 million rounds per year.

These four steps equal an AE capability of providing up to 2 billion rounds of small caliber ammo per year to



The new XM32 Lightweight Hand-Held Mortar Ballistic Computer (LHMBC) will replace the aging M23 Mortar Ballistic Computer on the front lines. The LHMBC will run the new MFCS software and will enhance mortar firing accuracy and lethality on the modern battlefield. (U.S. Army photo.)



The XM32 LHMBC will provide Soldiers with the ability to accurately fire the latest 60mm, 81mm and 120mm ammunition. (U.S. Army photo.)

The AE has been instrumental in responding to current needs and requirements, whether it is through early fielding of concepts, purchasing additional assets or returning to service assets that have been recapitalized.

America's warfighters. In parallel with the FY04 urgent buys, approximately 120 million rounds of existing NATO-certified UK stocks were procured for the United Kingdom, over half of which were supplied directly to Kuwait to support the war in Iraq. In areas of new technology, efforts are now underway to improve 5.56mm ammo lethality and develop environmentally friendly lead-free small caliber ammunition.

Through integration of acquisition, logistics and technology, the AE is providing solutions for meeting small caliber demands and, ultimately,

warfighter requirements. The AE priority is readiness and support to warfighters. As such, the AE partnership is committed to the successful establishment of a JA LCMC to further enhance the integration, communication and feedback necessary for continued process improvement across the enterprise.



BG JAMES W. RAFFERTY is the Deputy Commanding General, JMC. As such, he augments the command and control of munitions production and storage facilities, serves as the senior command proponent for matters related to JMC's use of Reserve and National Guard units and assumes overall responsibility for G-3 (Operations) and G-7 (Transportation) missions and functions. He has a B.A. in history from Syracuse University. His military education includes the U.S. Army Command and General Staff College and the Army War College.

Fire Support Munitions Modernization

COL Nathaniel H. Sledge Jr.

In October 2001, during the Army's program executive office (PEO) reorganization, the Assistant Secretary of the Army for Acquisition, Logistics and Technology established the Project Management (PM) Office for Combat Ammunition Systems (CAS) Indirect Fire. PM CAS is part of PEO Ammunition (Ammo), which is DOD's Single Manager for Conventional Ammunition.

PM CAS' core business is life-cycle management of gun-launched indirect fire munitions, mortar weapons and mortar fire control systems. PM CAS' products include related fuzes, fuze setters, propellants, explosive fills, software, hardware and electronics. PM CAS' vision is to deliver conventional and leap-ahead munitions combat power to warfighters, giving them the materiel edge over our Nation's real and potential adversaries. This article introduces PM CAS and its business initiatives, and presents selected elements of its fire support munitions modernization strategy.

The M109A6 Paladin 155mm Self-Propelled Howitzer provides the primary indirect fire support for heavy divisions and highly mobile armored cavalry regiments. Thanks to PM CAS' combat developers, precision-strike munitions like the Excalibur are extending the range, accuracy, lethality and versatility of 155mm artillery projectiles. (U.S. Army photo by SGT Jack Morse, 982nd Signal Co.)

Munitions Modernization Strategy

Indirect fire support must transform with the Army. It must achieve a proper balance of precision, point-target-killing munitions — fired from indirect fire platforms — and more accurate suppressive area-fire munitions that better enable the maneuver commander's direct-fire platforms to engage with dominant force at key decision points. PM CAS' munitions enable and enhance each of the Army's generalized transformation attributes for enhanced agility, lethality, versatility, survivability, deployability, responsiveness and sustainability for evolutionary fire support munitions — from ballistic to conventional, to precise and automated.

Following the Army's Indirect Fires Strategy, PM CAS' objective is to contribute to Army transformation success by leveraging technology to provide destructive, suppressive and protective effects, while also minimizing collateral damage. To meet its objective, PM CAS is helping combat developers determine where to invest the Nation's treasure to deliver the most cost-effective fire support systems. PM CAS' approach is to follow national and Army guidance, participate in analyses, study concepts and conduct experiments. In addition, PM CAS will collect data from and make observations about recent operations and study relevant trends in threat; rules of engagement (ROE); doctrine;

tactics, techniques and procedures (TTP); and technology. This approach has revealed existing fire support capability gaps and anticipated future needs.

Findings from observations and studies have affirmed that fire support transformation is characterized primarily by improvements in precision, accuracy, range, lethality and robustness. It is also characterized by increases in responsiveness, mobility, sustainability, safety and reliability. Improvements in these attributes are necessary to better address the conventional and asymmetric threats U.S. forces are likely to encounter today and tomorrow. Therefore, PM CAS and combat developers have shaped the indirect fire support modernization strategy with

these needs in mind. PM CAS' highest priority development projects address these needs. They are listed below in priority order for the two battlefield operating systems (BOS) they support.

Precision Strike (Field Artillery)

- The *Excalibur* is an extended-range, precision-guided 155mm artillery projectile that reduces collateral damage and enables ground-based urban fire support. *Excalibur* also serves as a versatile cargo carrier for various submunitions.
- The *Course-Correcting Fuze (CCF)* is a technology that provides near-precision performance to conventional artillery, enabling more effective area fires, improves

operational efficiency and potentially reduces the Class V logistics burden.

- The *Advanced Cannon Artillery Ammunition Program (ACAAP)* is an extended-range, ballistically matched family of conventional artillery projectiles that will increase range and add infrared illumination and multi-spectral smoke to the Army's arsenal. Pre-formed fragmenting warheads will potentially increase lethality against selected soft targets.
- The *Sensor-Fuzed Munitions (SFM)*s will provide artillerymen a highly effective and affordable tank-killing capability, whose value was undeniably proven during *Operation Iraqi Freedom (OIF)*.

Dominant Maneuver (Organic Fire Support)

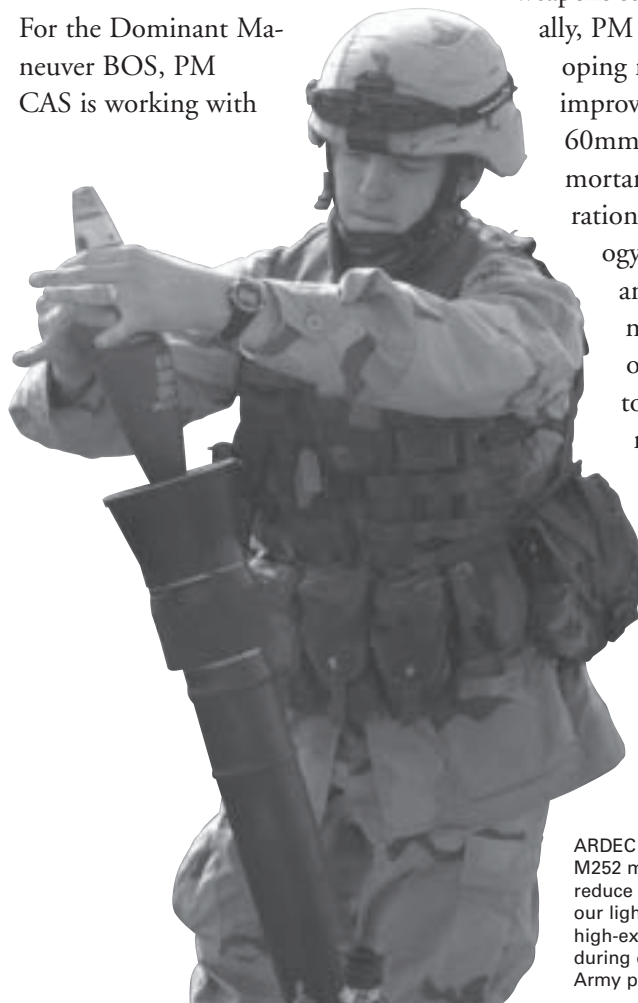
- The *Precision-Guided Mortar Munition (PGMM)* is a laser-guided 120mm mortar munition that provides the maneuver commander the ability to neutralize or destroy entrenched enemy combatants or lightly armored vehicles with indirect fire, while also limiting collateral damage.
- The *Mortar Fire Control System (MFCS)* will connect mortars to the fires network, improve precision and usher in a new era in mortar solution computing. In operational tests, the MFCS has dramatically reduced the dispersion of rounds at maximum range.
- The *120mm Extended-Range, Cargo-Carrying Mortar* will improve lethality and extend the range of organic fire support available to maneuver commanders.

PM CAS is also developing and procuring many other innovative products. For the Precision Strike BOS, PM CAS has developed and is producing Electronic Self-Destruct

In response to the Army Chief of Staff's call for accelerating technology development to support today's forces, PM CAS is searching for capabilities and technologies that can be fielded in 24-36 months. Prime candidates are PGMM, ACAAP and integration of *Excalibur* into the *Paladin Self-Propelled Howitzer*.

Fuzes for both 105mm and 155mm cannon-fired Dual-Purpose Improved Conventional Munition (DPICM) and guided-rocket applications, such as the Guided Multiple-Launched Rocket System. By nearly eliminating hazardous duds with this technology, PM CAS will help save friendly and non-combatant lives. Currently being fielded, the Multi-Option Fuze for Artillery (MOFA) will help reduce operational and logistics burdens by replacing five other fuzes. Also in fielding, the Modular Artillery Charge System (MACS) will increase range, enable autoloading and handling, reduce gun tube wear and reduce long-term training and operating costs. Finally, the 155mm M864 DPICM Recapitalization program will employ self-destruct fuze technology to increase the lethality, reliability and safety of our Stryker forces.

For the Dominant Maneuver BOS, PM CAS is working with



the U.S. Army Armament Research, Development and Engineering Center to develop the Lightweight 81mm mortar to improve unit mobility and lessen operational burdens on our light forces. A concurrent effort is underway to reduce the weight of the 120mm mortar base plate issued to Stryker forces serving in *OIF*. The Arms Room Concept (ARC) is now included in the Army Modularity Initiative for heavy and light forces. The ARC will greatly increase light forces' organic lethality and flexibility by adding 120mm mortars to their weapons suite. Additionally, PM CAS is developing much-improved lethality for 60mm and 81mm mortar bombs through exploration of embedded ball technology. Finally, for both artillery and mortars, PM CAS is monitoring combat developer requirement processes to prepare for nonlethal munitions development.

These programs will give warfighters a robust and flexible suite of gun-launched indirect fire capabilities that will increase the depth and breadth of the gun-launched indirect

ARDEC is developing the lightweight 81mm M252 mortar to improve unit mobility and reduce operational and logistics burdens on our light forces. Here, a Soldier places a high-explosive round in the mortar tube during ongoing operations in Iraq. (U.S. Army photo by SFC Alexander Ruckers.)

Findings from observations and studies have affirmed that fire support transformation is characterized primarily by improvements in precision, accuracy, range, lethality and robustness. It is also characterized by increases in responsiveness, mobility, sustainability, safety and reliability.

fire munitions suite and the complementary nature of the precision and area fire weapons that provide scaled precision capabilities to the Future Force.

Other Initiatives

In addition to the major projects already mentioned, PM CAS has other initiatives aimed at speeding capabilities to the field and at improving its business practices. First, in response to the Army Chief of Staff's call for accelerating technology development to support today's forces, PM CAS is searching for capabilities and technologies that can be fielded in 24-36 months. Prime candidates are PGMM, ACAAP and integration of Excalibur into the Paladin Self-Propelled How-

itzer. Others are the Electronic Time Fuze with Course Correction, the Guidance Integrated Fuze, the ARC, the Lightweight 81mm mortar and nonlethal submunitions. Second, PM CAS is reaching out to warfighters through the "PEO Ammo Road Show," during which it will inform deploying operational units about the most recently fielded and near-term future product developments. Third, the PM office is working with its proponents and combat developers — including the U.S. Marine Corps — to develop and execute a comprehensive fires-and-effects modernization strategy.

PM CAS is also encouraging industry and government to pursue those technologies and innovations that enable or support development efforts. Among the most critical performance-



PM CAS' fire support munitions modernization programs will give warfighters a robust and flexible arsenal of gun-launched indirect fire capabilities with enhanced precision and lethality. (U.S. Air Force photo by MSG James M. Bowman.)

enhancing technologies are thermal and reserve batteries, deeply integrated and miniaturized guidance modules, seekers/sensors and sensor algorithms. Also needed are new global positioning system (GPS) codes, next-generation GPS Selective Availability Anti-spoofing Module microelectromechanical systems fuzing, telemetry and data links, rocket-assist and ramjet technology, digital fire control, improved target-locating devices and greater network bandwidth and efficiency. Three needed chemical technology initiatives are insensitive and safer energetic materials, composites for lighter weight components and nonlethal compounds.

To help improve asset tracking and surveillance, industry should invest in automation such as radio frequency identification, novel ammunition marking, automated inventory control,

accurate ammunition condition indicators and comprehensive stockpile decision support tools. Additionally, improvements in friendly vehicle locating devices, used in conjunction with the digital network, may improve identification of friend or foe and help improve munition accuracy.

PM CAS continually executes product safety improvement initiatives such as the 120mm mortar breech cap modification; the electronic self-destruct fuze development for artillery submunitions; and the pyrotechnic, explosive and propellants (PEP) improvement program to improve the effectiveness,

PM CAS' objective is to contribute to Army transformation success by leveraging technology to provide destructive, suppressive and protective effects, while also minimizing collateral damage.

safety, shelf life and environmental compliance of selected energetic compounds. PM CAS is also spearheading PEO Ammo's campaign to reduce munitions sensitivity. Topping the list is the Mortar Insensitive Munitions Program, which will make the 60mm, 81mm and 120mm families of munitions less sensitive to unplanned stimuli, thereby decreasing the risk of injury or death to warfighters and damage or loss of equipment.

In the business arena, PM CAS is conducting a study to determine when to employ horizontal contract integration (breakouts) or systems contracting. The trend is toward more systems

PM CAS initiatives — such as the 120mm mortar breech cap modification, electronic self-destruct fuze development for artillery submunitions and the pyrotechnic explosive and propellants improvement program — will improve effectiveness, safety and shelf life of selected energetic compounds. (U.S. Air Force photo by SSG Aaron Allmon II.)



contracting, but it is critical to know when either of the two primary acquisition strategies, or a hybrid scheme, is more appropriate. The study's decision templates should help. PM CAS is also improving the way it manages the stockpile through development of a database interface program called the Combat Ammunition Plan. Finally, PM CAS is exploring the value of supplementing its decision-making and problem-solving processes with expert systems analysis.

PM CAS is at the forefront of indirect fire support modernization and transformation. Its fire support munitions modernization strategy is

PM CAS is also improving the way it manages the stockpile through development of a database interface program called the Combat Ammunition Plan.

primarily characterized by improvements in precision, accuracy, range, lethality and robustness. PM CAS is ensuring these attributes through its key transformation products: Excalibur, PGMM, CCF, MFCS, ACAAP and SFMs. PM CAS is executing many other important initiatives that address strategic planning, business practices, decision making, and problem solving to ensure that it is investing in the most effective capabilities.

Notwithstanding, PM CAS is executing a forward-looking, but realistic and practical, fire support munitions modernization strategy that will remain flexible to

adapt to the ever-changing fiscal, strategic and operational requirements environments.

COL NATHANIEL H. SLEDGE JR. has been PM CAS-Indirect Fire since October 2001. He has a B.S. from the U.S. Military Academy and M.S. and Ph.D. degrees in mechanical engineering from the University of Texas-Austin. Sledge is an Armor officer who is Level III certified in program management.



Novel Ammunition Acquisition Approach Yields Positive Results

Roger E. Joinson

In early 2001, the 105mm cannon was selected for the Stryker Mobile Gun System (MGS). A key requirement for the main armament on the MGS was to provide holes in 8" double-reinforced concrete walls large enough for infantry entry. One of the key factors that drove a 105mm-cannon selection was the considerable stockpile of 105mm ammunition formerly used on the Abrams M1 tank and later slated to be used on the 105mm Armored Gun System.

The new M467E1 (blue) training round and M393E3 (green) tactical round were thoroughly tested for performance and dispersion at Yuma Proving Ground. (U.S. Army photo.)

The U.S. Army stockpile round that was best suited to meet the MGS requirement was the 105mm M393A2 High Explosive Plastic-Tactical Cartridge (HEP-T). The M393A2 was Type Classified-Standard (TC-STD) in 1965, and was used during the Vietnam War. Historically, this round was known to be occasionally inaccurate, and the numbers of serviceable rounds in the stockpile were very limited. Additionally, the stockpile of M393A2 cartridges was now, on average, more than 27 years old, well beyond a planned 20-year service life. These facts led Army leadership to conclude that the Army needed new rounds that would meet the MGS's key performance parameter (KPP) — performance as good as or better than

the existing HEP round in the defeat of double-reinforced concrete walls.

Once the caliber decision was made, the Project Management Office for Maneuver Ammunition Systems (PMO MAS), and the then Deputy Chief of Staff for Ammunition, requested funding for a new high-explosive round that would meet modern safety and insensitive munitions requirements.

At that time, there were several rounds — believed to be commercial-off-the-shelf (COTS) —

with high-performance claims against concrete walls and dismantled targets.

Cartridge testing proved these claims were exaggerated. During the third quarter of FY01, and early in FY02, the Product Manager for MGS and PM MAS funded the performance evaluation of stockpiled M393A2 rounds against a newly constructed concrete wall target to prove that the KPP could keep up. This assessment also served as the basis for the performance specification needed

to generate a request for proposal once funding was made available. An

A unique acquisition strategy was employed to reduce the fielding time normally associated with ammunition acquisition.



Initial M393A3 tests against reinforced concrete walls and bunkers showed that the rounds exceeded performance requirements. Additionally, dispersion testing showed that the rounds also exceeded accuracy requirements. (U.S. Army photo from test-shot video.)

integrated product team (IPT) was assembled to draft the performance specifications and to manage and execute the program. The team consisted of engineers and support elements from PM MAS, the Picatinny-based Army Research, Development and Engineering Center, the Army Research Laboratory and the Joint Munitions Command.

Requirement

The Ammunition Performance Requirement was included in the MGS Annex of the Stryker Operational Requirements Document (ORD) to reduce approval time needed to staff a full ORD for the ammunition alone. A detailed ammunition performance specification was written to ensure the ammunition's compliance with MGS and international requirements for 105mm ammunition. The performance specification was reviewed and approved by the user to ensure that it accurately described the desired capability.

A unique acquisition strategy was employed to reduce the fielding time normally associated with ammunition acquisition. Specifically, these munitions were procured as nondevelopmental items (NDIs) using a system contract. The program was initiated at Milestone C in the first quarter of FY02, just prior to being funded. The acquisition plan called for procurement of a small quantity of rounds (bid samples) of NDI cartridges that would meet the performance specification. The aggressive delivery schedule assured the government that samples had been made

with the production tooling and were indeed NDI. The samples were evaluated against the performance requirements in a test matrix that was developed for this solicitation. Awardees of a contract for samples were also required to submit a production proposal along with the samples — including pricing information — prior to government testing and evaluation. Testing was scheduled within 6 months of contract award.

The Downselect Process

Based on technical performance, management/quality, past performance and price, a single production contractor would be chosen for the low-rate production (LRP), along with subsequent full-rate production (FRP) for the HE-T and TP-T cartridges.

In July 2002, 4 contracts were awarded for 60 samples of both tactical (HE-T) and matching training (TP-T) cartridges with delivery within 6 months of contract award. For the HE-T requirements, contracts were awarded to L-3 Communications, Alliant Techsystems, SNC Technologies Inc. and General Dynamics-Ordnance and Tactical Systems. Three of the four contractors proposed using different variants of an improved M393A2 cartridge (HEP-T) to meet the requirements, while one contractor proposed using a COTS round produced by Denel in South Africa.

A Winner Emerged

L-3 Communications, BT Fuze Division, in Lancaster, PA, proposed an M393E3 cartridge made by their Bel-

By getting a competitive price for the production upfront, reprourement costs were kept to a minimum.

gian subcontractor, MECAR. L-3 also incorporated a MIL-STD-13163-compliant dual-safe fuze made by marrying the proven M739 Safe-and-Arm function with the proven M578 fuze. The modified M578A1 meets all the requirements of MIL-STD-1316E (dual safety).

Initial L-3 HEP round tests found that it exceeded the performance requirements for the concrete wall and bunker. Dispersion testing also showed that the round exceeded the accuracy requirement. Based on the test results from other samples and the production proposal, L-3 Communications was selected to produce the LRP for both the tactical and training cartridges. This selection was made in April 2003. L-3 Communications was subsequently awarded a contract for M393E3 and M467E1 cartridge LRP. Most of the initial production tactical cartridges were allocated for an expanded verification test, which mirrored a full-production qualification test.

Positive Results

The matching M467E1 training round was funded in FY03, permitting the LRP schedules to be sufficiently aligned to provide economies of side-by-side testing and to conserve considerable program resources. The contractor made timely LRP round delivery, improving the first quarter FY04 schedule.

Verification testing was conducted at the Aberdeen, MD, and Yuma, AZ,

Initial L-3 HEP round tests found that it exceeded the performance requirements for the concrete wall and bunker. Dispersion testing also showed that the round exceeded the accuracy requirement.



A Stryker MGS test fires the new M393A3 tactical round at YPG. (U.S. Army photo.)

The new cartridges provide the Army with a unique capability that is not available through other means.

Proving Grounds and included firing of the rounds from a vehicle to prove accuracy. At the conclusion of verification testing, PM MAS compiled all of the requirements needed for the TC-STD for both cartridges and to obtain an FRP release.

Program Executive Officer for Ammunition (PEO Ammo) BG Paul S. Izzo approved both TC-STD and FRP Aug. 5, 2004. The IPT is working toward a materiel release for the third quarter, FY05. The program has also been complimented for extensive work done to improve the ammunition's insensitivity to various insensitive munitions stimuli.

Lessons Learned Summary

By using this novel acquisition approach for the M393E3 and M467E1, the Army substantially reduced

acquisition time and saved considerable resources by "bundling" the two rounds during verification tests. TC-STD and FRP decisions were obtained within 2 years of the first contract award.

The program also averted risk by procuring samples and making an early assessment of the candidate rounds' performance for the down-select decision. By getting a competitive price for the production upfront, procurement costs were kept to a minimum. An added advantage to HEP cartridge development was the circumstance afforded by "hiring" the fuze "specialist," L-3 BT Fuze Division, as the integrator since fuzing is historically one of the most challenging tasks in this type of development. The new cartridges provide the Army with a unique capability that is not

available through other means.


The M393A3 and M467 programs are currently managed by PM MAS

COL Mark D. Rider whose office provides direct-fire munitions under the leadership of PEO Ammunition, the Single Manager for Conventional Ammunition. Both organizations are located at Picatinny Arsenal, NJ.

ROGER E. JOINSON is the 105mm Ammunition Team Leader at PM MAS. He has a B.S. in mechanical engineering from the New Jersey Institute of Technology. Joinson is Level III certified in systems planning, research, development and engineering, and has been an Army Acquisition Corps member since 1982.

No Silver Bullets for Conventional Ammunition Demilitarization

Larry Gibbs, Dorothy Olson and Raymond Goldstein



The Conventional Ammunition Demilitarization (demil) program's estimated liability is \$1.2 billion more than the Program Objective Memorandum with the demil stockpile standing at 392,162 tons as of February 2004. The true story may be even worse because those figures do not include 69,880 Army missiles; excess ammunition (ammo) in Korea, Europe and Southwest Asia; or obsolete ammo still in field service accounts worldwide.

The Product Manager for Demilitarization (PM Demil) has life-cycle management responsibility for demilitarizing and disposing conventional munitions for all U.S. military services. A mission goal is to develop capability through research and development (R&D) programs where capability, technology and facilities do not currently exist to ensure effective, efficient ammo demil.

PM Demil relies on its field operating agencies — the Joint Munitions Command at Rock Island Arsenal, IL, and the U.S. Army Aviation and Missile Command at Redstone Arsenal, AL — to reduce the stockpile. The Demil Enterprise’s ability to successfully execute the mission depends largely on significant R&D undertakings led by the Defense Ammunition Center (DAC), a tenant organization of the

McAlester Army Ammunition Plant, OK, and the Armaments Research, Development and Engineering Center (ARDEC) at Picatinny Arsenal, NJ. DAC and ARDEC play crucial roles in the PM Demil Strategic Plan to achieve two key goals: driving demil to higher closed disposal technologies (CDT), and the aggressive pursuit, transition and integration of R&D technologies to enhance demil execution capabilities and processes.

The PM Demil R&D strategy that supports these strategic goals will fund projects that:

DAC and ARDEC play crucial roles in the PM Demil Strategic Plan to achieve two key goals: driving demil to higher closed disposal technologies, and the aggressive pursuit, transition and integration of R&D technologies to enhance demil execution capabilities and processes.

- Resolve demil stockpile and demil issues.
- Provide a reasonable return on investment.
- Address technology voids in demil execution capability.
- Enhance safe demil operations and safeguard the environment.
- Provide opportunity for participation by industry, academia, international and governmental interservice agencies and committees.

There are no “silver bullets” to effectively and efficiently demil munitions — it is a complicated and often complex problem. Variations in munitions size,



Soldiers from Bravo Co., 1st Battalion, 116th Infantry Regiment, 1st Infantry Division, search for improvised explosive devices (IEDs) along a road leading into Ramadi, Iraq. Unexploded IEDs and captured Iraqi munitions from weapons caches and stockpiles add to the ammo demil challenge overseas. (Photo by SGT Lee Davis, 982nd Signal Co. (Combat Camera).)

complexity, filler materials and assembly methods, coupled with the need to provide operators with safe, environmentally compliant and economic processes, continually provide challenges for the demil community. Today, Congress and DOD mandate less reliance on open burn/open detonation (OB/OD) processes and more on environmentally acceptable CDT. By definition, CDT is a primary demil method and is essentially an alternative technology to OB/OD, which includes resource recovery and recycling (R3) and reuse. More than 78 percent of PM Demil's procurement funding is spent on demil execution using CDT processes.

PM Demil manages two separate R&D programs:

- *Project D51*, the Explosives Demilitarization Technology Program, is managed by DAC. *Project D51* is a DOD Joint-funded, cooperative, interservice, interagency effort dedicated to the maturation of safe, efficient and environmentally acceptable CDT capability and processes.
- *Project F24*, the Conventional Ammo Demil Program, is managed by ARDEC as part of the Army Munitions Standardization, Effectiveness and Safety program. *Project F24* supports a continuing technology evaluation of demil methods for conventional munitions. Like the Joint D51 program, the Army F24 program conducts R&D related to the development and demonstration of new, safe and environmentally acceptable alternatives to OB/OD.

The Joint D51 R&D Program

The DAC Technology Directorate centrally manages the D51 Explosives Demil Technology Program and integrates military service requirements through the PM Demil R&D

Integrated Product Team (IPT) and the Joint Ordnance Commander's Group Demil Subgroup. This program leverages resources from Department of Energy national laboratories, academia and industry to promote demil technology development and transition emerging technologies to the government organic base or commercial sector. DAC provides acquisition, technical, engineering and scientific services and support including program management for all R&D projects. The Munitions Items Disposition Action System (MIDAS) database characterizes munitions and MIDAS supports demil R&D applications,

forming the bridge between technology R&D and the demil user community.

Project D51 is a DOD Joint-funded, cooperative, interservice, interagency effort dedicated to the maturation of safe, efficient and environmentally acceptable CDT capability and processes.

The Joint program focuses on demil R&D thrust areas to address capability gaps. The accompanying table shows application of select technologies under development, separated by thrust areas.

Examples of past successes are the stationary and transportable Contained Detonation Chambers employed at unexploded ordnance sites, ammunition-peculiar equipment 1995 Near Infrared Propellant Analyzer, cryocycling of high-velocity aircraft rocket
(Continued on Page 58.)

Explosive Demil Technology Program

Thrust Area Technology	Application
Disassembly	
Automated Munitions Disassembly	Submunitions from improved conventional munitions
R3	
Explosive D Conversion	Explosive D to Picric Acid
Propellant Conversion	Single-/double-based propellants to fertilizer
HMX Requalification	Requalification of reclaimed HMX for military applications/new munitions
Thin Layer Chromatography	Enables safe reuse of military propellants
Destruction	
Detonation Chamber	35 pounds net explosive weight maximum
Photocatalytic Degradation	Organic materials and explosives
Waste Stream Treatment	
MSO	Energetic contaminated carbon
SCWO	Energetic contaminated water

LCMCs

1 Joint Ammunition LCMC Rock Island, IL

Joint Munitions Command (JMC)
PEO Ammunition (Ammo)

Commander: BG(P) Jerome Johnson (dual-hatted as Commanding General (CG), Army Field Support Command and LCMC Commander (in conjunction with BG Robert Radin, JMC Commander and BG Paul Izzo, PEO Ammo)

Deputy to the Commander: No deputy as of press time.

Web Site: No Web site as of press time.

Establishing the Joint Ammunition LCMC further solidified working relationships already founded by the January 2004 Ammunition Enterprise agreement. The ammunition community realized early the need to create an alliance of people, organizations, infrastructure and processes to best meet warfighters' needs. The Joint Ammunition LCMC will continue to use Lean/Six Sigma principles to provide a disciplined approach for process and product optimization.

2 Soldier/Ground Systems LCMC Warren, MI

Tank-automotive and Armaments Command
PEO Ground Combat Systems
PEO Combat Support and Combat Service Support
PEO Soldier

Commander: BG William M. Lenaers

Deputy to the Commander: No deputy as of press time.

Web Site: www.us.army.mil (Army Knowledge Online); search for the "LCMC" group.

Soldier/Ground Systems LCMC comprises seven parent organizations with operations and personnel throughout the country. Its immediate task is to improve cooperation, collaboration and communication while refining the groundwork already laid in the development of its life-cycle management teams. It will also continue to institutionalize fact-based decision making using Lean/Six Sigma practices.

3 Communications/Electronics (CE) LCMC Fort Monmouth, NJ

Communications-Electronics Command
PEO Command, Control and Communications Tactical
PEO Intelligence, Electronic Warfare and Sensors

This is the proposed structure of the CE LCMC as of Nov. 17, 2004.

Commander: MG Michael R. Mazzucchi

Deputies to the Commander: Victor J. Ferlise
Edward T. Bair
COL(P) Nickolas G. Justice

Web Site: <https://www.monmouth.army.mil/C4ISR/>

The CE LCMC formalizes organizational relationships that were already highly collaborative. The establishment of the LCMC reinforces the collaborative approach by providing senior leadership the flexibility to assign expertise to high-priority efforts while placing all the functional expertise across the sustainment and acquisition realms under a single command structure. Under this collaborative umbrella, CE LCMC personnel consistently provide warfighters command and control, communications, computers, intelligence, surveillance and reconnaissance tools that are highly developed, sustainable, reliable, usable and technologically current. CE LCMC: One Mission One Vision — The Warfighter.

4 Aviation/Missile LCMC Huntsville, AL

Commander: MG James H. Pillsbury

Deputies to the Commander: Dr. Richard Amos
Paul Bogosian
BG Michael Cannon

Web Site: https://redstoneappsrv1.redstone.army.mil:4443/apws/apwsdba.apws_home

The Aviation/Missile LCMC will support integrated weapon system teams called Soldier Focused Life Cycle Management Teams (SFLCMs). Integration will be accomplished by collocating supporting personnel within a single weapon system authority, establishing common metrics and following Lean/Six Sigma principles. SFLCMs will afford product/project managers the ability to accurately predict a true go-to-war capability.

Life Cycle Management Commands

In August 2004, the Army Chief of Staff approved an initiative created by the Assistant Secretary of the Army for Acquisition, Logistics and Technology and the Army Materiel Command CG for the two organizations to create Life Cycle Management Commands (LCMCs). These LCMCs allow the Army to bring together relevant

acquisition, logistics and sustainment teams to support Soldiers. The entire community will be involved in shortening the acquisition process and rapidly fielding equipment to Soldiers. This initiative supports the Army's goal to transform to a more lethal and agile force that requires a smaller logistical footprint to sustain itself.



1 • Joint Ammunition LCMC
Rock Island, IL



2 • Soldier/Ground Systems LCMC
Warren, MI



3 • Communications/Electronics LCMC
Fort Monmouth, NJ



4 • Aviation/Missile LCMC
Huntsville, AL



To create the first four LCMCs, the Aviation and Missile Command, Communications-Electronics Command, Joint Munitions Command and Tank-automotive and Armaments Command have been realigned with the program executive offices (PEOs) with which they work. In some cases, LCMC commanders may be dual-hatted as PEOs. The PEOs for Simulation, Training and Instrumentation;

Joint Chemical and Biological Defense; Air, Space and Missile Defense; and Enterprise Information Systems are not initially affected. The Research, Development and Engineering Command retains its technology mission and remains strategically and operationally linked to the new LCMCs and PEOs.

motors and base hydrolysis of cartridge-actuated devices/propellant-actuated devices (CAD/PAD) at Tooele Army Depot, UT.

There are exciting Joint projects on the horizon including combinations of existing equipment, equipment developed under Joint programs and new technologies to create integrated demil and recycling facilities. At Anniston Munitions Center, AL, a Missile Recycling Center will incorporate a new methodology to disassemble and recycle Multiple Launch Rocket System rockets. In the Republic of Korea, a Munitions Demil Facility will include Propellant Conversion, Molten Salt Oxidation (MSO) and Super Critical Water Oxidation (SCWO) units. At Hawthorne Army Depot, NV, the demil facility will incorporate a Hot Gas Decontamination unit and enhanced incineration and recovery capabilities. At McAlester Army Ammunition Plant, the Cryofracture Facility, developed under the ARDEC program, incorporates robotic disassembly and induction heating technologies from the Joint and Army programs.

DAC leads the PM Demil R&D IPT, which evaluates all R&D programs and prioritizes competing technologies using an analytic hierarchy process. The process comparatively ranks technologies based on criteria for demil capability, technical synergism and environmental, safety and technical risk. All services have input to the prioritization process and participate in project evaluations.

Demil R&D technology is the cornerstone supporting strategic initiatives for reducing the U.S. demil stockpile, developing and providing additional supply sources and ensuring demil processes are safe and environmentally sound.

The Army F24 R&D Program

The ARDEC Energetics, Warheads and Environmental Technology Directorate provides centralized management of the Army F24 Conventional Ammo Demil Program and integrates requirements through PM Demil R&D IPT and the DAC Technology Directorate. While the program includes new destruction technology, an emphasis is placed on first attempting to develop CDT capability and processes. The program seeks broad-based applications with opportunities for partnering and leveraging with other government agencies, private industry and academia. Where possible, dual-use technology is identified and pursued. Presently, projects are underway in the areas of plasma arc thermal treatment, cryofracture, recovery of magnesium from pyrotechnic munitions and MSO.

R3 Processes

Plasma arc thermal treatment uses super-hot (25,000 F) plasma to destroy the energetics in munitions with no environmental impact. Inorganic materials are melted into a nonhazardous glassy slag or recoverable metal layer. The plasma is created by electrical energy input into a gas flowing through a torch, which is contained in a furnace. This plasma furnace allows demil of pyrotechnic and smoke munitions, fuzes and CAD/PAD items, which are difficult to process by any other means. Two prototype systems have been built and are undergoing systems qualification: a

stationary system at Hawthorne Army Depot and a mobile system at a commercial site in West Virginia.

Cryofracture is a process whereby munitions are frozen in liquid nitrogen and then fractured using a hydraulic press. The fractured pieces are then treated via thermal deactivation or separated for disposal or recovery allowing demil of small, steel-bodied, high explosive-loaded munitions such as grenades, mines and submunitions found in improved conventional munitions (ICMs) and cluster bomb units (CBUs).

A prototype process has been built and is undergoing demonstration and validation of demil capability and processes at the McAlester Army Ammunition Plant. There is also a project underway to integrate the cryofracture and mobile plasma processes into a transportable, mobile configuration allowing a complete, modular, munitions demil facility capable of being disassembled, relocated by tractor-trailers and reassembled at a desired site quickly. The system will be capable of demilitarizing small- to medium-sized, explosive-containing, conventional munitions such as hand grenades, anti-personnel mines,



medium-caliber projectiles and submunitions downloaded from CBU, ICM and large-caliber artillery projectiles.

Magnesium recovery from obsolete pyrotechnic munitions is an important CDT project using R3 processes. A prototype process with an initial capacity to produce 90,000 pounds per year of recovered magnesium is being designed for installation at Crane Army Ammunition Activity, IN, in FY06. Successful technology implementation will yield a significant savings over the virgin material cost and eliminate dependence on a single supply source.

Starting as a DAC initiative and later transitioning to ARDEC, the MSO program is a flameless oxidation process enabling destruction without incineration for a wide variety of bulk munitions, energetic materials and related by-product wastes with virtually no environmental impact. A pilot program demonstrated the process with plans for prototype system installation at Blue Grass Army Depot, KY, in FY06.

Demil R&D technology is the cornerstone supporting strategic initiatives for reducing the U.S. demil stockpile, developing and providing additional supply sources and ensuring demil processes are safe and environmentally sound. Demil capabilities, technologies and processes are resulting from joint collaborative team efforts within the Demil Enterprise to ensure R&D programs are adequately funded, integrated and synchronized to ensure effective transition to impact demil execution. A myriad of exciting demil R&D challenges and solutions are just over the horizon and the total R&D program's synergy will provide the silver bullet — much needed solutions to help tackle conventional ammo demil.

LARRY GIBBS is the Deputy PM Demil. He holds a B.S. in general engineering from the U.S. Military Academy and an M.S. in management from the Florida Institute of Technology. He is an Army

Acquisition Corps (AAC) member and is Level III certified in program management.

DOROTHY OLSON is the Chief, Technology Division at DAC. She holds a B.A. in English/political science from Luther College and an M.S. in human resources from East Central University. She is an AAC member.

RAYMOND GOLDSTEIN is the Technical Manager for Conventional Ammunition Demil Technology R&D at ARDEC. He holds an M.S. in chemical engineering from Stevens Institute of Technology and an M.S. in computer science from the New Jersey Institute of Technology. He is a past recipient of the Department of Army R&D Achievement Award for his work in process modeling and computer simulation.



Supplying our troops on the front line with quality ammunition of the right type and in the right quantity is a critical challenge in time of war for the logistics community. In the coming years, an equally daunting challenge will be demilitarizing obsolete ammo from field service accounts worldwide. (U.S. Army photo.)

Soldier/Ground Systems Life Cycle Management Command

BG William M. Lenaers and Paul Moses



Current collaborative efforts to support readiness and cost goals for the AGT 1500 engine for M1 series Abrams tanks employ Lean/Six Sigma initiatives and process standardization across the entire Totally Integrated Engine Revitalization project.

The Life Cycle Management Commands (LCMCs) were established in August 2004 to better integrate the Army's systems program management (acquisition), sustainment (logistics) and research,

development and engineering activities (technology). The Soldier and Ground Systems (S&GS) LCMC is one of four LCMCs created for this purpose. The S&GS LCMC consists of the following organizations:



Tank-automotive and Armaments Command (TACOM)



Program Executive Office Ground Combat Systems (PEO GCS)



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



PEO Soldier

The S&GS LCMC's enterprise partners include the Research, Development and Engineering Command's (RDECOM's) Tank Automotive Research and Development Center (TARDEC), the Armaments Research and Development Center (ARDEC) and the Natick Soldier Center. Our enterprise partners have an important, but not exclusive, alignment with the S&GS LCMC. All seven S&GS LCMC organizations share the same goals and objectives — get products to the warfighter faster, make

enterprise partners' relationships for support.

The Army's LCMC initiative represents a reversal of its previous approach to AL&T management and

integration. During the 1990s, Army PMs left the major subordinate commands to come under the Assistant Secretary of the Army for AL&T's direction. Therefore, where it was feasible to do so, logisticians and engineers worked alongside acquisition professionals, often collocated in integrated product teams (IPTs). However, after several years and numerous lessons learned, the Army's senior leaders found that this approach tended to suboptimize total capabilities and level of integration. When the

LCMC initiative was announced, AL&T community leaders studied the timing, change rate, cultural transformation factors and other elements of the

good products even better, minimize life-cycle costs and enhance the effectiveness and integration of the acquisition, logistics and technology (AL&T) communities. Our primary immediate task is to make significant improvements in our S&GS LCMC's level of cooperation, collaboration and communication. Although it's clear that a single approach may not fit each organization, S&GS LCMC's leadership is committed to this endeavor's success. Figure 1 depicts the S&GS LCMC Program/Project Management (PM) and Joint Program Management (JPM) organizations and

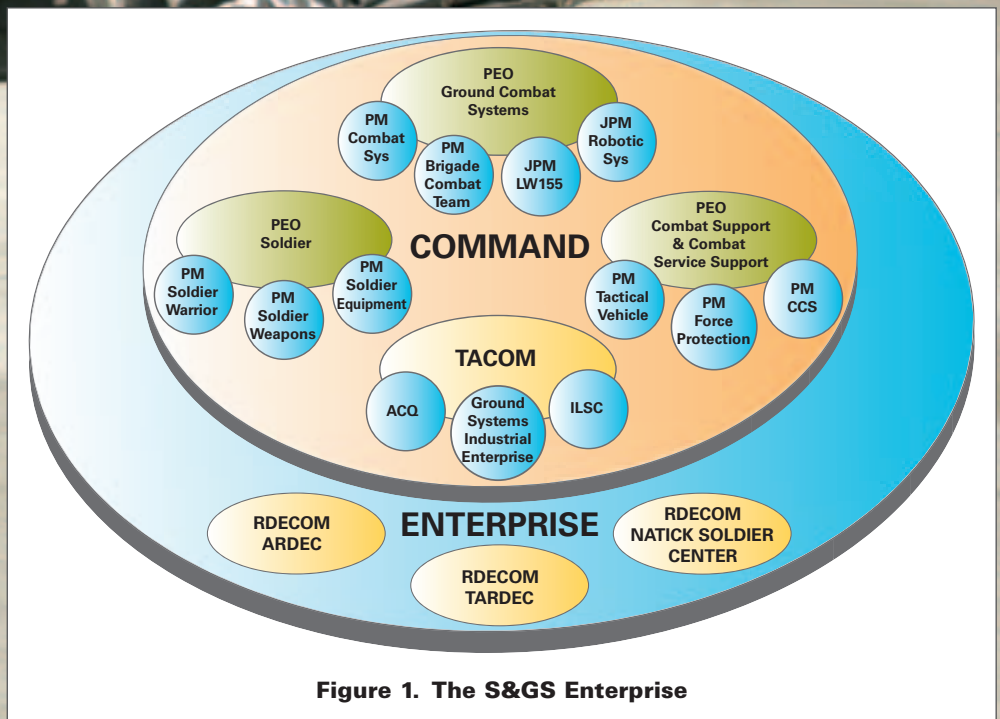
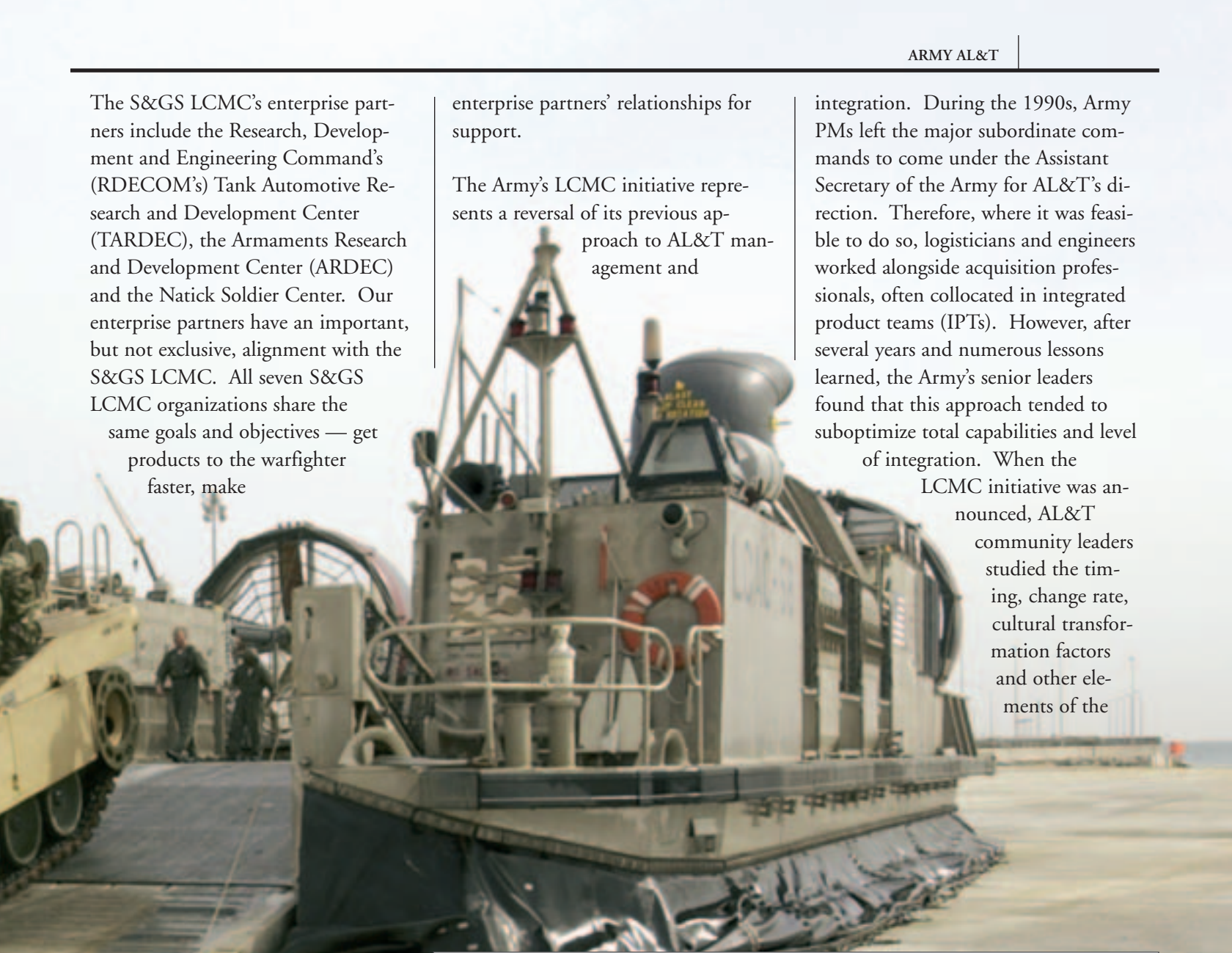


Figure 1. The S&GS Enterprise

previous approach. The community is now better prepared to more fully integrate all AL&T activities into a comprehensive life-cycle management (LCM) effort.

Because of our earlier experiences with realignments and mergers, and because of the broad geographical range of participating organizations, senior leaders became directly involved in establishing and implementing S&GS LCMC. The S&GS community includes seven parent organizations with operations and personnel in dispersed locations throughout the country. To their credit, leaders recognized that all parent organizations must be intimately involved in the effort to give birth to this new organization. Commanders and leaders from the parent organizations gathered to form the S&GS Executive Steering Committee (ESC). A working group was also established to manage the details of creating, implementing and nurturing the new S&GS organization's development.

Our S&GS leaders agree that the community will not view the LCMC as a merger or realignment, but rather as a refinement of the groundwork already performed in the development of our LCM teams. ESC leaders are sensitive to the fact that true cultural change requires time and ownership. They also recognized that to truly address organizational change, existing processes must be studied and refined. Our leadership decided to implement the LCMC in a phased approach. The implementation phases are loosely identified as minor (initial)

ESC leaders are sensitive to the fact that true cultural change requires time and ownership. They also recognized that to truly address organizational change, existing processes must be studied and refined.

organizational changes, process identification, process modification, measurement and, if necessary, additional organizational changes.

The S&GS LCMC cultivates existing relationships, builds new relationships and synchronizes multiple processes and initiatives that are already in place. It fosters and integrates cross-service management while incorporating continuous measurable improvement within all functional areas. At the heart of this effort is the institutionalization of fact-based decision making that uses Lean/Six Sigma practices and related tools and methodologies.

The LCMCs are not founded on command and control, but on the more productive principles of collaboration, coordination and communication. We are basing our future direction on process identification, process ownership, greater effectiveness and efficiency and a strategic workforce development plan that will benefit the entire S&GS community. Figure 2 illustrates the S&GS business model.

Our S&GS LCMC implementation plan will focus on LCM processes. The S&GS community recognizes the need to map existing processes to establish a baseline. From this baseline, process gaps, flow problems and redundancy will be identified to help achieve more effective and efficient end-state processes and maps.

This application of Lean/Six Sigma methodology has led to the completion of level 0 and level 1 process maps. These maps identify processes

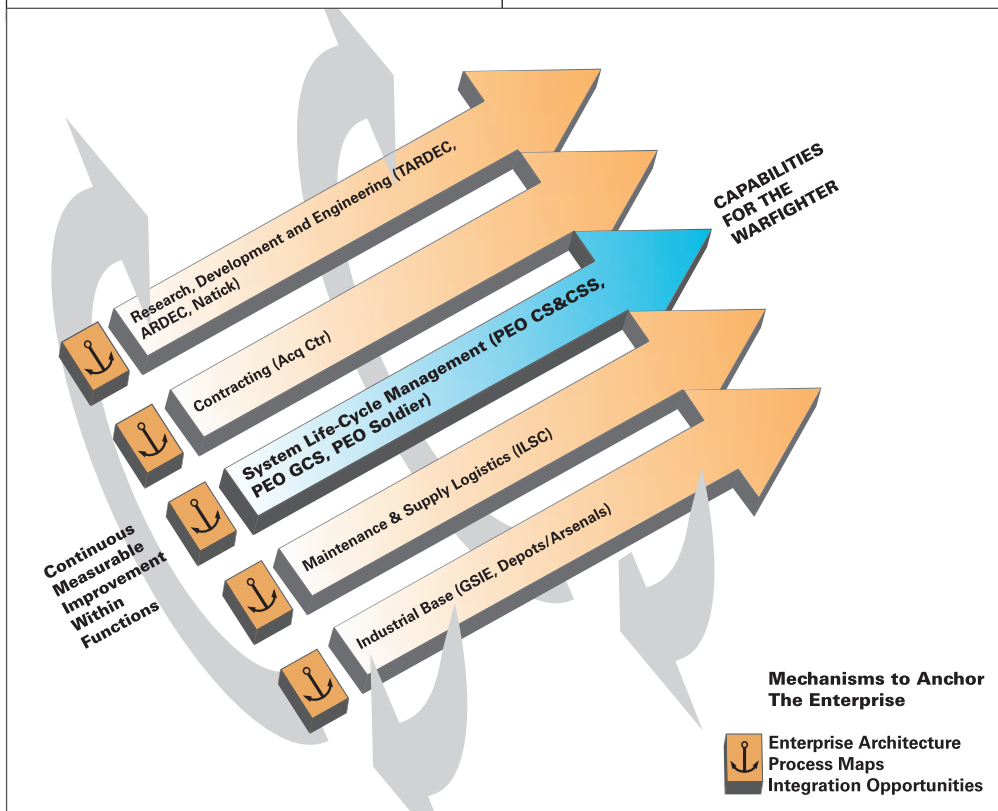


Figure 2. Managing the S&GS Enterprise Synchronizing Multiple Processes

Humvee ASKs on point in Iraq and Afghanistan — armor protection for Soldiers brought to theater through the collaborative work efforts of the S&GS community's acquisition, logistics, technology and engineering professionals.



throughout the system life cycle as performed by our contracting, research, development, engineering, program management, supply/maintenance logistics and industrial base activities. More detail mapping will continue from this baseline to identify areas of opportunity and to modify processes that will ultimately lead to the creation and validation of a new organizational structure. This effort will be conducted in a “block” approach that will identify those opportunities for improvement with the greatest payback. The top 5-7 process areas will become the block 1 focus with the next 5-7 process areas becoming block 2. This deliberate approach will not develop instant opportunities for improvement, but it will identify high-payback areas that can be carefully and appropriately instituted over time.

Our S&GS LCMC community leaders have begun to encourage, reinforce

and reward the adoption of those principles and practices that will promote the cultural changes necessary for successful implementation. A comprehensive communications plan has been developed and will include workforce messages from S&GS senior leaders, community town hall meetings, aggressive marketing of the guiding principles and operating models and the creation of a single S&GS information site on Army Knowledge Online (AKO). The AKO information Web site resides in an LCM area rather than in the AL&T areas of AKO. Our community news report has been renamed and reformatted

The LCMCs are not founded on command and control, but on the more productive principles of collaboration, coordination and communication. We are basing our future direction on process identification, process ownership, greater effectiveness and efficiency and a strategic workforce development plan that will benefit the entire S&GS community.

to address the entire S&GS LCMC's concerns. The development of the Humvee Armor Survivability Kits (ASKs) provides an excellent example of the collaborative working environment within the S&GS community. During *Operation Iraqi Freedom*, our vehicle users identified the need to have more armor protection for their Humvees. To better protect more warfighters, it was necessary to develop, test, produce and field the ASKs quickly. Every S&GS organization came into the IPT environment with the single focus of providing soldiers with greater protection. Acquisition, logistics and engineering professionals worked



Making good products even better — a Stryker on patrol in Iraq. When Soldiers identified a need for a field-expedient solution to protect their vehicles from rocket-propelled grenade attacks, the S&GS community responded with “slat armor,” a low-tech, low-cost but highly effective deterrent.

together to design and test the system. Our industrial base workforce assisted in ASK planning and production efforts. As a result, more than 8,000 ASKs have been fielded and the kits continue to be applied to vehicles in theater at an accelerated rate.

Another example of benefits derived from S&GS workforce collaboration are current efforts to support readiness and cost goals for the AGT 1500 engine that powers the M1 series tank. Previous support for the AGT 1500 engine resulted in narrow stovepipe suboptimization of resources, resulting in missed production schedules, variations in durability, inconsistent field support and increased operation and support (O&S) costs. The current

The development of the Humvee Armor Survivability Kits provides an excellent example of the collaborative working environment within the S&GS community.

ongoing Totally Integrated Engine Revitalization project, a Lean/Six Sigma Black Belt project, brings together resources from PEO GCS, TARDEC, TACOM’s Integrated Logistics Support Center (ILSC), Acquisition Center, Anniston Army Depot and the contractor (Honeywell). Working together, this collaborative team is well on its way toward consistent delivery of higher quality products with no increased O&S costs, steady supplies of quality parts, increased durability, consistent production schedules and improved support to the field and various vehicle programs.

The S&GS LCMC initiative unites all of the organizations that focus on soldier and ground systems — from

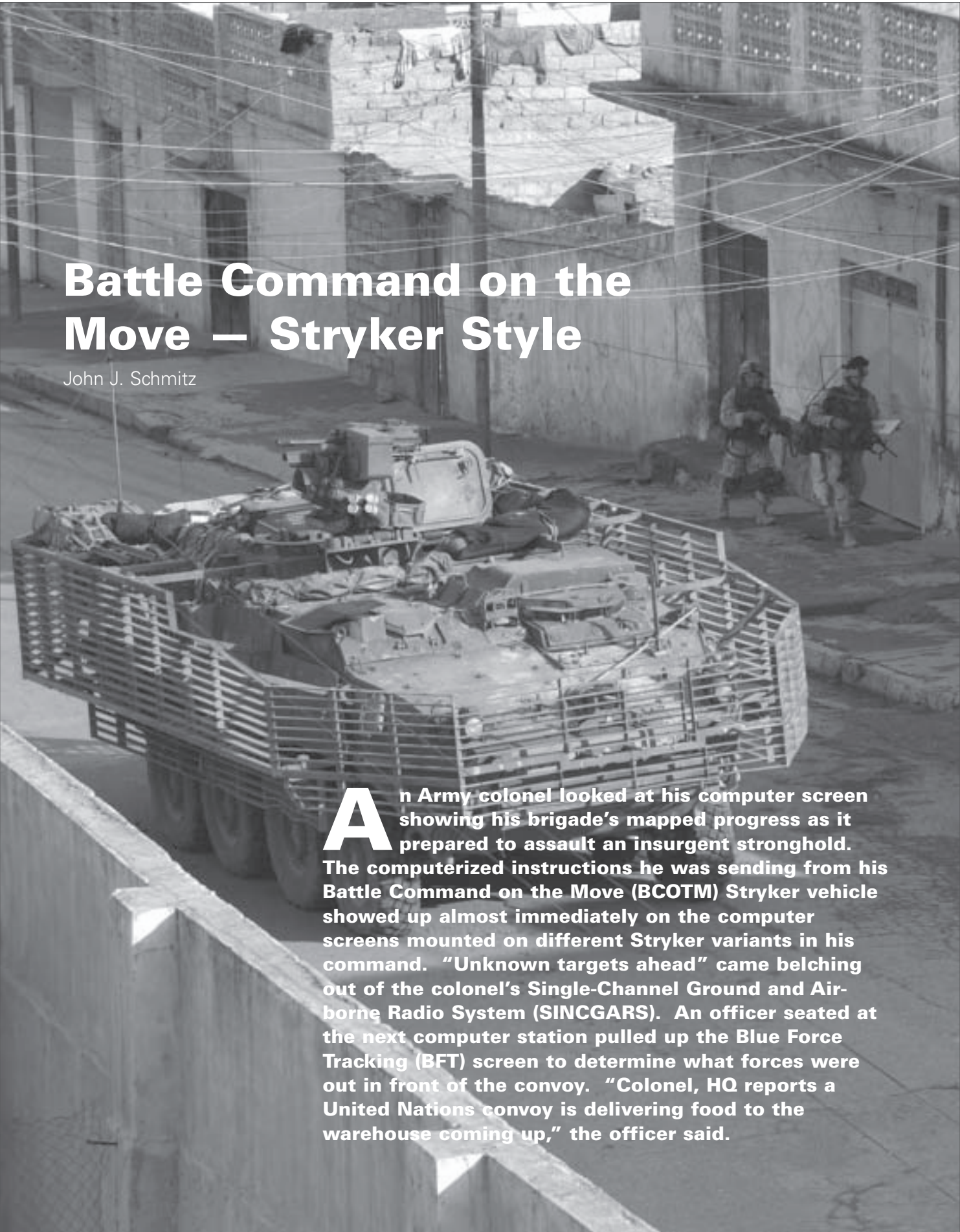
product development to system support. With strong leadership support and an S&GS workforce that’s committed to collaboration, coordination and communication, this effort promises to bear great fruit for our Joint warfighters.

BG WILLIAM M. LENAERS is the Commanding General, TACOM, in Warren, MI. He has a B.S. in chemistry from the University of Santa Clara and an M.S. in oceanography from Oregon State University. His military education includes the Command and General Staff College and the Army War College.

PAUL MOSES is a strategic planning analyst at TACOM. He is a James B. Angell Scholar from the University of Michigan where he earned a B.A. in social studies. He is Level III certified in contracting from the Defense Acquisition University, Fort Belvoir, VA.

Battle Command on the Move – Stryker Style

John J. Schmitz



An Army colonel looked at his computer screen showing his brigade's mapped progress as it prepared to assault an insurgent stronghold. The computerized instructions he was sending from his Battle Command on the Move (BCOTM) Stryker vehicle showed up almost immediately on the computer screens mounted on different Stryker variants in his command. "Unknown targets ahead" came belching out of the colonel's Single-Channel Ground and Airborne Radio System (SINCGARS). An officer seated at the next computer station pulled up the Blue Force Tracking (BFT) screen to determine what forces were out in front of the convoy. "Colonel, HQ reports a United Nations convoy is delivering food to the warehouse coming up," the officer said.

“Roger, order the units to go around,” responded the brigade commander through his intercom. Just down the road, a reconnaissance vehicle watched armed men carrying boxes of explosives, the scouts knew they had the right place and entered a Red icon into their Force XXI Battle Command Brigade and Below (FBCB2) software to show the Strykers in their unit the enemy location. Mortar fire soon rained down on the targeted building and vehicles — the infantry made quick work of the rest. The power of computerized warfare just saved the commander’s unit precious time and saved lives.

While this anecdote is fiction, it is close to becoming reality. A pre-production BCOTM Stryker prototype was fabricated at the U.S. Army Research, Development and Engineering Command’s Tank Automotive Research Development and Engineering Center (TARDEC) in Warren, MI, and was recently displayed at the 2004 Acquisition Senior Leaders’ Conference, Fort Knox, KY, where it received accolades from Army leaders and soldiers alike.

The prototype BCOTM Stryker is a combination of the Program Manager (PM) BCOTM Mission Equipment Package with TARDEC’s fabrication and system integration capabilities, creating a very powerful mobile battle command center. The prototype program was ordered by PM BCOTM, and supported by PM Stryker, to provide an upgraded and Soldier-friendly

mobile command post with the latest radios, computers and network components. TARDEC’s development group was chosen as the lead integrator because of its proven track record of providing rapid design and prototyping support to PM Stryker and other programs. The design and fabrication time from start to finish was a mere 12 weeks.

TARDEC’s development group was chosen as the lead integrator because of its proven track record of providing rapid design and prototyping support to PM Stryker and other programs. The design and fabrication time from start to finish was a mere 12 weeks.

The new BCOTM Stryker is outfitted with the latest technology, including a Mission Equipment Package from PM BCOTM that contains a 4-slice multiprocessor unit, an 8 by 8 keyboard video mouse (KVM) switch, four 18-inch flat-panel monitors, a network switch and router, fiber optic media converters, Inmarsat satellite (sat) phone with voice and digital capabilities and an Iridium sat phone. These systems are integrated with the standard Stryker associated support items of equipment consisting of four SINCGARS very high-frequency radios, a near-term digital radio, an Enhanced Position Location Reporting System, VRC-103 sat communications radio, VRC-104 high-frequency radio, three Precision Lightweight Global Positioning System Receivers and a BFT sat antenna. To support the radio and sat communications gear, 14 antennas are spread out on the roof. This antenna configuration (except for the Inmarsat and Iridium antennas) was successfully tested at Fort Huachuca, AZ.

To display the various software packages, an 18-inch flat-screen monitor is

mounted at each of the Stryker’s four command stations. Three monitors can be adjusted up and down and tilted slightly and one can be swung out of the way to improve access to the roof escape hatch. The monitors are connected to the 8 by 8 KVM switch and they can display any of the various software programs running on the multiprocessor unit. A typical set of software is FBCB2, Maneuver Control System, Advanced Field Artillery Tactical Data System and All Source Analysis System. These programs can be called up from any generic command station.

To give the vehicle’s crew improved situational awareness, another selection on the KVM switch is the quad video display. Consisting of four video inputs including the Remote Weapon Station video, the Driver’s Vision Enhancement video, a rearview camera and a curbside video, camera crews can get a 360-degree view of the outside of the vehicle, allowing them to detect possible close threats or potential obstacles.

Soldiers were impressed to see that TARDEC took their comfort into consideration while designing the Stryker’s interior layout. First, TARDEC engineers changed the Stryker’s existing V4 computer (located on the right side) to upgraded BFT software. For ease of egress, the vehicle’s center isle was left as wide as possible and flanked by four comfortably padded, commercial-off-the-shelf (COTS) bucket seats arranged in a 2 by 2 configuration. Unlike the current Stryker Command Vehicle’s bench configuration, the COTS seats can tilt back and slide fore and aft about 6 inches, are mounted on stainless steel wire shock mounts and are upholstered with fireproof cloth allowing maximum safety and comfort. The



Interior layout of the BCOTM Stryker.
(U.S. Army photo by John J. Schmitz.)

shock mounts provide relief from very rough terrain and they also provide improved protection if the vehicle is hit by a mine or an improvised explosive device.

Another improvement in rider comfort is the addition of heater cores and fans located in the seat bases. The fans can be individually adjusted at each seat and will provide some relief in the summer by blowing air across the legs and feet. A jump seat, known as the "Auto-bahn Seat," was added in the left front hatch to provide a location for a soldier providing security watch while on

Soldiers were impressed to see that TARDEC took their comfort into consideration while designing the Stryker's interior layout.

road marches. The seat is such that it positions the rider at a "nametag defilade" height and it can be quickly folded up to clear the hatch access.

Overall, the vehicle was praised by many high ranking officers and other visitors to the Fort Knox Live-Fire Demonstration. TARDEC is currently discussing a follow-on plan for vehicle testing and other field demonstrations. No matter what the next step for this vehicle is, it is certain that BCOTM vehicles will populate the next generation of military weapons platforms.

JOHN J. SCHMITZ is a Professional Engineer and Team Leader, Electronics/Remote Control Team at the U.S. Army Tank-automotive and Armaments Command. He has a B.S.E.E. from Lawrence Technological University and an M.S.E.E. from National Technological University. Schmitz is an Army Acquisition Corps member who is Level III certified in science and technology.

UNITED STATES ARMY
TARDEC
TANK AUTOMOTIVE RESEARCH, DEVELOPMENT AND ENGINEERING CENTER



An M939 5-ton medium truck sports a prototype armor protection kit for the vehicle's cab. In addition, contoured armor plates were installed under the hood, inside the dashboard, inside the floor of the cab and under the front wheel wells to protect the driver and gunner from small arms fire and explosive fragments from IEDs. (U.S. Army TARDEC photo.)

TARDEC Develops M939/M35 Crew Protection Kit Prototypes for *Operation Iraqi Freedom*

MAJ James A. Riddick

Responding to requirements from U.S. Central Command (CENTCOM) that truck drivers needed better protection against small arms fire and improvised explosive device (IED) fragments, Program Manager Tactical Vehicles (PM TV) COL Robert Groller contacted the U.S. Army Tank Automotive Research, Development and Engineering Center (TARDEC) in March 2004 to find a survivability solution. Soon after, prototype armor kits for the M939 and M35 series vehicles were under development.

Noting TARDEC's quick fielding of the Humvee Armor Survivability Kit (ASK), Groller requested that TARDEC develop prototype kits for testing and evaluation in a mere 90 days to reduce Soldier injuries and deaths in the CENTCOM area of operations. TARDEC was up to the challenge. Under the guidance of Deputy Director LTC Craig Langhauser, a matrix team was quickly organized for the project. To ensure customer requirements were met, PM TV representatives were an integral part of the team.



TARDEC engineers fitted the M939 up-armored cab with a Humvee lightweight gun ring. (U.S. Army TARDEC photo.)

Although PM TV did not authorize funding for the project until April 18, TARDEC's Emerging Technologies Team commenced armor design efforts on March 25. According to TARDEC Lead Project Manager Terry Avery, "This was, and continues to be, an all-out effort that has no margin for error. Every delay or mistake results in potential casualties to our troops. There's no greater motivation than to have the ability to provide equipment that saves lives."

PM TV declared that protection performance parameters must equal those for the Humvee ASK. Because there was a firm requirement for 2,229 M939-series kits but no firm number for the M35 system, priority was placed on developing the M939 prototype kit. At a start-of-work meeting, it was indicated that M939 A1 and A2 vehicles would need to be supported by this new armor protection kit.

M939 base vehicles would require upgrade to the A1 as part of the process, with front winches removed to accommodate the protection kit's anticipated weight. Information provided by PM TV indicated that there were

9 versions of the A1, A2 and M939 base vehicles with 27 possible variations. The kit would need to fit 18 of these variations. Field estimates indicated that approximately 40 percent of the vehicles in use in Southwest Asia were the M939 base variants and would need their winches removed.

TARDEC engineers first looked at an existing solution. In the early 1990s, 165 armor kits were developed for the M939 during operations in Bosnia, and they still existed in Army warehouses. This "Bosnia" crew protection kit would first need to be upgraded to provide enhanced side protection. By May 21, 2004, the TARDEC team had modified, fabricated, assembled and shipped two prototype kits to be tested at Aberdeen Test Center (ATC), which would determine the performance of these kits against *Operation Iraqi Freedom (OIF)* threats.

Unfortunately, the Bosnia kits did not meet the full *OIF* requirements. Testing was delayed while a new kit design and prototype was completed.

In addition to meeting threats, CENTCOM identified these operational requirements:

- Movable side windows for ventilation and firing of all infantry weapons.
- A gun ring that would permit mounting and firing of the M2 and M60 machine guns, M249 Squad Automatic Weapon and MK19 Grenade Machine Gun.
- A weapons platform.
- Digital rack.
- A cab air-conditioning (A/C) unit.

This was, and continues to be, an all-out effort that has no margin for error. Every delay or mistake results in potential casualties to our troops. There's no greater motivation than to have the ability to provide equipment that saves lives.

There was great concern that the new requirements' additional weight would decrease the level of threat protection because the increased weight would need to be partially borne by the noncab vehicle structure. Additionally, movable windows would be a design challenge because the armored windows' estimated weight would be more than 100 pounds.

In an effort to optimize the material and reduce unnecessary weight, numerous armor material combinations were considered for various cab areas. Readily available armor materials and windshield transparency materials were given highest priority because this approach would lead to lowest schedule and cost risk over the project's life cycle.

To meet the most important requirement — crew protection — TARDEC engineers developed and manufactured a new cab that consisted of armored cab walls and doors, which included the applied armored glass, powered actuators to assist in moving the heavy doors and a powered protected door assembly that can move the side transparencies up and down for ventilation and firing purposes. To be able to mount the required weapon platforms, engineers fitted the armored cab's roof with the Humvee lightweight gun ring. To add a bit of comfort and to make room for the A/C and gunner platform, two new air ride seats were installed. The kit fits the M939 basic, A1 and A2 series vehicles.



Bench seats were removed and new air ride bucket seats were installed to accommodate the gunner platform and A/C unit. In addition, power actuators were installed to assist in moving the heavy doors along with a powered assembly that moves the side transparencies up and down. (U.S. Army TARDEC photo.)

For even more protection, TARDEC technicians added contoured armor plates under the M939 hood and inside the dashboard to reduce the threat of small arms fire through the hood region. Armor plate was also mounted inside the floor of the cab as well as under the front wheel wells to reduce the threat of fragments from IEDs.

To meet the A/C requirement, TARDEC collaborated with the Red Dot Corp. of Seattle, WA, to modify an existing Humvee A/C kit to fit into the M939 — commonality between vehicle systems would simplify parts supply and repair procedures. The cab's interior was redesigned to accommodate the A/C system. To make room for the evaporator cooler fan console, the bench seat and battery box were removed and relocated. The console was then mounted between the two new bucket seats; a new gunner's platform

was mounted on the console's top. Within 2 weeks of inception, a functional A/C system was installed.

To meet the most important requirement — crew protection — TARDEC engineers developed and manufactured a new cab that consisted of armored cab walls and doors ...

Armor kit assembly and installation and A/C was completed by June 21. The next day, the first two kits were sent to ATC for automotive and safety testing, with one kit to become the “ballistic turret and hull” for live-fire testing against the standardized *OIF* threats.

This intense effort is indicative of what TARDEC engineers can accomplish to provide rapid support to combatant commanders and their Soldiers in the field. This kit provides the highest level of protection of any of the tactical vehicle armor kits that have been tested thus far. It's been gratifying to receive positive feedback from the troops using U.S. Army Research Laboratory/TARDEC/ Ground Systems

Industrial Enterprise-produced equipment. Our goal is to continue to provide our Soldiers with improved lethality, survivability and sustainability.

MAJ JAMES A. RIDDICK is the Armor Equipment Integration Officer for TARDEC. He has previously served as the assistant product manager for recovery at Program Executive Office for Combat Support and Combat Service Support and as the operational test officer for U.S. Army Operational Test Command.

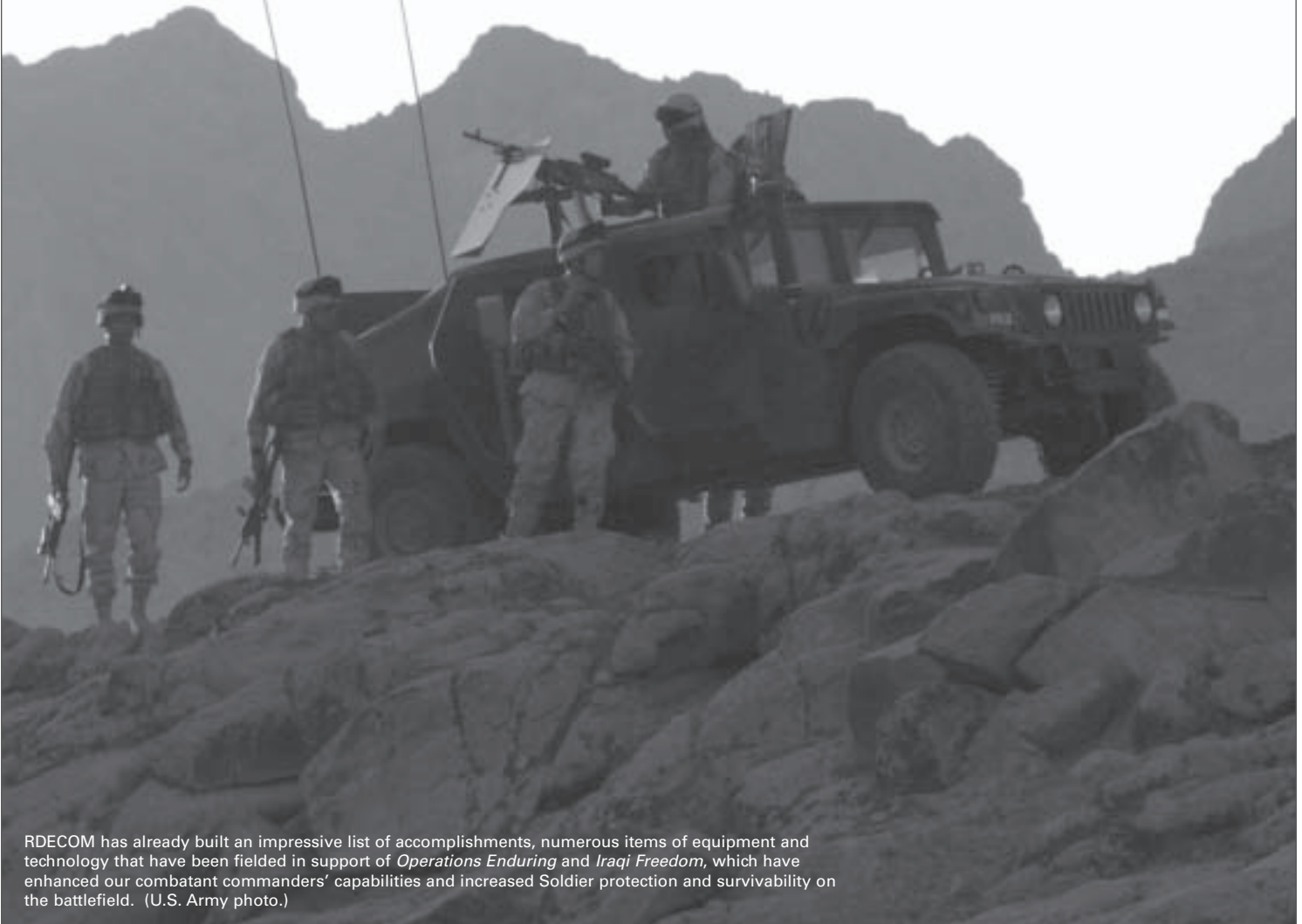


RDECOM –The Life Cycle Management Command’s Strategic Partner

BG Roger A. Nadeau

The Army Materiel Command’s (AMC’s) Life-Cycle Management (LCM) initiative aligns the U.S. Army Research, Development and Engineering Command (RDECOM) as the operational research and sustainment-engineering arm for the Life Cycle Management Commands (LCMCs). This creates a synergy that allows RDECOM to better prioritize technology development based on current and future warfighter needs.

By restructuring organizational relationships, the LCM initiative will better facilitate the maturation and transition of technologies to the program management offices (PMOs) and program executive offices (PEOs). Through the LCM initiative and formation of RDECOM, each LCMC will have access to the combined synergistic value of RDECOM at its disposal.



RDECOM has already built an impressive list of accomplishments, numerous items of equipment and technology that have been fielded in support of *Operations Enduring* and *Iraqi Freedom*, which have enhanced our combatant commanders’ capabilities and increased Soldier protection and survivability on the battlefield. (U.S. Army photo.)

RDECOM is bringing together talent from the Army, other military services, international partners, industry and academia and creating a center of gravity for getting the right technology into the hands of warfighters more quickly.

In the past, major subordinate commands, including the U.S. Army Tank-automotive and Armaments Command, Communications-Electronics Command and Aviation and Missile Command, were generally constrained by their own, individual stovepiped research and development (R&D) and engineering centers. Now, RDECOM can properly focus all Army R&D facilities to assist each LCMC as necessary, no longer limiting their R&D needs to a single center.

Since it was established as a provisional command in October 2002, RDECOM has moved independent organizations into an integrated command of interdependent organizations.

Since it was established as a provisional command in October 2002, RDECOM has moved independent organizations into an integrated command of interdependent organizations. Unlike the past, RDECOM continuously promotes and facilitates coordination and cooperation between a myriad of R&D assets to stay ahead of ever-changing technological advances, thus enhancing the LCMC concept.

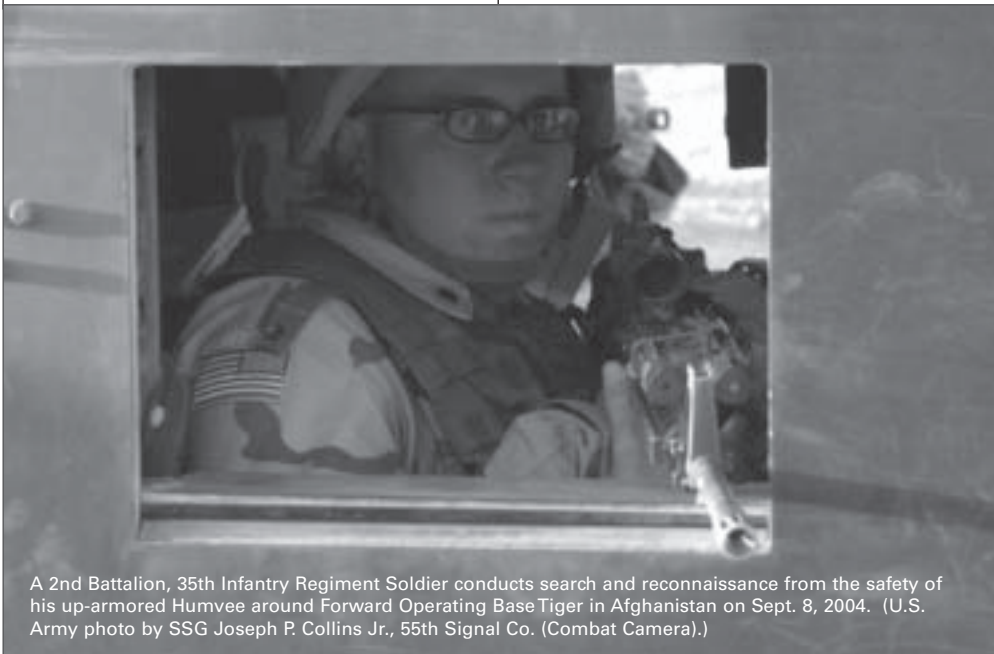
RDECOM is focused on expanding the working relationships between Army elements, industry, academia, other military services, other government agencies and international partners to improve communication, coordination and integration of all available R&D and engineering data. The command established Memorandums of Understanding with the U.S. Army Training and Doctrine Command (TRADOC) and the U.S. Army Test and Evaluation

Command (ATEC) to increase coordination between these commands and the Army's science and technology (S&T) community. The relationship with TRADOC includes the full integration of doctrine, training, leadership, organization and warfighter considerations into the technology development and transition process. This will eliminate the current process that calls for requirements determination, system development and testing to happen sequentially. TRADOC schools will be afforded an opportunity, very early on, to be exposed to emerging technologies and better understand their potential, which will facilitate their decision process, from both a combat development perspective and requirements perspective.

Similarly, the relationship with ATEC will encourage comprehensive testing considerations to be integrated into the design of technology and technology programs to facilitate the rapid, effective

development and transition of technology to resolve critical warfighter requirements. RDECOM is also working to provide better tools and processes that shorten the decision cycle while maintaining the quality of decision making by the S&T community, thus preserving the quality and enhancing the timeliness of RDECOM's S&T products, R&D and engineering services. Modeling and Simulation and the Science and Technology Enterprise Management are two of these tools that will enhance collaborative efforts and improve communication internal and external to RDECOM.

The ability to efficiently and effectively pull together the expertise of all R&D and engineering centers to roadmap what the Army must do — today and in the future — will be RDECOM's trademark. Although a relatively new organization, RDECOM has already built an impressive list of accomplishments, numerous items of equipment and technology that have been fielded in support of *Operations Enduring* and *Iraqi Freedom*, which have enhanced our combatant commanders' capabilities and increased Soldier protection and survivability on the battlefield.



A 2nd Battalion, 35th Infantry Regiment Soldier conducts search and reconnaissance from the safety of his up-armored Humvee around Forward Operating Base Tiger in Afghanistan on Sept. 8, 2004. (U.S. Army photo by SSG Joseph P. Collins Jr., 55th Signal Co. (Combat Camera).)

RDECOM is continuing to develop comprehensive support plans for each LCMC. The support will be enhanced through the implementation plans being developed by each LCMC. RDECOM will ensure the early and continuous integration of technology into a product's life cycle by fully exploiting its technology expertise, analytical capabilities and unparalleled collaboration with academia and national and international industry to provide cutting-edge technology for our Armed Forces. As the Army continues to transform, it must constantly procure and apply technological solutions from across the world to a wide spectrum of threats quickly. RDECOM is focused on giving the Army and Nation that capability.

RDECOM's activities will encompass a wide array of support to the LCMCs including technology development, S&T support, sustainment engineering, systems engineering, industrial base planning and independent analysis.

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strategic and operational partner for the new LCMCs.



RDECOM is creating a center of gravity for getting the right technology into the hands of warfighters quickly. (U.S. Navy photo by PH2 (NAC) David Mercil, Flight Combat Camera Group Pacific Command, Camp Pendleton, CA.)

RDECOM will continue to grow as the best R&D and engineering support source to its integrated customer base while streamlining the transition of technologies to PMOs and PEOs. RDECOM is the

Together, RDECOM and the LCMCs will continue to enhance the entire process supporting our Soldiers on today's battlefields, while also developing the technology to support future full-spectrum battlefield dominance.

BG ROGER A. NADEAU is the Commanding General, RDECOM, Fort Belvoir, VA. He has a B.S. in laboratory animal science from the University of Rhode Island, an M.S. in business administration from the Florida Institute of Technology and an M.S. in natural resource and strategy from the National Defense University. His military education includes the U.S. Army Command and General Staff College and the Industrial College of the Armed Forces.



The U.S. Army Chemical Materials Agency and Pine Bluff Arsenal Support the Life-Cycle Management Initiative

Roger Johnson and Nick Levett

Good products delivered to Soldiers on time at the lowest cost has always been the Pine Bluff Arsenal's (PBA's) goal. PBA was established in November 1941 with the World War II mission of manufacturing incendiary grenades and bombs. However, the mission quickly expanded to the manufacture, loading and storage of war gases and production and storage of pyrotechnic, riot control and white phosphorus munitions. Between 1953 and 1969, PBA was the only U.S. site for the full-scale production of biological munitions. In the 1980s, PBA served as the primary site for the "Rock-Ready" chemical equipment recertification program. PBA products and services were heavily used during World War II, the Korean War, Vietnam and *Operation Desert Storm*.

PBA develops, produces and stores the M83TA practice grenade. The M83TA is used to train Soldiers how to operate in smoke- or dust-filled environments like the one depicted in this photo. Here, a CH-47 Chinook helicopter approaches the landing zone to extract security forces from outside the village of Jegdalek, Afghanistan, Sept. 6, 2004. (U.S. Army photo by SGT Michael Abney, 55th Signal Co. (Combat Camera).)

PBA's mission has evolved over time with an organizational structure reflecting two mission organizations — ammunition manufacturing and depot operations. Even though the depot operations organization underwent several name changes, it remained multifunctional and PBA operated without an organization

arsenal's mission base — soldier system support (SSS). This was strategically significant for PBA because the SSS market involves everything a soldier eats, wears or carries. This corporate realignment, along with an increased emphasis on infrastructure investments, led to rapid mission expansion in the early 2000s.

SBCCOM's Materiel Readiness Center (MRC) vision was for PBA to become DOD's center for chemical and biological technology, products and services. In working toward that vision, PBA incorporated the MRC concept into ongoing strategic planning efforts. This concept expanded the chemical, biological, ammunition and SSS missions to offset the completion of chemical demilitarization missions.

With the recent transition of SBCCOM into the Research, Development and Engineering Command, PBA has been reassigned to the Chemical Materials Agency (CMA) under the Army Materiel Command. In addition to PBA, CMA includes the former Program Manager for Chemical Demilitarization and the chemical stockpile storage mission formally under SBCCOM. In addition to mission realignment, PBA base-operation functions have been realigned with the Installation Management Agency.

CMA

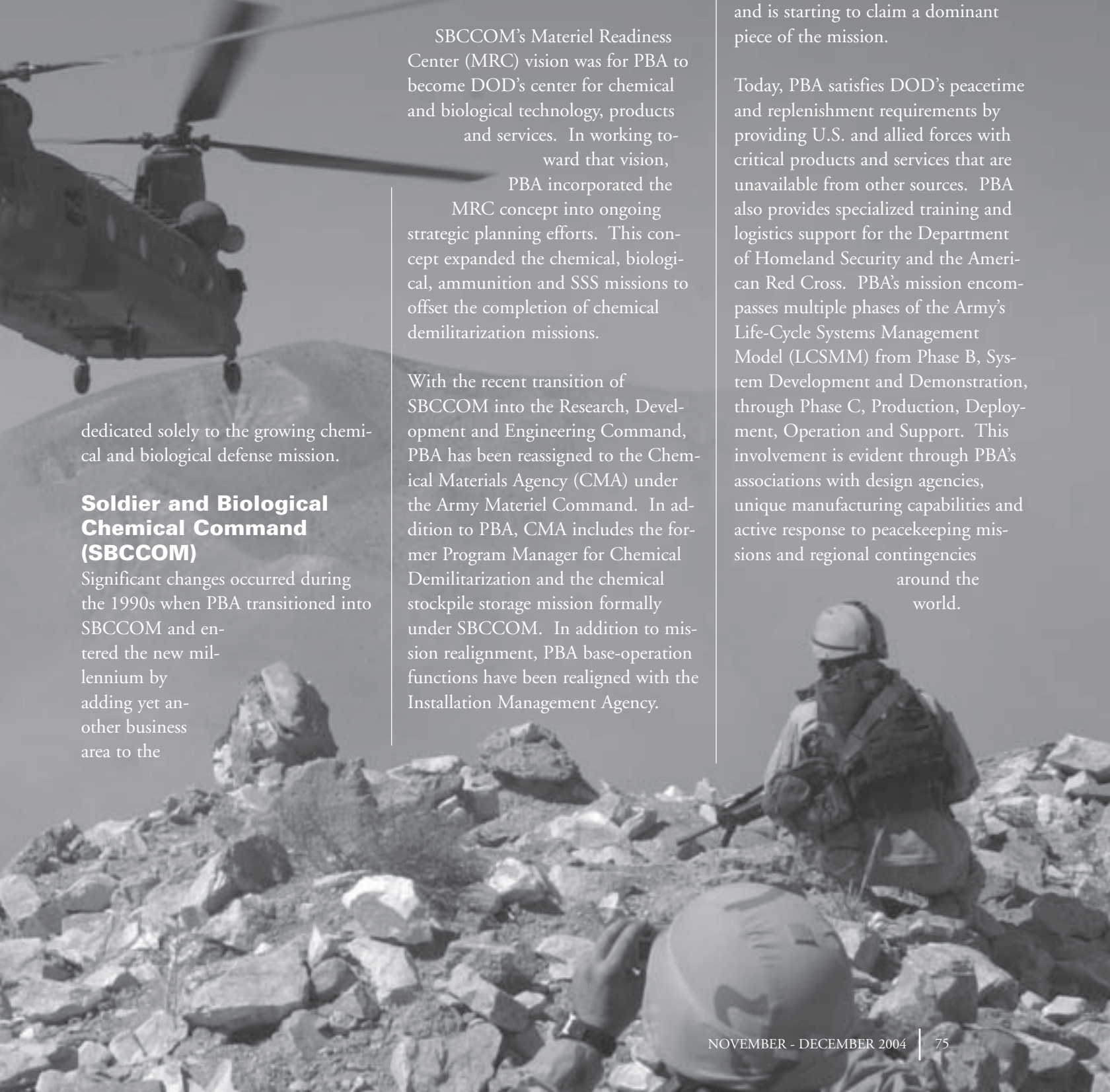
CMA's mission is to both enhance national security by eliminating chemical materiel stored at several sites around the United States and to fulfill national defense needs by providing specialized products and capabilities for our warfighters and homeland defenders. The SSS workload is increasing and is starting to claim a dominant piece of the mission.

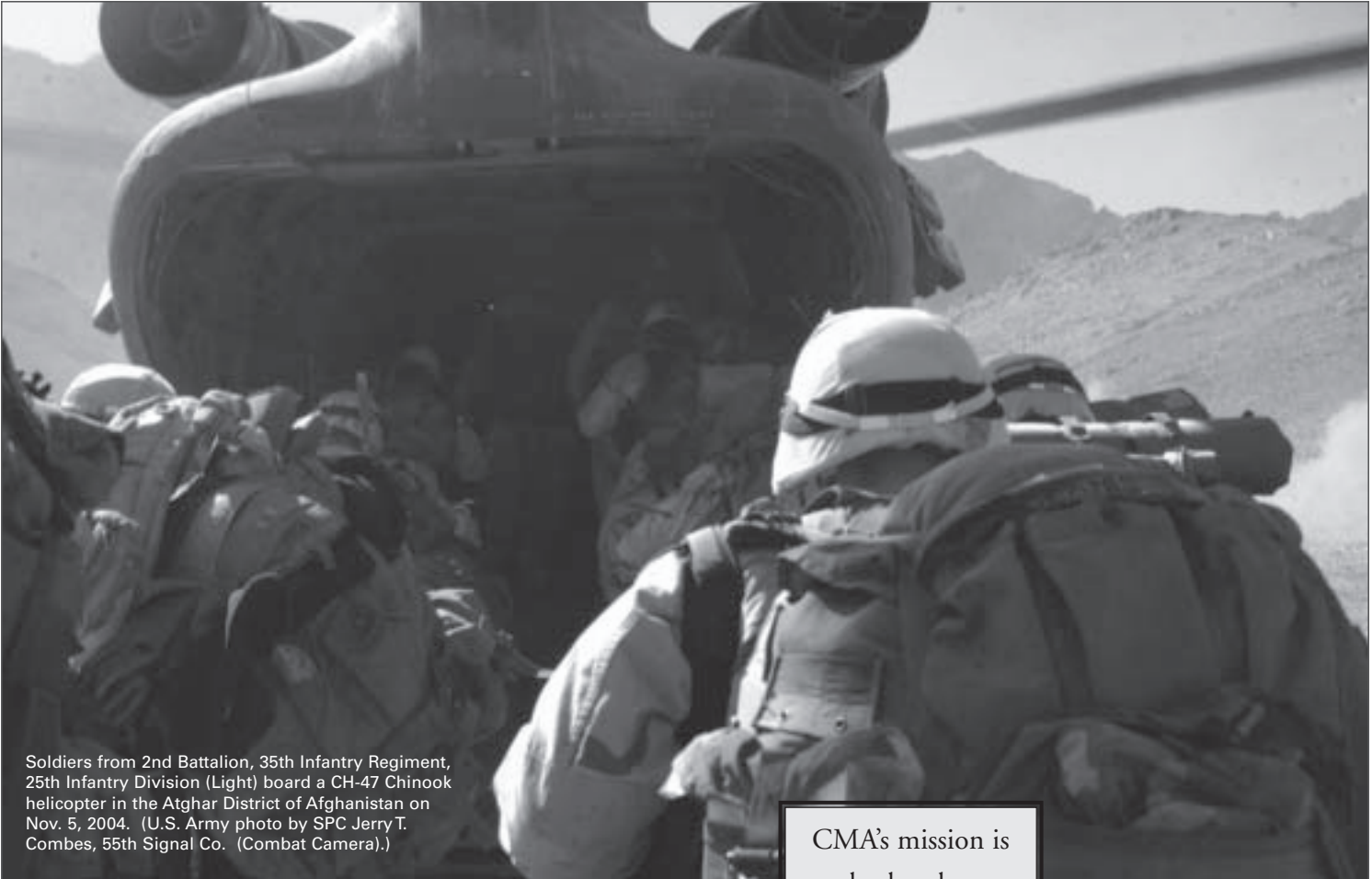
Today, PBA satisfies DOD's peacetime and replenishment requirements by providing U.S. and allied forces with critical products and services that are unavailable from other sources. PBA also provides specialized training and logistics support for the Department of Homeland Security and the American Red Cross. PBA's mission encompasses multiple phases of the Army's Life-Cycle Systems Management Model (LCSMM) from Phase B, System Development and Demonstration, through Phase C, Production, Deployment, Operation and Support. This involvement is evident through PBA's associations with design agencies, unique manufacturing capabilities and active response to peacekeeping missions and regional contingencies around the world.

dedicated solely to the growing chemical and biological defense mission.

Soldier and Biological Chemical Command (SBCCOM)

Significant changes occurred during the 1990s when PBA transitioned into SBCCOM and entered the new millennium by adding yet another business area to the





Soldiers from 2nd Battalion, 35th Infantry Regiment, 25th Infantry Division (Light) board a CH-47 Chinook helicopter in the Atghar District of Afghanistan on Nov. 5, 2004. (U.S. Army photo by SPC Jerry T. Combes, 55th Signal Co. (Combat Camera).)

One product that was developed, produced and stored at PBA, exemplifying multiple phases of the Army's LCSMM, is the M83TA practice grenade, which is used to train soldiers to operate in smoke-filled environments. Beginning in the early 1990s, PBA's Engineering and Technology Directorate developed this grenade for the U.S. Army Chemical School. After the development process was complete, and once the grenade had passed through the stringent testing process, PBA's Ammunition Operation Directorate was chosen to manufacture this munition. PBA's Material Management Division also has the

capability to safely store the M83TA grenade until one of PBA's key customers requires additional supplies.

PBA's mission has evolved over time with an organizational structure reflecting two mission organizations — ammunition manufacturing and depot operations.

PBA's current mission includes development support, development, manufacturing, maintenance and storage of conventional ammunition and chemical and biological defense items; logistical and maintenance support for mobile and

CMA's mission is to both enhance national security by eliminating chemical materiel stored at several sites around the United States and to fulfill national defense needs by providing specialized products and capabilities for our warfighters and homeland defenders.

powered systems; and logistical and training support for homeland defense. PBA also supports the storage and destruction of the Nation's second largest chemical weapons stockpile and provides base operations support to numerous tenant activities.

PBA operates under the Army Working Capital Fund (AWCF), a revolving fund that receives revenue from customer orders and pays expenses from the AWCF appropriation. An AWCF facil-

ity operates in a business-like environment and maintains financial statements, balance sheets and income

PBA's current mission includes developing, manufacturing, maintaining and storing conventional ammunition and chemical and biological defense items; and logistics and training support for homeland defense. Here, Soldiers practice donning Mission Oriented Protective Posture gear during a training exercise at Camp Arifjan, Kuwait, during *Operation Iraqi Freedom*. (U.S. Army photo by SSG Olga Steiert, 55th Signal Co. (Combat Camera).)



statements that are used as measurement tools to monitor the business entity's fiscal health.

PBA continues to respond quickly and efficiently to the Army's changing needs as the Nation's only active chemical and biological defense arsenal. PBA's unique evolution has been a migration from a large-scale producer of offensive weapons to the flexible manufacturing of chemical and biological defense and ammunition commodities.

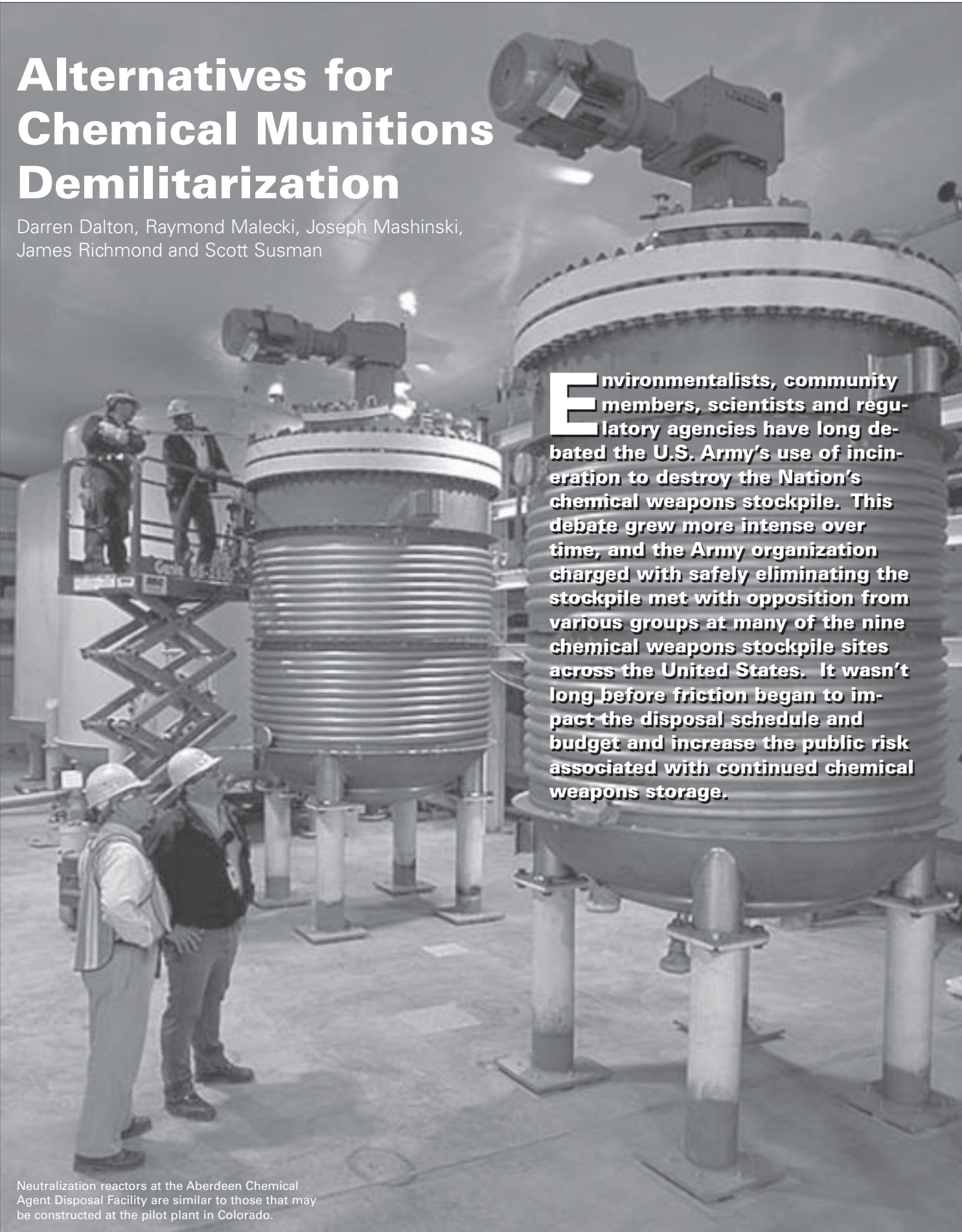
ROGER JOHNSON is the Chief of Strategic Planning and the Technical Operations branch at PBA. He holds a B.S. in electrical engineering from the University of Arkansas. He is also a registered Professional Engineer with the State of Arkansas and a graduate of the Army Management Staff College's Sustaining Base Leadership for Managers course.

NICK LEVETT is the Advocate for PBA at CMA. He holds a B.S. in industrial engineering from the State University of New York-Brockport and an M.S. in industrial engineering from the University of Buffalo. Levett is an Army Acquisition Corps member who is Level III certified in systems planning, research, development and engineering.



Alternatives for Chemical Munitions Demilitarization

Darren Dalton, Raymond Malecki, Joseph Mashinski, James Richmond and Scott Susman



Environmentalists, community members, scientists and regulatory agencies have long debated the U.S. Army's use of incineration to destroy the Nation's chemical weapons stockpile. This debate grew more intense over time, and the Army organization charged with safely eliminating the stockpile met with opposition from various groups at many of the nine chemical weapons stockpile sites across the United States. It wasn't long before friction began to impact the disposal schedule and budget and increase the public risk associated with continued chemical weapons storage.

Neutralization reactors at the Aberdeen Chemical Agent Disposal Facility are similar to those that may be constructed at the pilot plant in Colorado.

In 1996, Congress responded to the controversy by passing *Public Law 104-208*, leading to the creation of the Program Manager Assembled Chemical Weapons Assessment (PM ACWA). Through this legislation, PM ACWA was authorized to identify alternatives to incineration for the destruction of “assembled” chemical weapons — munitions configured with fuzes, explosives, chemical agents and packaging materials — at the Blue Grass Army Depot in Kentucky and the Pueblo Chemical Depot in Colorado. Specifically, *Public Law 104-208* required PM ACWA to develop a process for evaluating, selecting and demonstrating these technologies while incorporating significant and diverse public participation.

Led by PM Michael A. Parker, ACWA personnel realized early on that an ambitious public participation program is as critical to disposal mission success as its technical program. This article outlines the steps PM ACWA took to identify innovative alternatives to incineration and the unique approach the organization took to effectively involve concerned community members and elected officials throughout the technology selection process.

Soliciting Public Support

To facilitate the process of working with various stakeholders, program personnel enlisted support from Keystone Center, a nonprofit public policy organization located in Keystone, CO, specializing in mediation to have various stakeholders meet for a Dialogue on ACWA. Keystone Center identified key DOD, state and federal

regulators and national activist group stakeholders and a diversity of citizen interests from each stockpile site. The stakeholders participating in the Dialogue worked side-by-side with the

Public Law 104-208 required PM ACWA to develop a process for evaluating, selecting and demonstrating these technologies while incorporating significant and diverse public participation.

PM ACWA staff through the original technology identification process and continued with testing, evaluating and reporting of the technologies being demonstrated. This cooperative effort culminated with the selection of two alternative technologies for implementation at chemical demilitarization (chem demil) sites in Colorado and Kentucky.

Dialogue meetings were open to the public, and attendees had the opportunity to provide comments. Meetings were held at or near stockpile sites to encourage local residents to attend, or, in Washington, DC, to facilitate DOD and congressional participation.

One key mechanism that helped PM ACWA conduct a successful program was a combination of four Dialogue members and a support contractor forming a Citizens’ Advisory Technical Team (CATT). The CATT became integral to the process by providing an independent program review for the Dialogue. CATT members signed

confidentiality agreements, allowing them to serve as the Dialogue’s “watchdog” at many PM ACWA internal meetings, including those dealing with sensitive information. By participating in meetings normally open only to PM ACWA staff, the CATT provided Dialogue members with assurances that the technical program was being executed per the commitments PM ACWA had made to the Dialogue. The CATT also provided a mechanism for stakeholder input into the program’s technology selection and evaluation process. Thus, the CATT ensured maximum communication between PM ACWA and stakeholders while respecting the government’s legal and ethical responsibility to protect proprietary and trade secret information contained in proposals and other documents submitted by technology providers.

Requesting and Selecting Technologies for Demonstration

With the Dialogue and public participation program in place, PM ACWA focused on developing criteria to solicit and select technologies for assessment, evaluating technologies for demonstration and conducting technology demonstrations.

PM ACWA compiled criteria necessary to solicit and select proposed technologies in less than 3 months by using input gathered at public meetings and



Transportable Propellant Conversion Unit (U.S. Army photo.)

leveraging existing expertise. In October 1997, PM ACWA awarded contracts to seven companies offering potential disposal technology alternatives. Paring down the applicant number to six technology providers, PM ACWA awarded a second round of contracts enabling each finalist to submit technology demonstration work plans.

Ensuing demonstrations tested technology-critical unit operations. In addition, test plans focused on methods to validate technology process performance, characterize process intermediates and final effluents and establish confidence that these could be incorporated into a "total system solution."

To ensure critical stakeholders supported the testing methodology phase, program staff included test installation representatives, support contractors, CATT members and the technology providers.

Together with the Dialogue, PM ACWA submitted two supplemental reports to Congress announcing validation of four alternative chem demil technologies:

- Neutralization followed by biotreatment.
- Neutralization followed by supercritical water oxidation (SCWO).
- Electrochemical oxidation with silver and nitric acid.
- Neutralization followed by transpiring wall SCWO and gas phase chemical reduction.

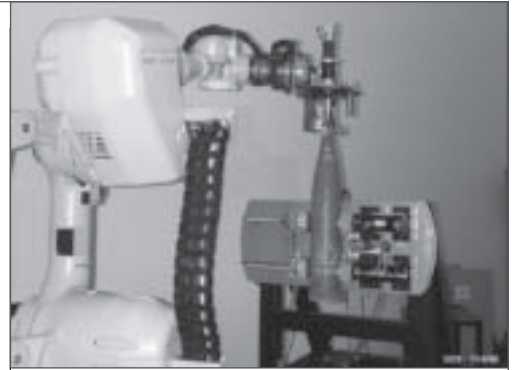
CATT ensured maximum communication between PM ACWA and stakeholders while respecting the government's legal and ethical responsibility to protect proprietary and trade secret information contained in proposals and other documents submitted by technology providers.

Once it became clear that alternative technologies could be demonstrated successfully, Congress directed PM ACWA, through supplemental legislation, to carry out activities necessary to ensure that an alternative technology for lethal chemical munition destruction could be implemented. As a result, PM ACWA expanded its focus and established program requirements; prepared procurement and environmental documentation; awarded a contract for the design, construction, testing, operation and closure of a pilot facility for the technology; and initiated a series of engineering design studies for the four validated technologies.

Identifying a Technology

Following extensive review of presentations, reports, independent studies and community input, DOD selected neutralization followed by biotreatment as the preferred chemical weapons destruction alternative for the Pueblo chemical weapons stockpile. In September 2002, a systems contract was awarded to Bechtel National Inc. to design, construct, pilot test, operate and close the Pueblo Chemical Agent-Destruction Pilot Plant using neutralization followed by biotreatment technology.

Five months following the Pueblo contract award, DOD selected neutralization followed by SCWO as the official disposal technology for the Blue Grass chemical weapons stockpile. Four months thereafter, in June 2003, a



Robotic Disassembly (U.S. Army photo.)

contract was awarded to joint venture Bechtel Parsons Blue Grass to design, construct, pilot test, operate and close the Blue Grass Chemical Agent-Destruction Pilot Plant.

PM ACWA will continue to oversee the safe destruction of the Colorado and Kentucky chemical weapons stockpiles using neutralization followed by biotreatment and neutralization followed by SCWO, respectively. The neutralization followed by biotreatment involves the following processes:

- **Removing the Energetics.**

Technicians manipulating robotic equipment will remove the weapon's energetic components, including the fuzes and bursters. Removing these parts first makes the remaining processes safer.

- **Removing the Mustard Agent.**

Highly trained workers manipulating robotic equipment will mechanically access munition bodies and wash out present agent with pressurized water.

- **Neutralization.** After energetics and chemical agent have been separated from their metal parts, they will be treated in separate tanks with a caustic solution and water. The by-products from this process are called hydrolysates.

- **Biotreatment.** Workers will channel the hydrolysate through large tanks containing microbes that digest and

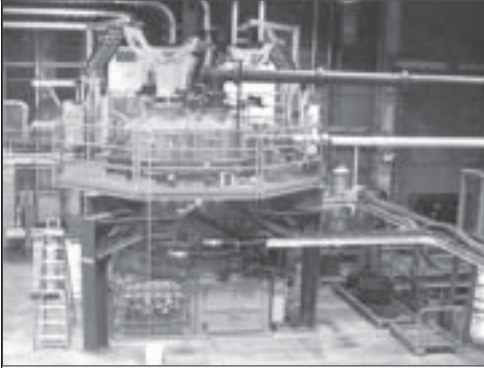
further break down the solution. Water released from the process will be recycled, leaving various salts and biosludge. Biosludge, made up of microbe waste products and other bacterial matter, will be filtered to remove water and shipped off-site to a permitted treatment, storage and disposal facility.

- **Disposing of Metal Parts.**

Although metal parts were cleansed of energetics and chemical agent at the beginning of this process, they may still contain energetics and agent and will need to be decontaminated to a higher level. This level is called "5X," a military decontamination standard that ensures the metal is clean and can be disposed of safely. To reach this decontamination level, the metal parts will be heated to 1,000 degrees Fahrenheit for a minimum of 15 minutes. The metal parts can then be recycled.

The neutralization followed by SCWO process involves the following steps:

- **Neutralization.** Munitions are disassembled by modified reverse assembly. Agent and energetics are separated. Agent and energetics are chemically decomposed and neutralized by caustic or water hydrolysis. The resulting chemical compounds are known as hydrolysates.
- **SCWO.** The agent and energetic hydrolysates are destroyed using SCWO units. SCWO subjects the hydrolysate to very high temperatures and pressures, breaking them down into carbon dioxide, water and salts.
- **Disposing of Metal Parts.** Metal parts are thermally decontaminated by heating to 1,000 degrees Fahrenheit for a minimum of 15 minutes.
- **Disposing of Solids.** Solid effluents are recycled or tested prior to disposal in permitted landfills. Gas



Stationary plasma furnace (U.S. Army photo.)

effluents are recycled or filtered before being released into the atmosphere.

The Future

PM ACWA met its initial mandate from Congress by demonstrating six technologies in fewer than 5 years. Looking toward the future, PM ACWA is implementing full-scale pilot testing of alternative disposal technologies and, in June 2003, changed its name to PM Assembled Chemical Weapons Alternatives (ACWA) to better reflect this evolving mission. Despite shifting responsibilities, the program remains committed to active and open public participation.

PM ACWA regards public participation as pivotal to its past and future successes. "We accomplished our mission through partnership with the government, the military and the public," said Parker. "I think that speaks volumes, not only for our approach, but also for the future."

DARREN DALTON is the Blue Grass Engineering Lead for the Assembled Chemical Weapons Alternatives program. He supports the chemical destruction project in Kentucky and is assigned to Aberdeen Proving Ground (APG), MD. He has a B.S. in mechanical engineering from the University of Delaware and an M.S. in

technology management from the University of Maryland.

RAYMOND MALECKI is a Project Engineer with the ACWA program and monitors the Technical Risk Reduction and Testing programs. He is Level III certified in systems, planning, research, development and engineering. He has a B.S. in mechanical engineering from the University of Pittsburgh and an M.S. in biotechnology from Johns Hopkins University.

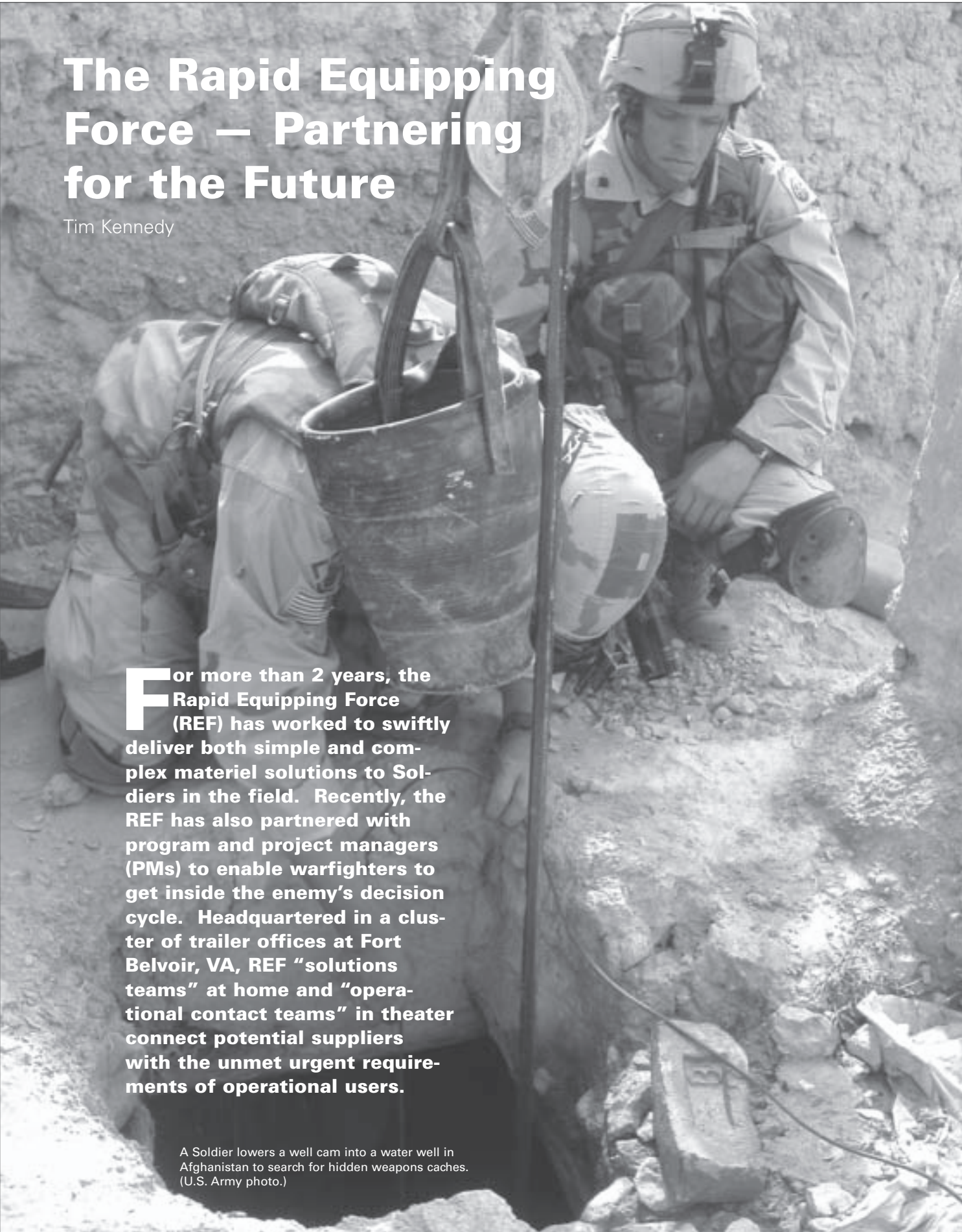
JOSEPH MASHINSKI is the Pueblo Chemical Agent-Destruction Pilot Plant Project Engineer and provides technical and administrative support to the chemical weapons project in Colorado. He has a B.S. in mechanical engineering from the University of Maryland. His background includes equipment acquisition, operations, chem demil facility design support and new equipment development and testing for the chemical weapons destruction program.

JAMES RICHMOND is the Blue Grass Lead for the ACWA program. He coordinates all activities and organizations regarding the destruction of chemical weapons at the Blue Grass Army Depot. He holds a B.A. in chemistry from the State University of New York-Geneseo and has 30 years of research, development and engineering of chemical defense systems experience at APG.

SCOTT SUSMAN is the Pueblo Lead for the ACWA Program. He is the technical team leader supporting the Pueblo Chemical Agent-Destruction Pilot Plant site office. He holds a B.S. in mechanical engineering from the University of Maryland and has a background in energetic materials.

The Rapid Equipping Force — Partnering for the Future

Tim Kennedy



For more than 2 years, the Rapid Equipping Force (REF) has worked to swiftly deliver both simple and complex materiel solutions to Soldiers in the field. Recently, the REF has also partnered with program and project managers (PMs) to enable warfighters to get inside the enemy's decision cycle. Headquartered in a cluster of trailer offices at Fort Belvoir, VA, REF "solutions teams" at home and "operational contact teams" in theater connect potential suppliers with the unmet urgent requirements of operational users.

A Soldier lowers a well cam into a water well in Afghanistan to search for hidden weapons caches. (U.S. Army photo.)

The REF teams operating in Afghanistan and working within each Army division in Iraq work directly with deployed units.

While they have many duties, the teams all seek answers to two simple questions: what immediate operational requirements are unmet and, if a materiel solution is provided, sometimes in a matter of days for field-engineered solutions, how can this solution be improved?

Conceived in June 2002 by then U.S. Army Vice Chief of Staff GEN John M. Keane as an experiment, the REF now operates both at Fort Belvoir and overseas with an 88-person staff. Approximately half of the staff members are 179-day augmentees. The REF serves as more than an alternative program management organization. It serves as an “acquisition catalyst” and Army change agent. Typically, REF “leverages” solutions already available in the Army and the private sector to meet the emerging requirements of operational commanders.

“I like to think of it as the REF helping PM shops, laboratories, national labs and the defense industry identify products currently under development or already on the shelf that can be used by soldiers in the field to satisfy their immediate operational needs,” says REF Commander COL Gregory Tubbs.

The REF operational contact teams in theater work closely with field commanders on the requirements definition process that results in a materiel solution — often, this is the purchase of needed equipment. In some cases

the REF has field-engineered solutions with materials immediately available in theater. These operational contact

teams work closely with field commanders to identify requirements and provide materiel solutions. They frequently accompany units on combat missions both to understand requirements and to ensure that the newly provided technology functions properly.

“Our presence in theater and with the Soldier on the ground enables us to provide unique insight to the acquisition side of the house,” Tubbs remarked. “We can validate a need on the ground, and with our CONUS presence, quickly determine whether a potential solution is already under development in the PM community. We become the eyes and ears for the acquisition community.”

REF “leverages” solutions already available in the Army and the private sector to meet the emerging requirements of operational commanders.

If REF support is appropriate for a commander’s requirement, the organization goes to work finding candidate solutions and offering them to the commander for consideration. However, the REF does not necessarily attempt to fulfill 100 percent of the commander’s need. “We know time is of the essence for Soldiers in theater. For them, ‘close enough’ is good enough. This to me is what the term ‘spiral development’ is all about,” Tubbs explained.

The REF’s reliance on a rapid, stripped-down spiral development process is ideally suited to the low-intensity combat missions that U.S. forces will likely encounter in the 21st century. “Speed is of the essence when you are confronting an enemy who adjusts his tactics to your responses,” Tubbs continued. “If we are going to get inside the enemy’s decision cycle and stay there, we need to be able to adjust more quickly than our adversaries.”

Since its creation in late 2002, the REF has fulfilled more than 100



A Soldier in Afghanistan uses a “Pocket Terp” to translate phrases. (U.S. Army photo.)

requirements. In some cases, working with existing PMs, it facilitated complex materiel solutions in such areas as intelligence, surveillance and reconnaissance, unmanned aerial vehicles and force protection. In many instances, the REF helped obtain commercial-off-the-shelf (COTS) items that met the commander's requirements. Several examples of REF-fielded technologies include:

- Field kits for explosives detection.
- Lightweight, portable metal detectors suitable for long-range missions.
- Thermal vision devices.
- Inexpensive robots.
- Special shims that enable search teams to nondestructively open padlocked doors where illegal weapons are suspected of being stored.
- Well cameras (small, battery-powered, fish-eye camera and hand-held monitor connected by a long Ethernet cable).
- Wearable vests for ventilation and heat dispersion.
- Mounting brackets on helicopter door-gunner ammo cans.
- Turret cameras for use by Humvee special operations teams in Iraq.

The REF does more than just provide materiel or COTS-based solutions. It also helps to develop and train tactics, techniques and procedures (TTPs) for the newly fielded solution. For example, the REF provided TTPs for the enormously popular "Pocket Terp," a commercially available hand-held computer customized with mission-specific phrases in local dialects.

The REF does more than just provide materiel or COTS-based solutions. It also helps to develop and train tactics, techniques and procedures for the newly fielded solution.



An 82nd Airborne Division Soldier displays weapons and ammunition retrieved from a well in Afghanistan using the REF well cam. (U.S. Army photo.)

Forming Partnerships With Army Commands

Last summer, the REF's remarkable ability to shrink the time from requirement to solution from years to weeks caught the attention of Army Chief of Staff GEN Peter J. Schoomaker, who instructed the REF to apply its rapid-equipping methodologies to bring forward Army Future Force technologies that could meet immediate requirements. Schoomaker was particularly

keen to have the REF examine emerging capabilities to determine if they could be inserted on the battlefield "now, rather than later." To better serve operational forces before deployment, Schoomaker urged the REF to establish partnerships at key locations within the U.S. Army acquisition community.

Army organizations have a lot to gain by forming

partnerships with the REF. "The first thing organizations gain is a new set of tools they don't have within their own process," Tubbs points out. "The REF can be used to explore alternative acquisition processes and alternative products. Likewise, REF partners have direct connectivity to people serving overseas in harm's way. If a PM has something that might work in theater, we have the capability to get it there, train Soldiers how to use it, assess its performance and then suggest improvements," Tubbs continued.

"PMs can also use their REF partnership to refine TRADOC [U.S. Army Training and Doctrine Command] requirements or suggest new requirements that may have been excluded in their initial doctrinal assessment," Tubbs explained. "Through a partnership with REF, the Army can provide better and more current solutions to our warfighters. Additionally, an REF partnership gives PMs the ability to employ nonstandard processes — an REF hallmark — to facilitate

resourcing selected projects,” he continued.

“The requirements process that we have today is a process that we’ve had since the Cold War. Though written with the best of intentions, requirements sometimes do not fully meet the needs of people in the field,” maintains BG Jeffrey A. Sorenson, Director for Systems Management and Horizontal Technology Integration, Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT). Sorenson, whose organization works in close partnership with Tubbs and his staff says, “The value of working with the REF is that it works directly with the field and takes input directly from Soldiers. The REF helps us ensure that as requirements come in — we call them operational needs statements — they have received proper ‘sanity checks.’”

“The partnership between my organization and the REF has produced benefits in two areas of mutual interest — getting rapid feedback from Soldiers in the field and renewed emphasis on competition in the acquisition process,” Sorenson continued. “However, remember that valuable feedback enjoyed by the REF-ASAALT partnership does not always originate in the field. Our people here in the Pentagon monitor all acquisition programs in the Army to ensure they are funded, supported and working. The REF does not have the infrastructure to do this, so we provide them with this support. Conversely, the REF brings

added value to our partnership because they have many contacts with small partners in the public sector — both at home and abroad — that Army program executive offices and PMs would not be directly able to tap into,” Sorenson summarized.

Partnering for Success

Regarding the value both partners add to acquisition competition, Tubbs cites the recent procurement of an “electronics system” that the Army will use to defeat improvised explosive devices (IEDs) in the Iraqi theater of operations. “An Army project manager had a program of record that was already well under development,”

Tubbs explained. “It met some but not all the new counter-IED requirements, so he was looking at developing another item. Unfortunately, he had no program in place for that. We looked at the situation and suggested a simpler program to supply the needed technology and helped speed up the process by finding a COTS-based solution that allowed us to put a product on the ground in 6 weeks. That gave the PM the leverage he needed to both speed up the original program and open up a second program.

“What resulted for the PM was competition that he had never had before

in an area where it had theretofore been fairly closed,” Tubbs remarked. “And the Army benefited because it now had potential choices of products it could employ immediately, and also had two competing sources for these products.”

The value of working with the REF is that it works directly with the field and takes input directly from Soldiers. The REF helps us ensure that as requirements come in — we call them operational needs statements — they have received proper ‘sanity checks.’

For example, the original vendor had asked \$64,000 for each of the new anti-IED devices. This was eight times the price of the COTS version the REF had bought. So the Army benefited in two ways: cost and time savings. “Needless to say, when we informed the first vendor that our second vendor was only charging \$8,000 a unit, their price came down significantly,” Tubbs said.

Lessons Learned

“I think the biggest lesson learned, on my part, is that there are a lot more potential contracting partners in the U.S. at our disposal than we realize,” Sorenson reflected. “Somehow, we need to find ways to encourage these small companies to provide the Army with materiel solutions that we have obviously not been able to tap into. If there’s any way that we can do things like that on a quick turnaround basis, we ought to take advantage of it,” he continued.

“I’m very enthusiastic about the overall value of my organization’s partnership with the REF,” Sorenson commented. “I think we need to take what we have with the REF, and expand the partnership horizontally with other Army elements such as the Research and Development Command and the Army Materiel Command. If we can tie all of that together in such a way that we can fully integrate the feedback loop that we are getting from the REF and other Army acquisition elements in the field, we will have a more complete picture of the requirements of people at the pointed end of the spear,” Sorenson concluded.

Success Stories

REF success stories abound. Case in point, when Soldiers in Afghanistan reported that they had serious communication problems on missions because

of the radio batteries running down on the Multiband Inter/Intra Team Radio (MBITR), REF operational contact teams assembled battery adapters that connect the MBITR to a single-channel ground and airborne radio system (SINCGARS) 5590 battery via a 12-volt (V) cigarette lighter adapter. Previously, the radios used a series of small batteries that typically only lasted 1 to 2 days on average. For instance, on a 4-day mission, communications were often lost during the latter half of the operation.

On a subsequent mission, of four radio teams, only the team with the REF 5590 adapter still had working radios at the mission's end. Soldiers with the MBITR/5590 battery adapter and power cables now only need to carry one type of battery, which has an existing logistics trail, and provides far more power at less weight. In addition, because of the 12V charger plug in the

middle, practically anything else such as satellite phones and laptops can run off of the 5590s. These battery adapters have proven to be combat multipliers and have had immeasurable impact on combat operations in Afghanistan. The power cables allow the expensive standard military equipment to continue operating well beyond the available supply of specialty batteries.

In another rapid fielding initiative, REF operational contact teams in Iraq noticed that Military Police (MPs) on IED sweeps were putting themselves in danger and could use a small, relatively cheap robotic asset to assist in IED identification. In just over 2 weeks, REF designed, fabricated and delivered 3 MarkBot II units into theater for assessment. These COTS, 4-wheel drive, remote-controlled vehicles were equipped with a pan/tilt camera, video transmitter and receiver. MPs had an inexpensive and disposable robot to as-

sist with IED detection. REF then trained the MPs and went with them on IED sweeps using these Bots.

While on patrol in Iraq, all Humvees are supposed to be outfitted with turrets. Often, these turrets are homemade plywood or metal mounts for M249 weapons, but they often carry the .50 caliber M2 machine gun or MK19 40mm automatic grenade

launcher. These weapons can be equipped with the heavy HOLOGraphic Weapon Sight (HWS) that has a video output connector on the side. In theater, patrols are frequently ambushed and attacked during the conduct of military operations in urban terrain. In August, after soldiers identified a clear need to be able to aim and fire the turret weapon from the Humvee's armor-protected cab, an REF operational contact team proposed running a cable from the HWS video connector to a small TV display inside the vehicle. REF discovered that the HWS had diagnostic outputs that could supply the inputs/outputs for this to work for Soldiers and built a prototype cable, small video monitor and additional prototypes for special operations forces.

In other news, REF operational contact teams identified the need for thermal markers as a means of identifying "friendly" vehicles in Iraq. The REF solution uses a grid of thermoelectric (TE) coolers, which are basically 2-inch solid-state squares that change temperature, hot or cold relevant to ambient, as a function of current flow and direction. By assembling the TE coolers into a 6 by 6 grid, the REF created a vehicle-mounted 36-pixel display visible only through thermal sights. Stryker Brigade has shown significant interest in this system and others under development by the REF.

TIM KENNEDY is President, Strategic Policy Group, an Arlington, VA-based strategic communications company. He holds a B.A. in English literature from the University of California and has served in the public and private sectors as a speechwriter and consultant since 1985.

A Soldier in Iraq uses a "PocketTerp" at a checkpoint. (U.S. Army photo.)



Did You Know?

It's Official — Army Has the Coolest Stuff

About 1,500 government, academic and industry leaders gathered in Orlando, FL, Nov. 29 – Dec. 2 for the 24th Army Science Conference — including a film crew from MTV2.

The New York City-based production crew from the music television video channel MTV2 documented the conference for a new show called High Tech Theater that debuts in February. The show will highlight the latest in technology, targeting male viewers aged 12 to 24, said producer Jodi Lahaye.

The crew filmed military technology that will also make its way into the civilian market, said creative director Shawn Mattaro. Bendable television screens — officially known as flexible display technology — medical robots and holographics caught the crew's attention.

Fifty-four technologies — from liquid body armor and a nasal-spray painkiller to an artificial exomuscle that may someday be capable of binding wounds or giving cardiopulmonary resuscitation — were also highlighted at the conference.

“What better place to come?” MTV2's Lahaye said. “The Army has the coolest stuff, clearly.”

Sergeant Major of the Army Kenneth Preston thanked the scientists, engineers and others whose work on ‘cool stuff’ has led to technologies being

distance, greatly reducing the threat of death or injury, Preston said.

A large balloon that looms over Victory Base in Baghdad is a floating platform that houses a Joint Land Attack Cruise Missile Defense Elevated Netted Sensor (JLENS) system that allows Soldiers to view large sections of the city, Preston added. Improved body armor like small arms protective inserts are also making a big difference, Preston said.

“I've seen firsthand the technology that many of you helped design that's keeping our Soldiers alive,” Preston said. “Their success is, in many ways, your success.”

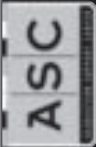
Vice Chief of Staff GEN Richard Cody gave an update on Army transformation from the Pentagon through video teleconferencing. When asked to name three top problems the Army would like scientists and engineers to prioritize, Cody asked for more work on intelligence-gathering technology that gives battlefield commanders more concise and quickly understood information; technology that

allows vehicles and equipment to consume less fuel and generate more water; and more tactical mobility and agility in the Future Combat Systems.

Excerpted from a release by SGT Lori Jewell, Army News Service.



used in conflict areas such as Iraq and Afghanistan. Remote-controlled robots, for example, are investigating suspicious items that may contain improvised explosive devices. Soldiers can check the items from a safe



From the Acquisition Support Center Director



Be Ready to Deploy!

That's the message I want everyone in the Army Acquisition, Logistics and Technology (AL&T) Workforce to take to heart. Every officer — and any civilian willing to deploy — must ensure that his or her personal affairs are in order prior to departure.

The U.S. Army Acquisition Support Center (ASC) supports Soldiers directly. We constantly train and develop our skills during peacetime to prepare our Soldiers for battle during times of war. However, *Operations Enduring Freedom* and *Iraqi Freedom* have changed the way we do business. Increasingly, Army Acquisition Corps (AAC) members are going to where the fight is, where the equipment is, and most importantly, where Soldiers are.

The AAC is weaving the Army Chief of Staff's guidance to create a Joint and Expeditionary Force into our own Transformation Plan. Many AAC greensuiters already support other services, and many more will do so in the near future. Our civilians deserve a lot of credit as well — several have voluntarily gone to Iraq, Kuwait and Afghanistan. And others will deploy to the battlefield to support our Nation's warfighters.

I intend to provide the necessary information for all military and civilian AL&T Workforce members to be part of the Army's modular unit design and deploy at a moment's notice. To do this, ASC has formed a Deployment Cell to facilitate deployment for both military and civilian personnel. The Deployment Cell has already posted several informative pieces to ASC's Web site at <http://asc.army.mil/deployment/default.cfm>, including:

- Theatre Awards Policy.
- Serving the Nation at War.
- OCONUS Deployment Guide.
- Military Deputy Guidance.
- Deployment Checklist and Packing List.
- Assistant Secretary of the Army for Acquisition, Logistics

and Technology (ASAALT) Deployment points of contact (POCs).

- Special Projects Office Tracker.
- ASAALT Answering the Call to Duty flyer.

ASC's MAJ(P) Michelle Nassar served during *Operation Iraqi Freedom* and has the following guidance for anyone deploying. "It's very important that all military members prepare themselves for deployment. When one's personal affairs are in order, one has peace of mind, which allows focus on the mission," Nassar explained. "The bottom line is that our efforts support the Soldiers who fight the fight. We owe it to them to be prepared to do our best."

I want to thank you all for the outstanding work you do every day. I know that each of you will face the challenge of deployment the same way you face the day-to-day challenges of your jobs — with confidence, pride and dedication to our warfighters. For your convenience, here is the Deployment Checklist you will find online.

Deployment Checklist: Personal Matters (Recommendations)

1. Finances
 - a. Set up a folder for receipts and financial documents.
 - b. Provide family members financial and computer passwords.
 - c. Set up automatic deposit and payment services.
 - d. Set up accounts that you can manage online from anywhere.
 - e. Review budgets for home and deployment expenses.
2. Legal
 - a. Consider giving someone a legal power of attorney/limited power of attorney.
 - b. Visit your local legal assistance office for additional guidance.
 - c. Make a will.
 - d. Place valuable documents or goods in a safe or location known to someone.
3. Life/Medical
 - a. Review current Servicemen's Group Life Insurance (SGLI) coverage and beneficiaries.
 - b. Determine if your life insurance has a War Clause in it.
 - d. Verify TRICARE status for your family.
 - e. Update shots.
 - f. Check prescription refill or expiration status.

- g. Check glasses or contact lens prescriptions.
 - h. Make sure Defense Enrollment Eligibility Reporting System (DEERs) is current.
 - i. Make sure your family understands your dental plan.
4. Personal Property
- a. Confirm adequate coverage of your living quarters.
 - b. Verify coverage of high-dollar items with your insurance carrier.
 - c. Update property inventory to include serial numbers.
 - d. Photograph or videotape property.
 - e. Check smoke detectors.
 - f. Label fuses and circuit breakers.
 - g. Store an extra set of house keys in an area known to someone you trust.
 - h. Arrange for someone to periodically check on your home.
5. Automobile
- a. Review your auto insurance needs.
 - b. Update registration, insurance and stickers.
 - c. Leave a scheduled maintenance plan with someone if your vehicle is in use.
 - d. List repair facilities and provide to someone.
 - e. Put an emergency kit in your vehicle.
 - f. If you store your vehicle:
 - (1) Change the oil and filter.
 - (2) Check all fluids (water, oil, antifreeze, etc.).
Fill the fuel tank/add fuel stabilizer if your departure is to exceed 2 months.
 - (4) Disconnect battery if storing vehicle more than 1 month.
 - (5) Reduce insurance premiums.
 - (6) Photograph or videotape vehicles.
6. Personal Details
- a. Make sure family's ID cards are current.
 - b. Notify your children's school of deployment.
 - c. Complete/update *Family Care Plan (DA Form 5305-R)*.
 - d. Annotate important dates (birthdays, anniversaries, etc.) and prearrange gifts.
 - e. Notify United Services Automobile Association (USAA)/insurance provider of your deployment.
 - f. Secure any weapons you have in the home.
 - g. Make arrangements for your mail (hold or forward).
 - h. Arrange for bill payments.
- i. Make a list of important e-mail addresses to take with you.
 - j. Note location of important papers.
 - k. Purchase a calling card.
 - l. Provide list of POC numbers to family and work (losing and gaining unit).
7. Packing List
- a. Contact phone numbers, addresses, e-mail addresses.
 - b. Documents: ID card, passport, visas, orders, country clearances.
 - c. Uniforms and accessories (female sizes are often difficult to get in the field so plan accordingly).
 - d. Flashlight, pocketknife, alarm clock, etc.
 - e. Medications, shot records.
 - f. Sleeping bag or blankets.
 - g. Civilian clothes
 - long sleeve shirts and pants.
 - sleeping attire.
 - shower shoes/flip flops.
 - towel.
 - physical training clothes.
 - anything you need to be comfortable in your quarters.
 - h. Comfort
 - sun block.
 - ChapStick®.
 - sunglasses.
 - goggles.
 - towel and wash cloth.
 - shaving kit.
 - feminine hygiene products.
 - foot powder.
 - eye drops.
 - bandana.



COL Genaro J. Dellarocco

Director

U.S. Army Acquisition Support Center



Celebrating Our Acquisition Stars

Mike Roddin

On Oct. 24, 2004, the Honorable Claude M. Bolton Jr., Army Acquisition Executive (AAE) and Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT), hosted the U.S. Army Acquisition Corps Annual Awards Ceremony at the Crystal City Gateway Marriott in Arlington, VA. The event recognized the numerous accomplishments of the acquisition workforce's most extraordinary members and the teams they lead. The ceremony's theme, *Celebrating Our Acquisition Stars*, was a fitting tribute to the uniformed and civilian professionals who work tirelessly behind the scenes to provide combatant commanders and their Soldiers the weapons and equipment they need to execute decisive, full-spectrum operations in support of the global war on terrorism (GWOT).

In kicking off the event, Bolton remarked, "We are facing some of our greatest challenges. We are serving a Nation at war and a military force that is transforming while fighting.



ASC Director COL Genaro J. Dellarocco presides over the annual awards event as master of ceremonies. (All article photos courtesy of SGT Scott Meinhardt, DA Staff Photographer.)

Information systems are major contributing factors to today's success in the global war on terrorism and in all other operations throughout the world...MG Michael Mazzucchi and his superb team have contributed immeasurably to the ability of our commanders and their troops to get the information they need when they need it — the right information, at the right time and in the right place.

It is clear that we have charted the right course — increasing capability, flexibility and sustainability — and that we must maintain the tremendous momentum we have built," he continued. "With great challenges, come great opportunities for success."

U.S. Army Acquisition Support Center (ASC) Director COL Genaro J. Dellarocco presided over the event as master of ceremonies. Other Army and defense acquisition senior leaders in attendance included GEN Paul J. Kern, former Commanding General, U.S. Army Materiel Command; LTG Joseph L. Yakovac Jr., Military Deputy to the ASAALT and Director, Acquisition Career Management; Dean G. Poppo, Principal Deputy Assistant Secretary of the Army (DASA) for Acquisition, Logistics and Technology; MG Darryl A. Scott, Director, Defense Contract Management Agency (DCMA); Dr. Thomas H. Killion, DASA for Research and Technology and Chief Scientist; Donald L. Damstetter, DASA for Plans, Programs and Resources; Tina Ballard, DASA for Policy and Procurement; Wimpy D. Pybus, DASA for Integrated Logistics Support; Dale A. Ormond, DASA for Elimination of Chemical Weapons; and BG(P) Jeffrey A. Sorenson, DASA for Systems Management. Other distinguished guests included former ASAALT Paul J. Hoepfer and former Military Deputy to the ASAALT LTG John S. Caldwell (USA, Ret.).

The evening's presentations included the Secretary of the Army Awards for Army Research and Development Laboratory (RDL) of the Year; Acquisition Commander, Project and Product Managers of the Year; and the Army Superior Unit Award.

Army Superior Unit Award (ASUA)

The ASUA, a special presentation, was awarded to the Program Executive Office (PEO) for Command, Control and Communications Tactical (C3T) for its efforts and accomplishments leading up to, and throughout, *Operations Enduring* and *Iraqi Freedom* (OEF and OIF) during the period March 19, 2002, to March 18, 2003. The ASUA is presented to organizations to honor outstanding meritorious performance during a difficult and challenging mission under extraordinary circumstances. Accepting the organizational award were MG Michael R. Mazzucchi,



Secretary Bolton (right) presents the ASUA plaque to John C. Perrapato, Deputy PEO C3T (left), and MG Mazzucchi, PEO C3T.

Commanding General, Communications-Electronics Command and PEO C3T, and John C. Perrapato, Deputy PEO C3T.

“Information is power,” Bolton emphatically stated. “Throughout history, commanders have sought to leverage information to achieve a decisive advantage over the enemy. Information systems are major contributing factors to today’s success in the global war on terrorism and in all other operations throughout the world,” he commented. “Our systems today — such as Force XXI Battle Command Brigade-and-Below — dissipate the ‘fog of war’ and provide our commanders and their forces with visibility that enables them to execute attacks on the best targets, at the most opportune times, with the most effective weapons. These systems also enable us to distinguish friend from foe and allow logistics and supply forces to maintain a constant flow of materiel to the troops. MG Michael Mazzucchi and his superb team have contributed immeasurably to the ability of our commanders and their troops to get the information they need when they need it — the right information, at the right time and in the right place,” Bolton observed.

RDL Awards

The evening’s next event was the RDL Awards presentation. The Army’s RDL Awards Program was established in 1975 to honor Army research and development (R&D) labs that have made outstanding contributions in science and technology, providing U.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.

All 12 Army laboratories competed in this year’s competition and were commended for their outstanding

research efforts and Soldier focus. Throughout the year, they provided extraordinary support to combatant commanders and their Soldiers during *OEF* and *OIF* and in direct support of national homeland defense and GWOT. The Army’s labs are critical enablers for achieving the Army Vision, its objectives and the Army’s transformation from the Current to Future Force. These exceptional R&D organizations continue to provide the unmatched technical advantage in support of the Army’s non-negotiable contract with the American people — to fight and win our Nation’s wars.

Large Research Lab of the Year Award

The first RDL Award was presented to the Army Research Laboratory (ARL) in the *Large Research Lab of the Year* category. John Miller, ARL Director, accepted the award on behalf of the ARL team. His lab was recognized for its significant efforts in autonomous mobility for unmanned ground systems research, and was selected as the basis for the Future Combat Systems Autonomous Navigation System. The program’s focus was machine perception, human-machine interface and tactical behaviors. ARL’s initiative and leadership during 2003 brought robotics technology to a new level, enabling the Army to move closer to fielding semiautonomous unmanned ground vehicles in the near future.

ARL’s mission is to provide innovative science, technology and analyses to enable full-spectrum operations. As the Army’s corporate laboratory, it provided its customers and partners the underpinnings necessary for developing and fielding the capabilities that Soldiers require for mission execution across the entire spectrum of operating environments.



ARL Director John Miller receives the *Large Research Lab of the Year Award* from Secretary Bolton. ARL was recognized for its significant efforts in developing autonomous mobility for unmanned ground systems research.

Large Development Lab of the Year Award

The U.S. Army Armament Research, Development and Engineering Center (ARDEC) was presented the *Large Development Lab of the Year Award*. Michael Devine, the ARDEC Technical Director, accepted the award for his organization. ARDEC was recognized for fielding the M95/M96 Mortar Fire Control System that has revolutionized mounted mortar operations. Initially fielded in May 2003 for the 1st Cavalry Division in support of ongoing conflicts, the Mortar Fire Control System delivers significant improvements in both effectiveness and survivability. This is the first application of digital fire control technology for mortar systems. This is also the first full mortar connectivity to the fire support network, including “sensor-to-shooter” options.



DOD Combat Feeding Directorate Director Gerald A. Darsch accepts the *Small Development Lab of the Year Award* for the Natick Soldier Center (NSC) from Secretary Bolton. NSC was recognized for its outstanding technology generation, application, transition and rapid fielding of equipment, as well as its efforts as the lead in a joint team that developed and accelerated fielding of the Joint Precision Airdrop System.

fielding of the Joint Precision Airdrop System. The system provides an evolutionary way to conduct precision airdrops from high altitudes, and provides the first-ever deployment and control of small, highly loaded parafoils. This new system reduced costs by 33 percent over its large parafoil system counterparts.

Collaboration Team of the Year Award

The Humvee Armor Survivability Kit (ASK) Team, which represents the collaboration between the Tank Automotive Research, Development and Engineering Center (TARDEC) and ARL, received the *Collaboration Team of the Year Award*. Dr. Richard McClelland, TARDEC Director, and John Miller, ARL Director, accepted the award plaques on behalf of their respective organizations.



ARDEC Technical Director Michael Devine receives the *Large Development Lab of the Year Award* from Secretary Bolton. ARDEC was recognized for fielding the M95/M96 Mortar Fire Control System.

ARDEC's mission is to provide advanced armaments for peace and war. It develops and integrates weapons, ammunition and fire control, and executes full armaments life-cycle engineering.

Small Development Lab of the Year Award

The Natick Soldier Center (NSC) was selected as the *Small Development Lab of the Year*. This is the second year in a row that NSC has garnered lab of the year honors. Gerald A. Darsch, Director, DOD Combat Feeding Directorate, accepted the award on behalf of NSC. NSC's mission is to treat Soldiers as systems to maximize their individual survivability, sustainability, mobility, combat effectiveness and quality of life in the field. NSC was duly recognized for technology generation, application, transition and rapid fielding of equipment to the Army's deployed forces. In addition, NSC was also recognized for its efforts as the lead partner in a joint team that developed and accelerated

From left: Dr. Thomas H. Killion, DASA for Research and Technology and Chief Scientist, looks on as ARL Director John Miller and TARDEC Director Dr. Richard McClelland receive the *Collaboration Team of the Year Award* from Secretary Bolton.

When the Humvee was created in 1981, it was not designed to be in the line of fire. In the pre-9/11, post-Cold War era, the Humvee's role was a behind-the-scenes support vehicle. Things have changed dramatically since GWOT's start. In Iraq and Afghanistan, Soldiers operate in a fluid environment with no clear-cut front or rear lines, leaving the Humvee and, more importantly, its passengers, subject to greater risk. In August 2003, the U.S. Central Command *Joint Task Force* issued an operational needs statement requesting a rapid solution to small arms fire, improvised explosive devices and rocket-propelled grenade threats to the Humvee platform. Together, TARDEC and ARL formed a collaborative team to tackle the challenge.

The ARL team, led by MAJ Dan Rusin and Mike Keele, joined forces with their TARDEC team counterparts, led by CPT Greg Hetzel and Michael Manceor. Within 3 months, the collaboration team had developed, tested and deployed a complete prototype armored solution used to upgrade the Humvee to reduce the risk to Soldiers who use the vehicles in combat zones. By October 2003, they had developed a production model and began shipping Humvee ASKs to Iraq. In theater, the return on investment from this collaboration has increased Soldier survivability exponentially. It is worth noting that this project wasn't a "quick-fix" solution, because the ASKs are now standard stock Armywide. As of Sept. 10, 2004, there were 8,361 ASKs installed and in use in the theater of operations.

Acquisition Commander of the Year Awards

Air Force MG Darryl A. Scott, Director, DCMA, assisted Bolton in presenting the *Acquisition Commander (AC) of the Year Awards*. DCMA is an indispensable partner in the Army acquisition life-cycle management process. Scott's contract managers are responsible for ensuring supplies and services are delivered on time, within cost and meet performance requirements. The Army currently has 32 colonels and lieutenant colonels in AC positions within DCMA.

The AAE received 28 nominations this year, but only one award was presented in each category. The winners were selected from an elite group of nominees who faced tremendous challenges and complexities during a year characterized by change, deployments, unit rotations and high-operational tempo. The nominees were outstanding representatives of the Army acquisition workforce, whose collective expertise and abilities to research, manage, develop, test, evaluate, contract, field and sustain Army warfighting systems helped ensure that Soldiers had the materiel they needed to fight

with greater lethality, survivability and sustainability on the modern battlefield.

AC of the Year — LTC/GS-14

LTC Jack Pellicci Jr., DCMA-New York, was honored as an *AC of the Year* for managing all aspects of life-cycle support services to more than 200 DOD contractors with 2,500 contracts valued in excess of \$2.2 billion, ensuring the delivery of critical supplies and services to our Nation's warfighters. DCMA-New York is the only entity within DOD that



LTC Jack Pellicci, DCMA-New York, addresses the audience after winning the 2004 *AC of the Year Award (LTC/GS-14)*.

provides contractual oversight and processing throughout the entire United States for Duty Free Entry of military materiel including critical spares in support of *OIF*.

Pellicci restructured his command into a leaner, more streamlined organization, focusing more efforts and resources on improving customer satisfaction and response time. Additionally, assigned manpower levels

were reduced by 45 percent over a 2-year period. He then skillfully cross-trained and positioned the majority of his workforce into more direct customer support roles. Finally, his command reduced its overage contracts with final acceptance dates over 5 years old by 60 percent.

AC of the Year — COL/GS-15

COL Ainsworth Mills, DCMA-Philadelphia, garnered honors as an *AC of the Year* for his exceptional leadership of one of the largest contract management offices within DCMA. He led 346 civilian and military acquisition professionals in managing more than 16,000 contracts from all services, defense agencies and NASA valued at nearly \$10 billion. Mills had just returned from a deployment in Central Iraq as an AC in direct support of the Coalition Provisional Authority (CPA) during *OIF*.

As a result of Mills' leadership, DCMA-Philadelphia received recognition from the Secretary of Defense for pricing assistance under the Oil for Food program and accolades for work performed in support of the Army Transformation Industrial Base Study. During his deployment to Iraq, Mills was responsible for overseeing contracts dealing with base



COL Ainsworth Mills, Commander, DCMA-Philadelphia, accepts the *AC of the Year Award (COL/GS-15)* from Secretary Bolton.

camp operations, security, linguists, the rebuilding of the oil infrastructure and the Iraqi broadcasting system.

Product Manager (PM) of the Year Award

The *PM of the Year Award* was presented to LTC Joseph Grebe, PM Battle Command Sustainment Support System, PEO C3T. Grebe oversees a program responsible for designing, developing, acquiring, testing, approving and fielding more than 1,600 different products for Army combatant commanders. Upon assuming command, he discovered the need to transform the Combat Service Support (CSS) Control System, into a useful and acceptable battlefield asset. This product is a decision support system that assists commanders and their staffs in planning and executing CSS operations.

Likewise, he conducted extensive market surveillance and target research to discover a commercial-off-the-shelf

product that could be used to produce a significantly smaller and user-friendly product for combatant commanders. He then created a credible and persuasive communications strategy that addressed the new product's transformation features to all stakeholders. During this transformation process, Grebe was recognized for exemplifying the highest standards of dedication, acquisition discipline, judicious use of risk, technical innovation and industry cooperation.

Project Manager (PM) of the Year Award

COL N. Lee S. Price, PM Defense Communications and Army Transmissions Systems, PEO Enterprise Information Systems, was responsible for more than 121 projects, including *Reachback* for deployed forces, worldwide satellite ground systems, terrestrial microwave communications systems, radio systems for first responders and combat vehicle intercom systems. She is responsible for upgrading technical control facilities, relocating and upgrading command center information systems and commercializing tactical assets in Iraq and Kuwait.

Price led her team to field the CSS Very Small Aperture Terminal — a leading-edge satellite communications system — to the first Unit of Action, the 3rd Infantry Division (Mechanized). This system is hailed as a significant combat multiplier as it allows Soldiers to rapidly change their



COL Lee Price, PM Defense Communications and Army Transmission Systems, PEO Enterprise Information Systems, receives the coveted *Project Manager of the Year Award* from Secretary Bolton. She was recognized for successfully managing 121 projects, including *Reachback*, and overseeing the upgrade of technical control facilities, the relocation and upgrade of command center information systems and the commercialization of tactical assets in Iraq and Kuwait.

processes, freeing them to do other mission-essential tasks. Likewise, it has saved trips between units in the field, keeping Soldiers out of harm's way by reducing the number of convoys deployed on potentially dangerous overland supply routes.



LTC Joseph Grebe, Battle Command Sustainment Support System, PEO C3T, receives the *Product Manager of the Year Award* from Secretary Bolton for designing, developing, acquiring, testing, approving and fielding more than 1,600 different products to Army combatant commanders.

In addition, Price's project office was selected by the CPA to provide U.S. Embassy personnel communications in the Baghdad area. She also assisted a nonprofit foundation in providing more than \$10 million of free Internet access to troops stationed in Iraq.

Closing Remarks

In closing this year's awards event, Bolton explained that, "People are central to everything we do. Institutions do not transform; people do. Platforms and organizations do not defend the Nation; people do. Units do not train, they do not stay ready, they do not grow and develop leaders, they do not sacrifice and they do not take risks on behalf of the Nation; people do. Our job, at its very heart, is to equip and sustain the men and women who volunteer to defend this Nation," he concluded.

"Every day the dedicated men and women of our Army Acquisition Corps go beyond the call of duty to make a positive and lasting impact on how our Soldiers protect America's freedom," Dellarocco reminded the audience. "The accomplishments and milestones set and achieved by this year's Army Research and Development Labs and Secretary of the Army Awards recipients for Acquisition Commander, Project Manager and Product Manager need no further elaboration — they speak for themselves and set measurable standards of performance to which we all can aspire. I hope one and all will draw inspiration from the accomplishments of the outstanding teams and individuals recognized here tonight."

This year's event attracted more than 370 guests, and ASC Event Coordinator Betisa Brown suggested that it's not too early to mark your calendars for next year's Awards Ceremony to be held Sunday, Oct. 2, 2005. Brown can be reached at (703) 805-2441 or via e-mail at **betisa.brown@us.army.mil**. Questions on awards submission criteria and timelines should be directed to ASC Awards Coordinator Ann Incorvati at (703) 805-1070 or **ann.incorvati@us.army.mil**.

Mike Roddin is Strategic Communications Director, ASC, Fort Belvoir, VA, and Editor-in-Chief, Army AL&T Magazine.

Editor's Notes: Ann L. Incorvati, Science Applications International Corp. (SAIC) Program Analyst, ASC Program Structure and Information Analysis Division, Fort Belvoir, VA, contributed to this article.

Army Civilians Selected for GMAP II

The state-of-the-art, part residency, part distance-learning Global Master of Arts Program (GMAP) II of the Fletcher School of Law and Diplomacy at Tufts University in Medford, MA, is designed for midcareer-level professionals serving in the security assistance/security cooperation fields. GMAP II enhances the skills of selected civilian and military personnel working in international affairs positions.

The program's purpose is to improve the quality and professionalism of the DOD International Affairs and Army Security Assistance Workforce. This prestigious course of study helps tomorrow's leaders grow and builds personal relationships at the midmanagement level among the Defense Security Cooperation Agency, military departments, other federal agencies, international foreign military sales customers and defense industry organizations.

GMAP II admission criteria are exacting and applicants must pass both an Army board and an academic panel at Tufts University. This year, 3 Army candidates were selected for the 12-month graduate degree program starting in March 2005. This year's Army selectees are:

- Brent M. Law, Lead International Program Specialist, Precision Fires Project Office, Program Executive Office (PEO) Tactical Missiles, Redstone Arsenal, AL.
- John H. Daniele, Director, Industry and Multinational Affairs, PEO Simulation, Training and Instrumentation, Orlando, FL.
- Vane Morrison, DOD Security Assistance Training Field Activity, Fort Monroe, VA.

Congratulations to this year's GMAP II student candidates!

Acquisition Trivia

The acquisition process is designed to provide a needed capability to the Soldier in the shortest practical time while concurrently reducing risk, ensuring affordability and providing adequate information for decision making.

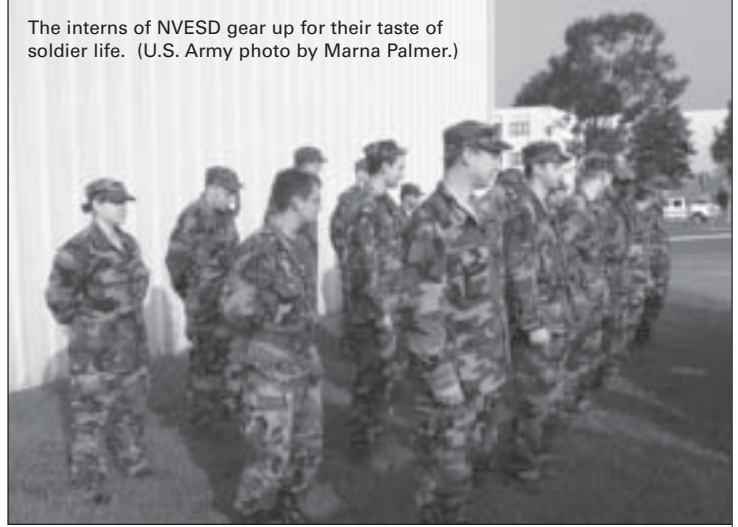
It's Not Easy Being Green

Marna Palmer

Flying around in Black Hawk helicopters, navigating through thick woods in darkness and camping out under the stars are not usually in the job description for government positions. But for 20 interns at the U.S. Army Research, Development and Engineering Command (RDECOM), U.S. Army Communications-Electronics, Research, Development Engineering Center, Night Vision and Electronic Sensors Directorate (NVESD), that's what "going to work" meant for 4 days in late August. They were the first interns to take part in the inaugural NVESD Greening Course. Months of planning culminated in an unforgettable experience for the interns. The course began at NVESD with an introduction to the military and its hardware, but the fun really began the following day.

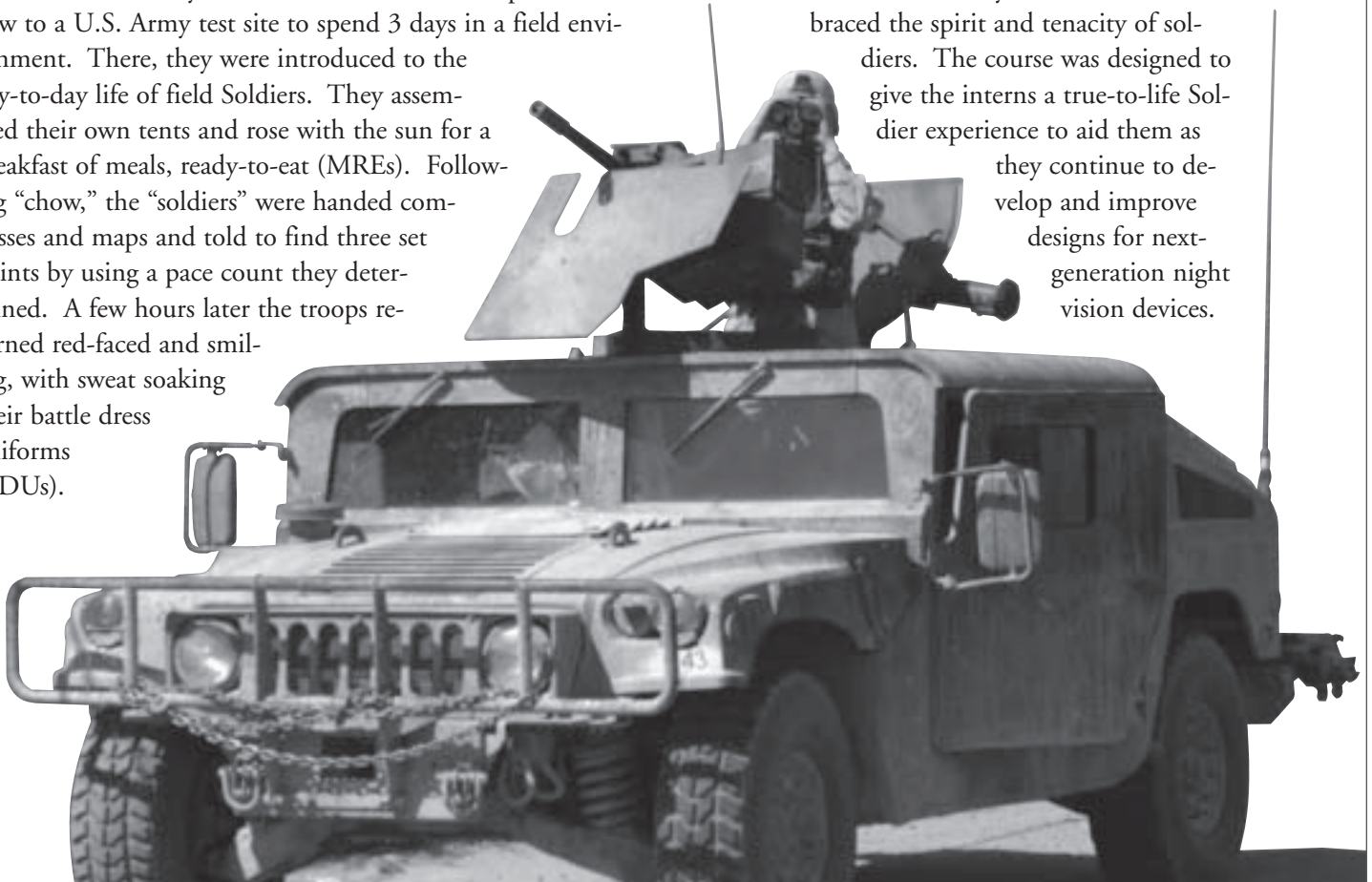
The interns went to the U.S. Marine Corps' Night Integrated Training Environment facility, which consisted of an obstacle course negotiated with the help of night vision goggles. After that, they boarded Black Hawk helicopters and flew to a U.S. Army test site to spend 3 days in a field environment. There, they were introduced to the day-to-day life of field Soldiers. They assembled their own tents and rose with the sun for a breakfast of meals, ready-to-eat (MREs). Following "chow," the "soldiers" were handed compasses and maps and told to find three set points by using a pace count they determined. A few hours later the troops returned red-faced and smiling, with sweat soaking their battle dress uniforms (BDUs).

The interns of NVESD gear up for their taste of soldier life. (U.S. Army photo by Marna Palmer.)



Afternoons were spent testing military vehicles and getting hands-on experience with impressive weapons such as the M249 Squad Automatic Weapon and M204B machine gun. Interns also participated in a road march, loaded down with heavy packs and got up early in the morning to do physical training. The 4 days were action-packed and the temperature was rising, but not once did the participants complain or quit.

In addition to the lifestyle, the interns embraced the spirit and tenacity of soldiers. The course was designed to give the interns a true-to-life Soldier experience to aid them as they continue to develop and improve designs for next-generation night vision devices.



Remembering the misery of carrying a heavy pack while trudging through 90-degree heat will undoubtedly influence the interns' weight and bulk considerations as they develop future systems. Seeing their work in action was an eye-opening experience and gave the interns a greater understanding of the challenges Soldiers face on a day-to-day basis. Being "green" was an experience that benefited the interns both personally and professionally.

Marna Palmer is a Program Manager at NVESD.

Koster, John COL	Close Combat Systems
Lipsit, Carl LTC(P)	Soldier Weapons
Miller, Scot COL	Defense Communication and Army Switched Systems
Mullin, Edward LTC(P)	Short Range Air Defense
Paquette, Derek LTC(P)	Apache Attack Helicopter
Parker, William COL	Rotary Wing Systems
Pennycuick, Richard LTC(P)	DCMA-Philadelphia
Sears, George COL	Defense Contracting Command-Washington
Wheeler, Kenneth COL	Constructive Simulation
Wolfe, Daniel COL	Combined Arms Tactical Trainers
Yarborough, Michelle COL	Aviation Systems

AHRC Notes



FY05 COL/GS-15 Acquisition Command Slate

The U.S. Army Human Resources Command recently released the following FY05 colonel (COL)/GS-15 project manager (PM)/acquisition command (AC) slate. *Editor's Note: Ranks listed were current as of release date.*

Name	Project or Command
Bezwada, Haribabu (CIV)	Night Vision/Reconnaissance, Surveillance and Target Acquisition
Cantor, Michael COL	Common Missile
Cook, David LTC(P)	Ground-Based Midcourse Defense, Ground-Based Interceptor
Dever, Douglas LTC(P)	Non-Line-of-Sight Launch System
Hansen, Jacob LTC(P)	Defense Contract Management Agency (DCMA) (Overseas)
Harrington, Gale LTC(P)	Defense Communication and Army Transmission Systems
Hazelwood, Donald LTC(P)	Unmanned Aerial Vehicle System
Hollingsworth, Larry LTC(P)	Combat Systems
Kendrick III, Robert COL	Third Army Contracting (Fort McPherson)
Kidd, Scott LTC(P)	Tactical Vehicles
Knudson, Ole LTC(P)	Combat Ammunition Systems-Indirect Fire

FY05 LTC/GS-14 Acquisition Command Slate

The U.S. Army Human Resources Command recently released the following FY05 lieutenant colonel (LTC)/GS-14 product manager (PM)/acquisition command (AC) slate.

Name	Product or Command
Anderson, Thomas J.	Ground Application Programs Office
Bassett, David G.	Unit of Action-Software Integration
Bochonok, Jeffery T.	National Missile Defense Ground-Based Radar
Bosse, Scott P.	Apache Sensors
Card, Dennis A.	Bio Detection
Chicoli, John A.	Field Artillery Launchers
Chyma, Timothy D.	Individual Weapons
Clayson, Edward T.	Medical Communication
Cummings, Brian P.	Combat Casualty Care
Cummings, Steven F.	Land Warrior
Davis, Christopher P.	Theater High Altitude Area Defense/PATRIOT Launcher
DiMarco, Andrew J.	Defense Contract Management Agency (DCMA)-Ozark
Downs, Jimmy E.	Reconnaissance Surveillance Command and Control Vehicle
Field, William E.	Commander, Kuwait Acquisition Command
	Demilitarization

Fuller, William S.	DCMA
Guthridge III, George A.	Kwajalein Test Range
Hirschman, Keith A.	Product Improvement/Future Systems
Hitz, Stephen E.	Infantry Carrier Vehicle
Hummel, Michael L.	DCMA Milwaukee
Jacobs Jr., Ronald	Communication Management Systems
Kilgallon, John C.	Army Human Resource Systems
Lane, Edward J.	Tactical Applications
Lemondes Jr., John	Clothing and Individual Equipment
Mansir, Martin J.	Extremely High Frequency Satellite Systems
Mason, Patrick H.	Aviation Technical Test Center
McVey, Wade L.	DCMA St. Louis
Morris, Jeffrey S.	Third Army Contracting-Qatar
Richard, Paul (CIV)	Aviation Rockets and Missiles
Payne, Thomas L.	Common Missile Launchers
Pincoski, Mark J.	Precision Guided Munitions
Pope, Joseph K.	DCMA Sealy
Pulford, Scott A.	Ground Combat Tactical Training
Puthoff, Frederick, A.	National Training Center Acquisition Command-Fort Irwin
Rettie, Craig L.	Force Sustainment Systems
Rodgers, Kenneth P.	Maneuver Control Systems
Rush, Christian E.	Air Traffic Control
Schafer, Joseph H.	Defense Satellite Communication Systems Terminals
Steinbugl, Louis F.	DCMA Detroit-Lima
Stoddard, Kevin P.	Crew-Served Weapons
Switzer, Michael R.	Scout/Attack Helicopter
Visconti, Albert J.	Fire Finder
Wells, Charles A.	Defense Communication Army Switch System-Europe
Wiley, Danny A.	Air and Missile Defense Command and Control Systems
Williams, Julian R.	Information Warfare
Zarbo, Michael E.	Combat Training and Instrumentation System

News Briefs

The Hot Humvee Becomes a Little Cooler

Ashley John

With summer temperatures reaching 130 degrees Fahrenheit in the desert, heat issues are as serious as enemy fire for Soldiers in Iraq. To lower this serious health risk, the U.S. Army Tank Automotive Research, Development and Engineering Center (TARDEC) is working to reduce extreme heat conditions inside military vehicles. TARDEC, headquartered at the Detroit Arsenal in Warren, MI; the Natick Soldier Center (NSC); U.S. Army Tank-automotive and Armaments Command (TACOM); Program Executive Office for Combat Support and Combat Service Support; TACOM Safety Office; Product Manager (PM) Air Warrior; and Army Research Laboratory are developing a heat-relief tool to ensure safe and successful Soldier mission completion.

Intense heat conditions became evident during installation of the 2- and 4-door Armor Survivability Kits (ASKs) in existing Humvees in Iraq and Afghanistan. ASKs provide increased survivability to deployed Soldiers. Unfortunately, the kits raise temperatures to more than 100 degrees Fahrenheit inside the vehicles. According to PM Tactical Vehicles, Soldiers could not properly complete missions because of the extreme heat and humid conditions. Thus, finding a quick solution to this problem was a must.

Industry began initial installation efforts to lower temperatures inside Humvees. Red Dot Corp., a Seattle-based mobile heating and air-conditioning (A/C) system supplier for the heavy-duty and off-road industries, manufactured an A/C system that provided heat relief to Soldiers in theater. The A/C system was modified to satisfy Humvee weight and space limitations. Following Red Dot A/C system evaluations at Aberdeen Test Center, temperatures inside ASK-equipped Humvees were still too high. A supplemental cooling system was needed to sustain Soldier performance levels and body comfort.

Applications focused on supplying a quick-fix solution for Soldiers. The interim solution used the Steele Vests worn by

Acquisition Trivia

The *Defense Acquisition Workforce Improvement Act (DAWIA)* was signed into law in 1990.

Navy sailors who work in ships' hot boiler rooms. The vests contain freezable gel strips, similar to ice packs, which are placed in a pouch to cool the sailor's body. In May 2004, NSC conducted a study to assess whether the cooling vest could fit under Soldiers' interceptor body armor. Army research indicated that the Steele Vest could be worn under an armored vest, but it was too short and only covered the Soldier's torso.

However, this quick-fix solution proved to be impractical for Soldiers in Iraq. The gel strips only lasted for 90 minutes, while Soldier missions lasted up to 8 hours, and there wasn't a way to recharge/refreeze the gel.

During ongoing research at NSC, TARDEC looked at two other currently used personal cooling systems that would supplement the Red Dot A/C unit — the Liquid Cooling Vest and the Air Cooling Vest. Each vest was rapidly fielded for near-term deployment.

Two NSC Microclimate Cooling Sub-Systems (MCSS), used in Apache and Air Warrior helicopters, were tested as possible long-term solutions for cooling internal Humvee temperatures. The modified Apache-style MCSS was evaluated in concurrence with the Red Dot A/C system. The vest, manufactured by Foster-Miller Inc., uses the Humvee's A/C unit to chill a fluid that is pumped into a microclimatic cooling garment (MCG). The liquid system consists of a heat exchanger; an MCG; and a flow control assembly that includes a pump, valve and manifold. The flow control assembly distributes the chilled fluid flow to four Soldiers and pulls heat away from their bodies.

By integrating the Apache and Air Warrior MCSSs for use in Humvees and other tactical vehicles, TARDEC can further develop cooling systems used in vehicles that do not currently have any form of air conditioning. A tactical vehicle fleet review will determine whether supplemental cooling requirements exist for additional systems. The improved Apache vest system has been modified into a Humvee-

unique system with the only remaining commonality being the garment.

TARDEC also performed and integrated on-the-spot modifications to the Red Dot A/C system to adjust the Air Vest from the M1 Abrams cooling system to fit the Humvee. This vest uses tubing to connect the garment to the vehicle's air duct, allowing cool air to flow through it. The system has individual connectors that supply cool air for a maximum of four Soldiers.

Air cooling system assessments are being performed at TARDEC's Propulsion Test Facility. The cooling systems are undergoing evaluations that involve high temperatures with solar effects to simulate similar environmental conditions that are found in Iraq. During testing, considerations were taken on how a Soldier's body would react to extreme temperature changes, eliminating the possibility of heat shock. Evaluations showed that the Liquid Vest and the Air Vest both significantly reduce Soldier body temperature.

Product configuration and final installation of prototypes were completed in only 2 months. In August 2004, 20 systems were fielded to Iraq — 10 Air Vest systems and 10 Liquid Vest systems. When the vests arrived, LTC Jeff Carr from PM Tactical Vehicles provided instructional pre-briefs to Soldiers in Iraq who received the cooling kits. Additionally, TARDEC has implemented an online evaluation system

where cooling system feedback is received immediately. This system provides TARDEC with the information and ability to address issues that arise and fix problems that occur in the field before additional cooling kits are deployed.

Developing a cooling system for the Humvee has been a group effort. TARDEC engineers and other team members worked diligently to find a solution to Soldier needs, providing a more safe and tolerable battlefield environment.

Ashley John is a Booz Allen Hamilton contractor supporting the TARDEC Technology Promotions Team.



Although ASKs provide increased survivability to deployed Soldiers, the kits cause temperatures inside Humvees to rise to more than 100 degrees fahrenheit. TARDEC is developing a cooling system to solve this problem. (U.S. Army photo by SPC James Smith.)

Historic Change of Command Ceremony Conducted at Aberdeen Proving Ground

Larry D. McCaskill

The U.S. Army Research, Development and Engineering Command (RDECOM) conducted its first change of command ceremony Oct. 28, 2004, as MG John C. Doesburg relinquished command to BG Roger A. Nadeau on Aberdeen Proving Grounds' Fanshaw Field.

RDECOM, headquartered at Aberdeen Proving Ground, MD, became "official" March 1, 2004, after its concept plan was approved by the Department of the Army. RDECOM consists of more than 30,000 military, civilian and full-time contractor personnel, who are charged with moving technology from the laboratories into the hands of warfighters as quickly as possible. As such, it is responsible for 75 percent of the Army's science and technology objectives. RDECOM seeks out and develops the latest technology to provide the most advanced weapons, communication, clothing, food and vehicles, using 110 direct liaisons to the field and more than 300 international agreements. RDECOM brings together laboratories and research and engineering centers nationwide.

Larry D. McCaskill is the Public Affairs Specialist, G-5 Public Affairs, RDECOM.



BG Roger A. Nadeau (left) receives the RDECOM flag from former AMC Commanding General GEN Paul J. Kern. (U.S. Army photo by Ralph Broth.)

ARL Names New Director

The Commander, U.S. Army Research, Development and Engineering Command (RDECOM), has announced the selection of John M. Miller as U.S. Army Research Laboratory (ARL) Director. Miller has been serving as ARL Acting Director since March 2003.



ARL Director John M. Miller. (U.S. Army photo.)

In making the announcement, then Commander MG John C. Doesburg said, "We look forward to Miller's continued success and proven leadership in directing ARL to new horizons in research, which is so vital to the mission accomplishment of American warfighters around the world."

Miller has a B.S. in aerospace engineering and an M.S. in mechanical engineering, both from the University of Maryland. In 1980, he received the U.S. Army Research and Development Award for outstanding technical achievement, and in 1988, he was appointed to the federal government's Senior Executive Service.

ARL, part of RDECOM, is the Army's corporate laboratory for fundamental and applied research. ARL provides key technologies and analytical support as well as critical links between the scientific and military communities to help American Soldiers on the battlefield. ARL has major sites at both the Adelphi Laboratory Center and Aberdeen Proving Ground in Maryland, and White Sands Missile Range in New Mexico. In addition, ARL shares facilities with NASA at two sites: NASA-Langley, Hampton, VA; and NASA-Glenn, Cleveland, OH. ARL's extramural basic research program is managed by its Army Research Office in Research Triangle Park, NC.

Army's Carroll Wins Mendenhall Leadership Award

*Jason Miller, Government Computer News**

From almost the beginning, Kevin Carroll said he saw the benefits of bringing the vendor and federal information technology (IT) communities closer together. Carroll, the Army's Program Executive Officer for Enterprise Information Systems, helped organize one of the first Industry Advisory Council (IAC) Executive Leadership Conferences nearly 15 years ago and has never shied away from providing the same insight and elbow grease to future events.

For his commitment and enthusiasm in supporting the federal IT community, the American Council for Technology (ACT) and IAC honored Carroll Oct. 25, 2004, with the Janice K. Mendenhall Spirit of Leadership Award at the 14th Annual Executive Leadership Conference.

The Spirit of Leadership Award is named after Mendenhall, who made such collaboration a focus of her 32-year government career. The annual award is given by ACT and IAC officials in memory of Mendenhall, who worked to strengthen the relationships between government and industry officials in her role in the industry/government organization. Mendenhall died in July 2001.

"Knowing Janice as I did makes this a very special honor," Carroll said. "I'm very surprised."

Barry West, ACT President and Chief Information Officer for the Federal Emergency Management Agency, said Carroll rose to the top of the nominations for many reasons, including his willingness to mentor federal employees and his ability to bring people together to accomplish a project.

*Used with permission, *Government Computer News*.

FCS ACE Program Wins Army Knowledge Award

The U.S. Army Tank-automotive and Armaments Command Program Manager (PM) Future Combat Systems (FCS) Unit of Action (UA) program was awarded an Army Knowledge Award (AKA) for its Advanced Collaborative Environment (ACE) program during an awards ceremony at the 2004 Army Directors of Information Management Conference in Fort Lauderdale, FL, Aug. 30 to Sept. 3, 2004.

The FCS ACE program was one of seven Army programs to win an AKA, winning in the "E-Army" category. "The FCS Advanced Collaborative Environment has already had a major impact on the life cycle of FCS weapon platforms and helped to reduce the FCS program timeline," BG Charles Cartwright, PM UA, stated. "Use of the ACE is absolutely key and essential to all we are trying to do to achieve program objectives."

FCS is the biggest technology and integration challenge the Army has today. It is a networked system-of-systems — one large system made up of 18 individual systems, plus the network, plus the Soldier. It uses advanced communications and technologies to link Soldiers with both manned and unmanned ground and air platforms and sensors. FCS is agile — allowing forces to move quickly — and versatile — allowing troops to conduct a variety of missions. FCS has assembled a government and industry team through a revolutionary change in the relationship between the Army and its private sector industrial partners, Lead Systems Integrator — Boeing Co. and Science Applications International Corp. — and its selected subcontractors. Together, with other government agencies, this team is known as the FCS One-Team.

FCS ACE is the digital environment enabling the design, development, test, production and support of FCS weapon systems throughout their life cycle. It directly supports the ongoing system engineering effort for the weapon systems in development and is the medium from which program engineers and program managers conduct preliminary and critical design reviews, supporting all FCS program decisions and milestone reviews.

The FCS ACE program's innovative capabilities have shown that it can bring great cost savings to the Army and DOD. Army senior leaders have issued a policy announcing their intention to build on FCS ACE's success in developing an Army ACE that provides a common collaborative digital environment across Army acquisition programs.

The Army Chief Information Officer/G-6 AKA program recognizes outstanding examples of knowledge management initiatives that support enterprise solutions focused on improving situational awareness and decision making. These may include enhanced collaborative processes that improve organizational decision making, learning or development or the use of technology and reengineering to achieve process transformation that improves operational effectiveness and product, service and information flow to the user. The AKA program provides Army-level recognition for initiatives that provide knowledge-based capabilities for the enterprise, including solutions applicable at the major command, functional community or Army level, highlighting those that have achieved tangible success related to Army Knowledge Management goals and objectives.

Contracting Community Highlights



Contingency Contracting at the National Training Center Supports Unit Rotations

LTC Anthony J. Nicolella and SFC Walter Epps



CONTRACTING HIGHLIGHTS

In the “Contracting Community Highlights” section of *Army AL&T* Magazine, we are afforded the opportunity to educate the acquisition community on the missions and achievements of our various Army contracting organizations. Each feature article provides in-depth information relative to a contracting organization, mission or process, while our “News from the Field” segments offer brief glimpses into contracting-related successes and achievements at numerous sites.

This issue’s feature article highlights a primary mission of the National Training Center (NTC) Acquisition Command at Fort Irwin, CA, — to train contingency contracting officers (CCOs) who support warfighting brigades. The authors present the 3-phase training process that CCOs will go through and the issues that the CCOs can anticipate while deployed. The article also details the support and training that the NTC Acquisition Command provides to the CCOs during their deployment to NTC.

In addition to the feature article and the regular Defense Acquisition Regulation Council Corner, we are proud to pass on news and laudatory comments for outstanding achievements by command personnel from our contracting organizations. We have also included a synopsis of the CP-14 FY04 Intern and Training Coordinator Workshop that was conducted in Nashville, TN, in June 2004.

We appreciate the support from the field in providing the material to submit for publication, and we hope you find the submissions as informative and interesting as we do. Enjoy reading the November-December 2004 issue, and have a safe holiday season!

Ms. Tina Ballard

Deputy Assistant Secretary of the Army
(Policy & Procurement)

The National Training Center (NTC), Fort Irwin, CA, is responsible for training the U.S. Army’s warfighting brigades. Every mechanized and armored rotational brigade (Active and many National Guard) comes to NTC once a year for training. Normally, there are at least 9 rotations per year at NTC, but the number can be as high as 12 rotations. Training these brigades usually includes maneuver and gunnery scenarios lasting approximately 4 weeks. Scenarios can vary from high-intensity conflicts (large tank formations going toe-to-toe) to low-intensity conflicts (small-scale units conducting raids, ambushes, etc.). Regardless of the scenario, the one constant factor is that these maneuver brigades will need contracting support and they will get this support from contingency contracting officers (CCOs) and the NTC Acquisition Command (AC).

A principal NTC AC mission, part of the Army Contracting Agency–Southern Region, is to provide an on-the-job training environment for CCOs, while also assisting the CCOs in providing contracting support to the warfighting brigades. CCOs are military contracting professionals



(normally the rank of staff sergeant through major) whose primary responsibility is providing contracting support to warfighting brigades. NTC trains the CCOs in three phases — pre-deployment, deployment and post-deployment.

Pre-Deployment Phase

This requires CCOs to contact the NTC AC’s CCO Program Manager (PM). The CCO PM then forwards the CCOs advance packets, which are also available on the

NTC AC's home page <http://www.irwin.army.mil/ac/cco>.

It is highly recommended that CCOs go to this page to download their advance packets, which include the NTC CCO Regulation, lessons learned, CCO support kit and local policy letters. Once the CCOs have their advance packets, they should familiarize themselves with its contents. The advance packet materials will help CCOs execute their duties. Besides familiarizing themselves with the advance packet material during this pre-deployment phase, CCOs will also need to:

- Arrange transportation and lodging for the brigade's torch party and main body.
- Obtain unit requirements at least 30 days prior to deployment start.
- Coordinate catered meals with the U.S. Forces Command G-4. Normally, catered meals are authorized for the first and last day at NTC and only at two locations: Southern California Logistics Airfield and the Yermo Railhead.
- Complete and forward network-access requests to the NTC AC's System Administrator. This will allow the command to set up CCO e-mail and Standard Procurement System (SPS) accounts.
- Coordinate funding via Military Interdepartment Purchase Request to NTC's Director of Resource Management (DRM) for *indirect costs* such as operation and administrative costs. This process must be completed at least 60 days before deployment. *Direct costs* such as operation of equipment and transportation should be completed at least 30 days before deployment.

Deployment Phase

Once the above tasks are completed, CCOs are ready to enter the deployment phase. This is the most challenging and rewarding training phase because it requires CCOs to perform their main mission (provide contracting support) under the same stressful conditions that they will experience during a real-world deployment. CCOs perform the full gamut of contracting (cradle-to-grave) at a very fast, and sometimes grueling, pace during unit deployments. At a minimum, CCOs will perform the following tasks:

- Receive unit requirements.
- Identify sources.
- Solicit quotes/offers.
- Evaluate quotes/offers.
- Award contracts using SPS. The types of contracts awarded are very diverse and can range from portable latrines to portable showers to various rental vehicles.
- Oversee issue/turn-in of leased equipment.
- Process claims.
- Document contractor quality, service and delivery.
- Review contractor invoices.
- Ensure that *Material Inspection and Receiving Reports (DD250s)* are completed and distributed and that the contractor is paid in a timely manner.

Post-Deployment Phase

The final phase is the post-deployment phase, better known as the out-processing phase. This phase is also very challenging because it takes place as the unit is turning in its equipment and preparing to either deploy back to its home station or, in many cases, deploy directly to an overseas theater of operation. Unit personnel have a tendency to be in a hurry to leave and this can make the CCO's job more difficult. Therefore, it's extremely important that CCOs maintain good communications with contracting officer representatives along with the unit S-4s, comptrollers and the NTC DRM. Any sloppiness during this phase has the potential to cost the government thousands of dollars in claims. During the post-deployment phase, CCOs will:

- Write and turn in their after action reviews.
- Be evaluated on performance by the NTC Acquisition Commander and CCO PM. The CCO's Director of Contracting (DOC) or unit commander receives a copy of each CCO's evaluation. Many DOCs and commanders use this information in the CCO's Officer Evaluation Report or Noncommissioned Officer Evaluation Report.
- Clear the NTC AC (i.e., return building/office key, close-out e-mail and SPS accounts, etc). Before departing,



CCOs CPTs Nicole Pasion (Fort Lewis, WA) and Angelito Clark (Fort Hood, TX) work together to award a contract in support of 3rd Brigade, 1st Armored Division's Rotation 03-04 at NTC. (U.S. Army photo.)

CCOs must close out all contracts and settle all claims.

- Debrief the NTC Acquisition Commander, CCO PM and contracting officer.
- Provide the NTC AC with a forwarding mailing address, telephone number and e-mail address in the event there is a problem with a contract that was closed out or if an outstanding claim is received.

As detailed herein, CCOs operate in a high-operations tempo environment while deployed to NTC, performing a role that is mission critical. Besides coordinating funding, ensuring timely delivery of products or services, complying with regulations, resolving claims and supporting/promoting small business goals, CCOs serve as unit liaisons between the rotational unit and the NTC AC.

The NTC AC's role is also critical because it is responsible for training and supporting the CCOs. Many CCOs who deploy to NTC are new to the Army acquisition workforce and this is often their first contracting job and deployment. The support and training that CCOs can expect to receive from the NTC AC includes:

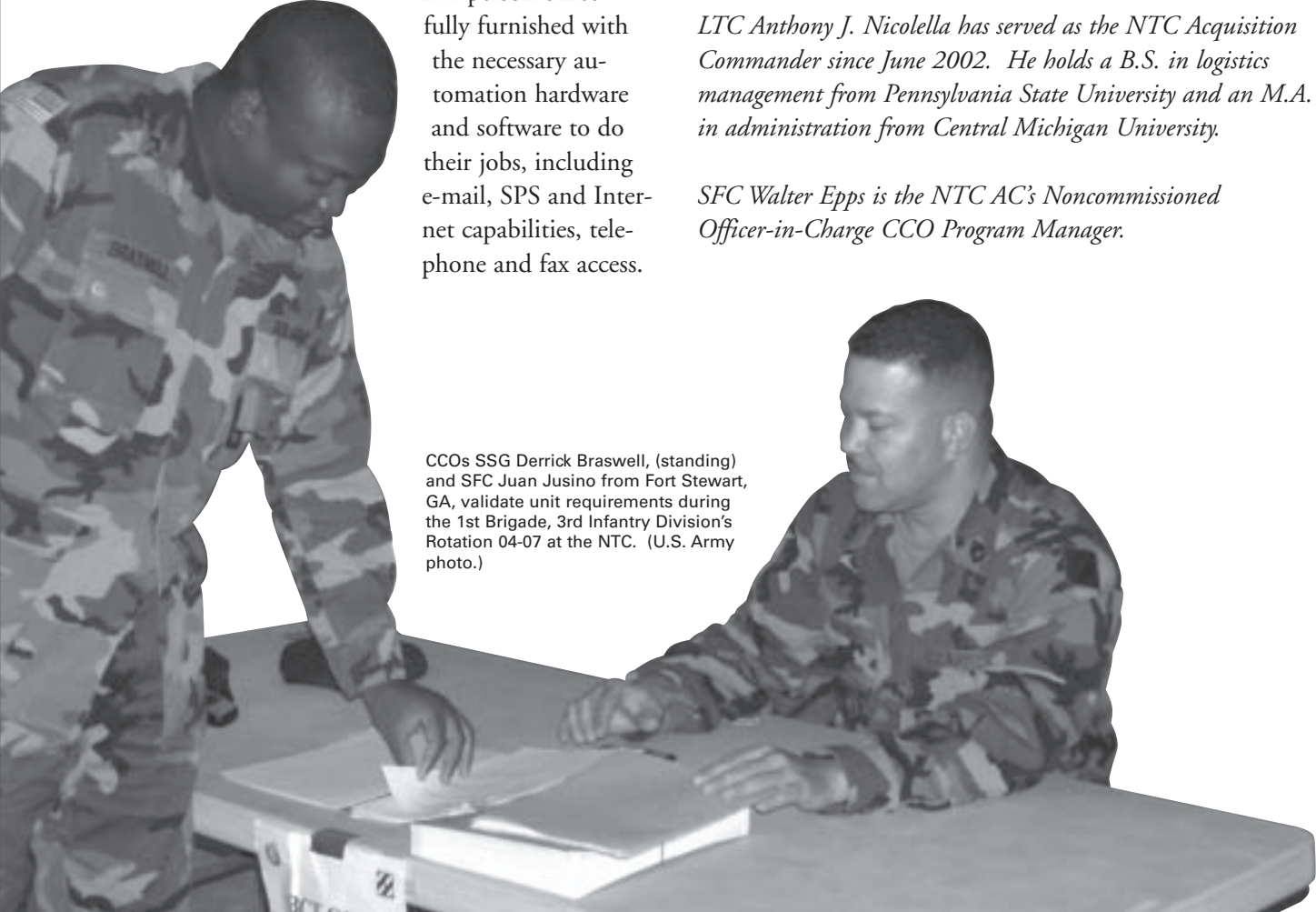
- A 2-person office fully furnished with the necessary automation hardware and software to do their jobs, including e-mail, SPS and Internet capabilities, telephone and fax access.

- Contracting officer support. Because many CCOs who deploy to NTC are new to contracting and are not warranted contracting officers (KOs), NTC AC KOs will review and sign all contract actions. In addition to KO support, CCOs can rely on the various functional experts (legal, property, quality and automation) within the NTC AC.
- The NTC AC provides a variety of contracting training for CCOs. The training is tailored to the needs of the individual CCO, officer and noncommissioned officer and covers numerous topics — from how to write a solicitation, to how to process a claim, to how to close out a contract. CCOs can also participate in the command's in-house training sessions.

This article provides a good sense of what CCOs can expect when they deploy to the NTC. Likewise, it provides better insight of the important role that CCOs play in supporting their warfighters. CCOs, when properly trained and supported, are combat multipliers and tremendous assets to the units they support. The acquisition workforce at the NTC AC takes great pride and satisfaction in supporting and training the U.S. Army's CCOs.

LTC Anthony J. Nicoletta has served as the NTC Acquisition Commander since June 2002. He holds a B.S. in logistics management from Pennsylvania State University and an M.A. in administration from Central Michigan University.

SFC Walter Epps is the NTC AC's Noncommissioned Officer-in-Charge CCO Program Manager.



CCOs SSG Derrick Braswell, (standing) and SFC Juan Jusino from Fort Stewart, GA, validate unit requirements during the 1st Brigade, 3rd Infantry Division's Rotation 04-07 at the NTC. (U.S. Army photo.)

News From the Field

U.S. Army Tank-automotive and Armaments Command (TACOM) Leads Effort in Equipping New Iraqi Armed Forces with Battalion Sets. TACOM and the Tank-Automotive Research, Engineering and Development Center (TARDEC), with support from the Communications-Electronics Command (CECOM) and the Natick Soldier Support Center (NSSC), in an unprecedented teaming effort equipped 27 new Iraqi Armed Forces (IAF) battalions with 43 different types of equipment in record time.

The procured equipment ranged from vehicles and rolling stock to weapons, communications, night vision devices, fire control and individual soldier equipment. From early March 2004 — when TACOM received the directive from Army Materiel Command (AMC) headquarters to lead this contracting mission — to late May, a core group of 17 associates from TACOM, TARDEC, CECOM and NSSC, with ad hoc support from approximately 17 additional associates, worked 7 days a week to fully define the requirements

specified by the Coalition Provisional Authority's Coalition Military Assistance Training Team, devise an acquisition strategy, release a competitive solicitation, conduct a formal source selection evaluation and award a fixed-price indefinite delivery/indefinite quantity contract. This contract type allows maximum flexibility in supporting the IAF's changing needs as it becomes a significant factor in creating the new Iraqi security forces.

Acquisitions as complex as this one usually take 120-180 days to complete. TACOM completed this contract in just 79 days — 7 days ahead of an already aggressive schedule that was accelerated to meet the equipment and training requirements to stand up the IAF in time to support the transition of authority to the new Iraqi government on June 28, 2004. Ten proposals were received from firms throughout the world on April 29, 2004, and an award was made on May 25, 2004, to ANHAM Joint Venture of Vienna, VA, for \$259 million maximum.

Corps of Engineers Joins Cooperative Ecosystems Studies Unit. The U.S. Army Corps of Engineers (USACE), Consolidated Contracting Office (VCCO), Vicksburg, MS, recently joined the Upper Middle Mississippi Valley Cooperative



IAF Battalion Sets Team Members – **Back Row:** (left to right) Steven Herbert (TARDEC), Marty Green (TACOM), Brian Corrigan (TACOM), John Klecha (TACOM), MG N. Ross Thompson III (Commanding General, TACOM), Harry Hallock (TACOM), Bill Roche (TACOM), Jake Brown (TARDEC), John Szafranski (TARDEC) and Mohan Khabra (TARDEC). **Middle Row:** Sue Lewandowski (TACOM), Peter Blazejczyk (PEO Combat Support and Combat Service Support), Chang Ford (Defense Contract Audit Agency), Jeff Parsons (HQ AMC), Celeste Steele (HQ AMC), Denise Mika (TACOM), Rich Franke (TARDEC), Elaine Hartung (TACOM) and Ken Starr (TACOM). **Front Row:** Kathy Krajnovic (TACOM), Janis Thelen (TACOM), Zoya Shaikh (TARDEC), Tina Minauro (TARDEC), Phoung Tran (TARDEC) and Sharon Criner (TACOM). (U.S. Army photo.)

Ecosystems Studies Unit (UMMV CESU) on behalf of DOD. The VCCO joined the UMMV CESU at the request of researchers in the Engineer Research and Development Center (ERDC). This was a precedent-setting effort that opened the door to USACE military funded programs for the entire CESU program.

The UMMV CESU has broad applicability within ERDC and allows DOD to quickly negotiate and award cooperative agreements to any UMMV CESU university partners. These agreements include conducting research for or providing technical assistance with the biological, physical, social and cultural sciences needed to address resource issues and interdisciplinary problem solving in an ecosystem context at the local, regional and national levels.

The CESU award process fulfills the competition requirements of *10 U.S.C. 2361* for agreements with institutions of higher education. In addition, CESU partners have agreed to low overhead rates, to enable ERDC researchers to employ the assistance of CESU partners at an affordable price. Any DOD office interested in using the UMMV CESU should contact Research Coordinator Alan Anderson at (217) 352-6511, ext. 6390 or Alan.B.Anderson@erdc.usace.army.mil; or Contract Specialist Joyce Roberts at (217) 352-6511, ext. 7568 or Joyce.I.Roberts@erdc.usace.army.mil.

CECOM Executes Modification to Other Transaction Agreement (OTA). On April 4, 2004, the CECOM Acquisition Center modified its OTA with Harsh Environment Applied Technologies (HEAT) Inc., a woman-owned small business. The \$1 million modification was issued to implement Phase II of the Head Tracked Sensor Suite (HTS2) effort. The HTS2 is an ongoing Science and Technology (S&T) Objective Program led by the CECOM Night Vision and Electronic Sensor Directorate located at Fort Belvoir, VA.

Under the HTS2 agreement's terms, HEAT will develop, test and demonstrate hardened helmet tracking sensors and situational awareness software. OTAs provide maximum flexibility by allowing HEAT to pursue new technologies and leading-edge S&T to develop specific capabilities that are critical to the HTS2 Program.

Significantly, several technologies developed under this OTA are applicable in other areas as well and show promise for overall Future Combat Systems Program goals. OTAs help broaden DOD's technology and industrial bases by fostering noncontractual business arrangements between DOD and

educational and commercial entities, many of which do not traditionally do business with the government. OTAs have been instrumental in furthering research that has demonstrated wider applications — both within and outside the military.

SMDC Organization Supports DOD's Chemical and Biological Defense Mission. The Space and Missile Defense Command (SMDC) has a small cadre of five contract specialists resident in the Chemical Biological Medical Systems (CBMS) Joint Project Management Office that provide contract support to the CBMS staff and its subordinate Product Managers: the Joint Vaccine Acquisition Program and the Medical Identification and Treatment Systems.

The contracting efforts have proven to be highly specialized, necessitating a working knowledge of life sciences as well as Food and Drug Administration requirements. The contract specialists in this branch are integrated product team members who perform technical and product management activities. The contract specialists are knowledgeable enough to understand the technical terminology and technology requirements requested by the scientists. In most cases, if a government specialist is not available, the contract specialist is equipped to detect a falsehood without additional assistance.

AFSC Contracting Personnel Successfully Accelerate 40mm Awards. In April 2004, the Program Manager for Maneuvering Armament Systems asked the Army Field Support Command (AFSC) to shift the FY04 40mm awards from August-September 2004 to June 2004. The contracting team dealt with numerous issues ranging from competitive solicitations for commercial items to plant-procuring other components, including the Load, Assemble and Pack requirements, which necessitated the acceleration of FY04 rate negotiations. Because the team successfully accelerated the award dates, additional reprogrammed monies became available and were put on contract in early July.

The team awarded nearly \$150 million to support the accelerated effort during June and July. The AFSC 40mm contracting team Procuring Contracting Officers are Gene Harrison, Melanie Johnson and Susan Phares. The Contract Specialists are Sherry Burris, Sandra DeGryse, Larry Leahy, Donna Ponce, Christine Thompson and Joe West.

ACA-SR Provides Support to Rapid Equipping Force (REF). MAJ Cyprien LaPorte, Army Contracting Agency – Southern Region (ACA-SR), served as the senior contracts advisor to REF from March 29, 2004, through Sept. 23, 2004. REF, headquartered at Fort Belvoir, VA, is a G-3 operation reporting directly to the Army Vice Chief of Staff. The REF's primary mission is to equip commanders with commercial-off-the-shelf solutions that increase mission capability and reduce risks for warfighters.

During his deployment, LaPorte advised REF leaders on business matters and forecasted future REF contracting needs, including developing support for upcoming requirements. He worked closely with REF program managers and provided invaluable assistance in developing statements of work, acquisition plans and other supporting documentation. He also educated REF personnel on acquisition regulations and federal procurement law.

The ACA-SR will continue to support REF with two additional people from September 2004 through March 2005. The White Sands Missile Range Directorate of Contracting (an ACA-SR organization) is also providing REF contracting support.

AMCOM Acquisition Center University. The Aviation and Missile Command's (AMCOM's) Acquisition Center University (ACU) was established in April 1999 by AMCOM Acquisition Center Executive Director L. Marlene Cruze as a formal job-site education center focused on practical application of acquisition processes. A "hands-on" training program that provides quality and timely acquisition workplace-relevant education, ACU uses current AMCOM acquisition practitioners and external subject matter expertise to deliver material in a "real-world" context. To date, approximately 7,300 students have attended more than 165 classes with about 22,900 Continuous Learning Points Awarded.

FY04 Intern and Training Coordinator Workshop

Kimberley D. Buehler and Jessica J. Hardage

The U.S. Army Acquisition Support Center (ASC) Contracting Career Program Office (CP-14) hosted an Intern and Training Coordinator Workshop in Nashville, TN,



DA interns in the IWG. **Front Row:** Julie Griffey, Angela Trimmier, Terri Harrison, Karin Weinert and Sherri Brown. **Second Row:** Christy Herbig, Dan Endrizzi, Brian Vershoore, Justin Filler, Jessica Hardage, Stacy Potts, Dee Klaff and Rachel Phelps.

June 2-4, 2004. The workshop targeted current CP-14 intern and training coordinators to increase Armywide communication and information sharing, validate and improve existing CP-14 programs and establish a series of tasks to execute FY05 intern hiring and training programs.

Twenty-three CP-14 intern and training coordinators, from the Army Materiel Command major subordinate commands, Army Corps of Engineers, Army Medical Command, Space and Missile Defense Command (SMDC), Army Contracting Agency and ASC Regional Customer Support Offices, participated in 2 1/2 days of lectures and roundtable discussions. Personnel from the Civilian Human Resources Agency (CHRA); North Central Civilian Personnel Operations Center; Acquisition, Logistics and Technology Enterprise Systems and Services; Army Logistics Management College; ASC; and True Careers — a commercial job services company — spoke at the event. Discussions covered intern and training issues and initiatives such as recruitment and hiring procedures; entry-level, journeyman and executive training; professional development; and CP-14- and CHRA-sponsored electronic initiatives. The diverse speakers and attendees openly exchanged ideas and subject matter expertise.

Program coordinators nominated current DA interns to attend the workshop and participate in working sessions conducted concurrently with the intern and training coordinator sessions. An Intern Working Group (IWG), comprising 13 DA interns from Army contracting organizations reviewed 5 key areas of the CP-14 intern program: recruitment, marketing, program Web sites, training handbooks and an FY05 intern workshop.

The IWG provided recommendations and products integrating marketing strategy with recruitment practices. They proposed new program terminology to align with current commercial practices, created sample promotional brochures, suggested increased exposure at college career days and job fairs and on Internet-based employment Web sites. The interns created two new handbooks. The "Welcome Handbook" explains the intern program and processes prior to program entry. The second handbook provides practical guidance and serves as a reference throughout the intern experience.

Additionally, the IWG drafted a proposal for an FY05 Intern Professional Workshop that included a full agenda with suggested DOD and Army speakers and topics, a proposed timeframe and location and anticipated costs. CP-14 is reviewing all intern recommendations and products.

The workshop provided a forum for the improvement and implementation of CP-14 programs and policy.

Kimberly D. Buehler, ASC CP-14 Accession Programs Manager, Fort Belvoir, VA, and Jessica J. Hardage, DA Intern, SMDC, Huntsville, AL, submitted this article.

The DAR Council Corner

There are many *Federal Acquisition Regulation (FAR)* and *Defense Federal Acquisition Regulation Supplement (DFARS)* final rules published throughout the year; two are summarized here.

DFARS Part 242 – Contract Administration and Audit Services Section 242.1104 – Production Surveillance and Reporting. Effective June 8, 2004, this rule amends *DFARS* to eliminate requirements for contract administration offices to perform production surveillance on contractors that have only Criticality Designator C (low-urgency) contracts and for monitoring progress on any Criticality Designator C contract, unless production surveillance or contract monitoring is specifically requested by the contracting officer. This change allows contract administration offices to focus production surveillance resources on critical and high-risk contracts.

DFARS Part 206 – Competition Requirements Subpart 206.001 – Follow-on Production Contracts to Prototype Projects. This final rule, effective June 8, 2004, provides an exception from competition requirements to apply

to contracts awarded under the authority of *National Defense Authorization Act for FY02 (Public Law 107-107)*, Section 822. Section 822 permits award of a follow-on production contract without competition to participants in an Other Transaction Agreement (OTA) for a prototype project if:

- The OTA provides for a follow-on production contract.
- The OTA provides for at least one-third non-federal cost share for the prototype project.
- Parties participating in the OTA were competitively selected.
- Participants successfully completed the prototype project.
- The follow-on production contract does not call for more units than are specified in the OTA.
- The prices established in the follow-on production contract do not exceed the target prices specified in the OTA.

This information was provided by DAR Council Army Policy Member Barbara Binney. For more information, contact her at (703) 604-7113.

CECOM Contracting Successes

The U.S. Army Communications-Electronics Command (CECOM) Iraq Reconstruction Acquisition Team and the CECOM Acquisition Center were both recently honored for their accomplishments in the past year.

During a ceremony held at the Pentagon Aug. 14, 2004, Deputy Secretary of Defense Paul Wolfowitz recognized the Iraq Reconstruction Acquisition Team for its contributions to ongoing efforts in Iraq. CECOM was tasked with devising a suitable acquisition strategy that would satisfy requirements to reconstruct seven critical Iraqi infrastructure sectors including water, oil, security, justice, transportation, communication, building, housing and electricity.

CECOM Contracting Officer Jack Kulaga led the communications sector acquisition team. Other team members included Contract Specialist Sharon Fernandes and Source Selection Evaluation Board Subfactor Chief Robert Piermattei. Deputy to the Commanding General Victor Ferlise and CECOM Acquisition Center Director Edward G. Elgart were also recognized for their roles during the source selection.

At a ceremony held at Fort Belvoir, VA, CECOM Acquisition Center Contracting Officer Deborah Gilligan and

Contract Specialist Joseph Manganaro were recognized for their extraordinary efforts in supplying Second Generation Forward-Looking Infrareds to warfighters. COL Michael Bowman, Program Manager, Night Vision/Reconnaissance, Surveillance and Target Acquisition, presented Gilligan with the Army Superior Civilian Service Award and Manganaro with the Army Achievement Medal for Civilian Service.

Bowman cited the high caliber of acquisition support the CECOM Acquisition Center provided to his office and its customers.

For more information about the CECOM Acquisition Center, contact Robert F. Tiedeman, Procurement Analyst, at (732) 532-3818 or DSN 992-3818.

New Southwest Asia Command Blends Installation Support With Contingency Contracting

MAJ Douglas A. Schuetz

The U.S. Army Contracting Command Southwest Asia-Qatar (USACC SWA QA) is one of two new battalion-level commands operating under the auspices of the U.S. Army Contracting Command Southwest Asia.

Formally activated Dec. 13, 2003, the battalion has a twofold mission. What makes it unique is that it fulfills its original mission as the Directorate of Contracting for Camp As Sayliyah, Qatar, and has regional oversight and responsibility for four contingency contracting offices in Afghanistan and Uzbekistan.

The battalion performs a full range of acquisition and contracting support, and has eight Department of the Army civilians and four military staff members. From administering two multimillion-dollar-cost-plus-award-fee contracts for base operations and base security to functioning as the International Merchants Purchase Authorization Card (IMPAC) program coordinator for *Joint Task Force (JTF)-180*, the Afghanistan effort in the global war on terrorism (GWOT), this multi-functional command does it all.

The organization has always played a major role on Camp As Sayliyah. As the camp transitioned from a simple, preposition site for war reserve equipment with only 50 staff

members, to the current major command and control headquarters with more than 3,500 military members, the contracting office was instrumental in managing an increase of more than \$11 million to the base operations and base security contracts. Those contracts were critical in ensuring the new missions of the installation and its major tenant organizations — the U.S. Central Command, Special Operations Command-Central and Iraqi Survey Group — were able to continue uninterrupted and focused on fighting the GWOT. The command's base operations branch administers the two complex multimillion-dollar cost-plus-award-fee contracts with more than 480 contractors providing base operations support and 245 contracted guards providing base security.

The command's other branch, Base Support branch, is responsible for all local procurements in excess of \$2,500 for more than 14 tenant units. The branch conducts more than 90 percent of the procurements with local Qatari vendors and purchases everything from office supplies, bottled water, laundry and cell phones to medical, dental and optical services and maintenance for vehicles, heavy equipment and electric utility and water service. Additionally, the command has a robust construction program and has awarded and administered more than \$5 million in FY03 contracts and is on track to exceed that in FY04. Overall, in FY03, the command awarded more than \$72 million and through June 2004, it has awarded more than \$40 million.

The command's new mission is contractual oversight and responsibility for all contract actions for *JTF-180*. With four separate contracting offices in Kabul, Bagram and Kandahar, Afghanistan and Karshi-Khanabad, Uzbekistan, the



Visit to Pol-e Charkh-e site (Kabul), home to Afghan National Army 1st and 3rd Brigades, Camp Blackhorse. Inspecting construction projects awarded by Kabul Contracting Office. (U.S. Army photo by MAJ Douglas A. Schuetz.)

command supports more than 14,000 soldiers with an annual contract execution of approximately \$350 million.

The command functions as the regional commander, providing Title X contingency contracting oversight for *JTF-180*. It provides backup support for large, complex or high-dollar procurements because the commander is vested with an unlimited dollar value warrant. The command has already awarded five contracts worth more than \$18 million since December 2003. Those contracts cover everything from military working dogs, commercial power generation, shower and toilet facilities, ballistic protection for helicopters and airfield construction. The command has made determined efforts to expand regional sources to reduce costs and reduce acquisition lead and delivery times to get much-needed supplies and equipment into the hands of military members more quickly.

This new command is at the forefront of providing warfighter support. Whether it is operating the Camp As Sayliyah base or providing contract support to soldiers in Afghanistan, USACC SWA QA is playing a major role in combating terrorism.

MAJ Douglas A. Schuetz is the Defense Cooperation in Armaments Officer, U.S. Embassy, Oslo, Norway. At the time the article was written, he was the Executive Officer and Deputy Director of Contracting; USACC SWA QA.

Army AL&T Magazine 2004 Readership Survey Results

The Army AL&T Magazine editorial staff would like to extend its appreciation to all those who responded to our 2004 Readership Survey in the May-June issue. Our driving goal is to provide Army Acquisition Corps professionals — and the Army at large — with salient educational articles, news and career information in the acquisition, logistics and technology (AL&T) arena. This survey will help us accomplish that goal by telling us where we're hitting the mark, where we need to make changes and where we might want to expand our editorial horizons.

By and large, the results from this survey were very positive with 77 percent of respondents indicating they read "All" or

"Most" of each issue. An impressive 89 percent indicated that the magazine was either "Very Useful" (54 percent) or "Sometimes Useful" (35 percent) in keeping readers informed about matters related to the acquisition, logistics, contracting and technology career fields. Eighty-two percent rated article quality as either "Excellent" (48 percent) or "Good" (34 percent).

One reason for these impressive ratings is the magazine's new layout and design. Another is the quality of the articles submitted by so many talented authors who are subject matter experts in their respective fields. On a scale of 1 to 5, with 1 indicating best, between 77 percent and 83 percent of respondents marked 1 or 2, respectively, for "General Appearance," "Page Layout," "Charts and Graphs," "Photos/Captions," "Addition of Color Pages" and "Addition of New Sections."

On the topic of layout and design, though, the survey elicited a handful of questions concerning the magazine's expense. "The use of such high quality paper and printing is too extravagant for just informing the workforce on projects and programs. In comparing the overall look and feel to Newsweek or Time magazine, this publication is extravagant in its appearance and hard to justify from a cost standpoint." This reader's sentiment was echoed about a dozen times, and clearly warrants response.

The Secretary of the Army has made it clear that he is concerned with the benefits and the costs of all Army publications. Because of improvements in the way we publish AL&T — a more professional editorial process, leveraged relationships with printing contractors and use of state-of-the-art desktop publishing and printing technologies — we are able to produce the magazine on better paper with color photographs and graphics, for a larger subscriber population, on the same budget that we had a year ago. In short, while the magazine looks better, and is an easier read for most of the workforce, it costs about the same to produce. The only actual cost that has gone up is postage to mail the magazine because we are producing much larger, information-packed issues.

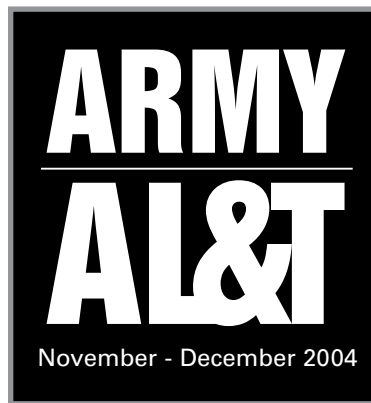
Without diminishing the value of our new eye-catching layout and design, we feel the primary driver behind the reader survey ratings is improvement in AL&T content. The addition of new features and columns further added to the magazine's overall appeal. A majority of readers found real value in our cover stories, lead articles, news briefs and the ever-popular Army Acquisition Executive and Acquisition

Support Center Director columns. The section titled “Did You Know?” also proved well-read. Other magazine sections were less popular, ranging from a 24 percent preference for Contracting Community Highlights, to a 5 percent preference for the DAR Council Corner. This information regarding reader preferences will prove valuable as we allocate editorial space in upcoming issues.

On the question of balance between longer and shorter articles, most respondents indicated no preference for change. However, 36 percent of respondents stated that they prefer shorter articles. Only 8 percent stated that they would like longer, more detailed pieces. These results are something we will analyze as we move forward.

In determining balance between types of articles, we received a large variety of reader comments. Some readers want more articles on the “nuts and bolts” of technology, while others say that “the technology stuff” goes right over their heads. Some readers wanted more logistics articles. Still others wanted more acquisition-oriented articles. Several readers suggested we add technology. Numerous readers requested more information on the value of AL&T programs to warfighters in Iraq and Afghanistan. Others wanted to capture more on best practices here at home. Some readers wanted more information about program, project and product management. Likewise, a core group preferred a greater focus on hard-core research, development and engineering. This variety is not surprising given the diverse audience *Army AL&T Magazine* is published for. Our readership consists of “all uniformed and civilian men and women dedicated to researching, managing, developing, testing, evaluating, contracting, fielding and sustaining the Army’s warfighting systems and the equipment to support the Army’s transformation from the Current to Future Force.”

In fact, *Army AL&T Magazine*’s intent as a professional journal is to meet as many reader preferences as possible. We recognize that no one article, or even a given issue, will meet the entire workforce’s requirements, so I encourage you to keep coming back! Our objective is to cover as much ground as possible over time. That’s why specific reader suggestions are of great value to our editorial staff. The recommendations we received are a veritable treasure trove of great ideas for our 2005 editorial calendar.



With the advent of our new Web Edition, we can address the professional development, training, information and news needs of an even larger audience. Sixty-three percent of respondents stated that they do not go online for additional or more detailed *Army AL&T* content. Another 17 percent stated they were not aware that going online was even an option. Little did we realize that even among those who do use the online service, only a minority visits the site more than once a month. Clearly, we need to do a better job of promoting our online edition.

Not surprisingly, we discovered that our subscribers also read a variety of other publications, with the largest number (36 percent) stating that they read *Army Magazine*, the Association of the United States Army publication. Also quite popular are *Soldiers Magazine*, *Defense AT&L* and *Army Logistician*. This is good information, because it helps our staff to better understand the subjects, orientation and issues of greatest interest to our own readers.

Finally, we will examine how the magazine is presented in general. In response to the first survey question, regarding how many of the previous six issues had been read, only three respondents replied “None.” In response to the follow-on query, “If none, why?” one person stated that, “I read none fully. Content is self-advertising hype.” While this appears to be a minority position, it’s one that took us by surprise.

On one hand, it’s worth noting that much of the magazine’s content is indeed “self-advertising,” and that this is by design, since the “self” in question is the Army acquisition community. As a whole, this “community” has made tremendous strides over the last several years to tell an extremely important story to the Army’s combatant commanders and their Soldiers — “We are here to serve you!” *Army AL&T Magazine* is just one of many mediums the workforce uses to share its success stories.

However, from a credibility standpoint, we must acknowledge that as an organization we tend to advocate the premise that there are no “problems” only “challenges.” In other words, we may tend too frequently to focus on the success at the end of a tunnel, while glossing over the genuine obstacles and missteps that may have preceded that success. Doing so only trivializes the success itself. Moreover, there are certainly examples of obstacles and missteps that have not been overcome, or which have yet to yield success.

While it is not our objective to dwell on the negative or play the role of judge and jury, we do recognize the value in exploring those problem areas that are not unique to one project or another, but which many of our readers may confront, often with frustration and less than stellar results. Addressing these areas also serves to motivate and educate the community as a whole. It helps to know that you are not the only one facing a certain challenge, and it would help to know what others are doing to try and overcome similar problems.

That sort of focus was asked for in several of the comments that we received in answer to questions about future articles or changes to the publication. While the vast majority of submitted comments were positive, it was clear that a greater emphasis on "lessons learned," both positive and negative, would be appreciated. Again, this is something we will address to the Editorial Advisory Board chaired by the Army Acquisition Executive.

Having had an opportunity to review the survey results, we wanted to share this information with our readers. On behalf of the entire *Army AL&T* Magazine editorial staff,

thanks for completing the survey. We take your feedback and recommendations seriously, and appreciate your candid comments and your vote of confidence in letting us know you value our publication.

Best wishes for a joyous holiday season and much success in the New Year.



Michael I. Roddin
Editor-in-Chief
Army AL&T Magazine

Acquisition Trivia

The 8-week Army Acquisition Basic Course provides initial acquisition training to Army officers and civilians. It prepares graduates for entry-level positions in the Army's acquisition workforce.

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ARMY AL&T Writers Guidelines

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Armey 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 Editorial Office address is:
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Purpose

To instruct members of the Army 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 AL&T Workforce.

Subject Matter

Subjects may include, but are not restricted to, professional development of the AL&T Workforce, AL&T program accomplishments, technology developments, policy guidance and acquisition excellence.

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 that verifies the cost savings and their reinvestment. Organizations should be prepared to defend these monies if higher headquarters has a more pressing priority for them.

Submission Procedures

Articles must not exceed 1,600 words. Manuscripts are to be prepared in MS Word and should be approximately 8 double-spaced pages, using a 20-line page, using Times Roman 12-point font. Do not submit articles in layout format or with footnotes, endnotes or acknowledgement lists of individuals.

A maximum of 3 photos or illustrations, or a combination of both, may accompany each article in files separate from the manuscript. Photographers names and commands are to be included for each photo submitted. Artwork must be accessible for editing and not embedded in the manuscript. Photos may be color or black and white. Illustrations must be black and white and must not contain any shading, screens or tints. Illustrations and photographs may be submitted via e-mail to army.alt.magazine@asc.belvoir.army.mil. All electronic files of photos must have a minimum 300-dpi resolution and be in TIFF or JPEG format. If they do not meet this requirement, glossy prints of all photos must be submitted via U.S. mail, FedEx, etc, to the address listed at the top of this page. Photos and illustrations will not be returned.

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.

All submissions must include the author's mailing address and office phone number (DSN and commercial).

Biographical Sketch

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

Submission Dates

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

Please be advised that because of the increased number of submissions, deadlines must be strictly enforced. Space constraints and changing priorities require that we publish some articles on the magazine's Web site only. These can be found at <http://asc.army.mil/pubs/alt/>.

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In This Issue

- Exclusive Interview With General Paul J. Kern
- Rapid Equipping Force
- Joint Ammunition Life Cycle Management Command



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