

Headquarters Department of the Army  
PB-70-03-4

JULY—AUGUST 2003

# ARMY A&T



# DEPOTS & ARSENALS

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# FROM THE ARMY ACQUISITION EXECUTIVE

## *Depots, Arsenals & Ammunition Plants — Critical Defense Industrial Base Facilities*

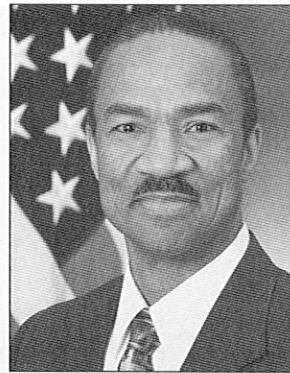
Concurrent with the more than 360,000 soldiers forward stationed or deployed to Operation Iraqi Freedom, Operation Enduring Freedom and other key missions throughout the world, the United States Army is undergoing the largest and most comprehensive transformation in its 228-year history. As the acquisition and purchasing arm for the Army, we are acquiring tremendous new capabilities so our warfighters can fight with greater lethality, survivability and sustainability, regardless of where the battlefield or mission takes them. It is clear that to provide the required sustainment and operational readiness for a transforming Army, we must transform the industrial base now to meet the Army's needs for the future.

The health of the defense industrial base is key to the Army's ability to provide innovative technology and technologically excellent systems and equipment at competitive prices. Production is primarily dependent on a privately-owned network of prime contractors and subcontractors. However, the Army's organic industrial base consists of facilities that produce ammunition, store munitions, manufacture components and maintain equipment. These are the Army's arsenals, ammunition plants and depots.

We know that the defense industrial base of the 21st century must consist of a complementary and synergistic mix of private sector and government capabilities. By leveraging the private sector's capabilities to the maximum extent practicable and economical, the Army can focus its resources on those manufacturing processes and products unique to its national security mission. The challenge is to determine what organic capabilities to retain and then how to make those Army-owned manufacturing facilities efficient so we can operate them without the need for subsidies.

We must also improve procurement from the private sector when we have limited sources. Our biggest dilemma in Army procurement is limited contractor competition and high costs. I hear complaints that despite large percentage increases in defense spending in every Army procurement appropriation, business for prime contractors dwindled as we bought fewer systems over the last few years and, instead, focused on modifications to current systems. Modifying *and* modernizing existing systems and equipment usually involves a sole source negotiation with the original equipment manufacturer, limiting our options. We are further limited because we cannot afford to miss out on important advancements or risk losing key industrial suppliers critical to sustainment of our fielded systems. As the Army transforms, program managers are faced with changing suppliers. The old base of suppliers has less work and is getting it without competition. This leads to higher cost.

This edition of *Army AL&T* magazine has several articles on the organic industrial base. There is much interest in this part of our infrastructure — including senior Army leaders, Office of the Secretary of Defense (OSD) officials, and Members of Congress. Although this base accounts for a small



percentage of the Army spending on procurement, the maintenance depots are responsible for more than half of all depot maintenance spending.

Several recent studies pointed out that the Army retains more capacity than the nation needs in peacetime or anticipates that it will need, even in an emergency. For example, we recently completed a study — led by RAND Corp. — that was requested by the Secretary of the Army, to examine utilization, efficiencies and potential consolidation of the Army's government-owned, government-operated and government-owned, contractor-operated facilities. In addition to this latest study, we met with OSD and committed to making the organic facilities lean — to operate without the need for government subsidies and ensure a level playing field and competitive pricing with the private sector. We also vowed to consider consolidation and privatization. The Army Materiel Command is developing a written concept, and many important details are outlined in this issue's articles.

I am a firm believer in private enterprise. I believe that government should be in business only on an exceptional basis. Still, when we are in business, we must be guided by the same tough standards that we set for our contractors. We want the best value we can get and we want world-class technology at competitive prices.

The Army has attempted to address these organic industrial base issues for years. Ideas have been developed and plans have been written, and we're still working on it. Manufacturing is not a core competency for the Army. Army ownership of the manufacturing capability requires Army leaders, particularly logistics leaders, to attend to this peripheral function. This takes these leaders away from their primary responsibilities and it requires them to make decisions that fall outside their primary areas of expertise. Further, government ownership of plants sometimes leads to inefficient sourcing decisions.

In 1997, the Pacific Northwest National Laboratories issued a report on the ammunition industrial base. The report urged the Army to convert its government-owned assets to commercial activities, apply acquisition reform measures, focus government activities on accurately expressing the need for munitions, use the competitive marketplace and establish a program executive office (PEO) for this important program. The Army followed this advice and we now have PEO, Ammunition, but we are still hard at work on the other areas.

Say "industrial base" and you will get a different response based on whom you talk to. Suffice to say that the buck for the Army industrial base stops with me. From my perspective, the Army is fully committed to warfighter readiness and to providing the required materiel to support the warfighter at competitive prices. We need innovation and efficiency throughout the entire industrial base, and we are taking the necessary actions to ensure that happens quickly.

**Claude M. Bolton Jr.**

July-August 2003; PB 70-03-4

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Army AL&T (ISSN 0892-8657) is published bimonthly by the OASAALT. Articles reflect views of the authors and not necessarily official opinion of the Department of the Army. The purpose is to instruct members of the Army acquisition workforce relative to AL&T processes, procedures, techniques, and management philosophy and to disseminate other information pertinent to their professional development. Private subscriptions and rates are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 or (202) 512-1800. Periodicals official postage paid at Fort Belvoir, VA, and additional post offices. POSTMASTER: Send address changes to DEPARTMENT OF THE ARMY, ARMY ALT, 9900 BELVOIR RD, SUITE 101, FORT BELVOIR, VA 22060-5567. Articles may be reprinted if credit is given to Army AL&T and the author. Unless specifically requested, photo credits are not given. Approved for public release; distribution is unlimited.

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**Professional Publication of the AL&T Community**

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**FEATURES**

<b>Transforming Depots, Arsenal, And The Industrial Base</b>	
<i>GEN Paul J. Kern</i> . . . . .	2
<b>Transforming The Army's Ammunition</b>	
<i>COL Jyuji D. Hewitt</i> . . . . .	4
<b>The Future Of The Army's Government-Owned Industrial Base</b>	
<i>Frederick L. Smith</i> . . . . .	7
<b>AMC And The AAE Partner To Implement Performance-Based Logistics</b>	
<i>Michael D. Connor</i> . . . . .	9
<b>Lean Manufacturing</b>	
<i>Darlene Paukei, Deidre Eaton, Robert Katulka, Dr. Carol Sedlacek, and José Martin</i> . . . . .	12
<b>Recapitalization And Army Transformation: The Role Of Depots, Arsenal, And The National Maintenance Program</b>	
<i>Dan McDavid</i> . . . . .	14
<b>ARDEC: Providing Decisive Lethality For The Army's Go-To-War Weapons</b>	
<i>Michael P. Devine</i> . . . . .	16
<b>PATRIOT IDSS Program Technology At Redstone Arsenal Supports Operation Iraqi Freedom</b>	
<i>CPT James O. McLinnaham and Dr. Dennis G. Beeler</i> . . . . .	20
<b>Acquisition Excellence: Providing Critical Operational Capabilities To The Warfighter</b>	
<i>LTC Anthony W. Potts, Richard M. Szczepanski, and Alvin A. Abejon</i> . . . . .	22
<b>Taming The Data Monster</b>	
<i>John W. Knapp and Susan Newell</i> . . . . .	25

The staff of Army AL&T magazine extends a special thanks to John T. Kelly, Army Acquisition Support Center, for his role as Contributing Editor to this issue.

**DEPARTMENTS**

<b>Career Development Update</b> . . . . .	27
<b>News Briefs</b> . . . . .	35
<b>Awards</b> . . . . .	37
<b>Conferences</b> . . . . .	39
<b>ASC Launches New Web site</b> . . . . .	40
<b>New Army AL&amp;T Editor-In-Chief</b> . . . . .	40
<b>Writer's Guidelines</b> . . . . .	41

**COVER**

The Army is improving the use and efficiency of its industrial base (arsenals, maintenance depots, and ammunition plants) where continued ownership is necessary for operational readiness and national security.

# TRANSFORMING DEPOTS, ARSENALS, AND THE INDUSTRIAL BASE

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GEN Paul J. Kern

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## Introduction

The U.S. Army is in the midst of an unprecedented transformation. The Army's Objective Force will provide the Joint Force Commander a military that is more responsive, deployable, agile, versatile, lethal, survivable, and sustainable. To meet the Army's challenge, DOD's entire logistical system—from the factory to the foxhole—must be transformed. This transformation must include the operations of the Army's organic industrial base and its relationship to private industry, both essential elements of the whole defense manufacturing capacity on which our Nation's warfighters depend.

Transformation of logistics from the factory to the foxhole makes a nice bumper sticker. But if we are really serious about transformation, we must develop a common understanding of the problem. Many people in our field logistics system and many in the private sector understand the details of their particular industry. But few people are familiar with our government industrial base facilities such as depots, arsenals, and ammunition plants. True transformation requires a holistic approach, as the expression factory to foxhole implies. Reducing the logistical footprint of our deployed forces requires an agile industrial base to make up for what we ask our soldiers to leave behind. Failure to invest in our industrial base to ultimately make it more agile creates unacceptable risk to forward-deployed soldiers on the battlefield.

## Yesterday

After the Revolutionary War, Alexander Hamilton advocated the development of a domestic armament base. Because the arms industry was very much in its infancy, the new government built public ordnance facilities to help satisfy its need for war materiel. Congress supported the public manufacture of arms and powder by appropriating funds for the establishment of federal arsenals, armories, depots, laboratories, and magazines so the United States would become independent of foreign nations for essential military stores. In 1794, our first arsenal was established in Springfield, MA. The arsenal served the Nation until its deactivation in 1968.

There has always been a precarious balance between the public and the private sector. During the Revolutionary War, we relied almost entirely on private and domestic sources to arm our troops. This relationship often produced unsatisfactory results in both quantity and quality of deliveries. This prompted President Washington to ask Congress to approve a bill establishing several permanent arsenals to free the republic from dependence on unreliable private sources. However, complete independence from contractors proved both infeasible and undesirable. Arsenals also allowed the government to maintain a peacetime repository for ordnance knowledge that could be leveraged by the private sector to expand production during war.

Connected to this relationship and also central to the arsenals' experience

has been the cyclical nature of the Nation's wars resulting in a boom-and-bust cycle for the arsenals. Private industry was the source for all artillery, gunpowder, and much of the small arms produced during the Civil War. After the Civil War, the Nation reduced its capabilities and relied even more on private industry. Unfortunately, private industry did not maintain significant investments in production capacity for Army munitions because of limited demand and profit. This further illustrates the cyclical nature of defense manufacturing. Fortunately, our arsenals maintained the expertise needed by both government and private defense production in wartime. This knowledge was invaluable as the Nation mobilized for the global requirements of total war during World War II.

As we entered the Korean and Vietnam Wars, we had an industrial base designed to support global operations. Fortunately, the nature and scale of these wars paled in comparison to World War II. The national strategy relied more on strategic weapons than conventional forces to meet the Soviet challenge. Economic concerns prompted a long trend toward privatization of defense facilities. Many arsenals and defense activities shut down while others simply concentrated on research and development. Arsenals began competing with private industry for work. The Nation's degree of industrial sophistication, defense budgets, and the peacetime availability of private profit in arms manufacture have all played a

role in determining how successful the arsenals could be as repositories of the production know-how essential for private defense producers. These constraints often placed frustrating limits on the arsenals as partners with defense-industry counterparts.

## Today

Today we look at the industrial base as a mix of commercial and government industrial-base capabilities. The Army relies on the commercial industrial base to meet materiel requirements to the maximum extent practicable. But we focus our organic government capabilities to maintain critical industrial technologies and to mitigate risk associated with the lack or potential loss of commercial capabilities.

These new conditions require the Army to size and work our organic capabilities to support peacetime and wartime requirements. The Army Materiel Command (AMC) must maintain the government's facilities in modern operating condition to ensure quality and enhance productivity while encouraging public-private partnerships to defray the cost of ownership for those commercial capabilities. With such a reliance on the commercial sector, the Army must be able to monitor and assess the health of the commercial industrial base to identify and manage the potential risks.

The organic government industrial base consists of the Army-owned arsenals, maintenance depots, and ammunition plant activities. Some could call this capability the Nation's insurance policy. While acknowledging it must divest itself of excess industrial facilities, the Army also recognizes that terminating an organic government manufacturing capability or moving it to the commercial industrial base may result in a capability being lost. Consequently, the Army must be judicious in its management of its inherent base because re-establishing a lost capability may be costly, politically and legally prohibitive, and may take more time than an emergency situation would permit. Public-private partnerships take on an increasingly more important role in maintaining the organic industrial base.

## Tomorrow

As we look into the future, we recognize we will continue to balance government and private-sector capabilities to meet our defense needs. Affordability will demand that we always try to balance the costs and risks of our industrial-base activities. In the future, we are likely to seek even closer relationships between government and private activities. The goal will be to make the most efficient use of scarce investment dollars while also leveraging the best characteristics of public and private-sector capabilities.

AMC realigned the Rock Island, IL, and Watervliet, NY, arsenals under the Ground Systems Industrial Enterprise, a single business unit at the Army Tank-automotive and Armaments Command, to optimize support for ground systems across the Current, Interim, and Objective Forces. The Army has also aggressively pursued the Armament Retooling and Manufacturing Support Program to reduce the cost of Army-owned ammunition production facilities, while maintaining necessary production equipment and a skilled workforce. This initiative is based on the proven best practices of public-private partnerships successfully demonstrated at the state and county level. The Arsenal Support Program Initiative is a major modernization effort modeled after the proven success of the Armament Retooling and Manufacturing Support Program with the ammunition industrial base for our government arsenals. Under the Arsenal Support Program, public-private partnerships generate revenue to modernize and consolidate core competencies. Army depots are designated as Centers of Industrial and Technical Excellence and maintain core capabilities in the types of equipment overhauled, rebuilt, modified, upgraded, or repaired at their respective facilities.

The Army's organic industrial base today consists of facilities that produce ammunition, store munitions, manufacture components, and maintain equipment. The facilities, located throughout CONUS, consist of government-owned, government-operated and government-owned, contractor-operated facilities.

At both government and contractor ammunition facilities, the Army produces, loads, assembles, and packs the various calibers of conventional ammunition such as small arms, mortar, and tank rounds used by all the military services. The government-operated munitions centers store and distribute ammunition rounds, bombs, and missiles. The two government-operated manufacturing arsenals produce items such as gun tubes, gun mounts, and other armament components for the Army, Navy, Marine Corps, and Foreign Military Sales. Finally, the five government-operated maintenance depots repair, overhaul, upgrade, and maintain helicopters; missiles; combat vehicles; tactical vehicles; and communication and electronic equipment for all services and other countries.

## Conclusion

Army leadership has been committed to improving the use and efficiency of the defense industrial base where continued ownership is necessary for operational readiness and national security. The Army is committed to establishing a more effective and efficient depot-level operation, enhancing productivity of its core capabilities, and integrating innovative business processes while ensuring the best sustainment capability to the warfighter to meet operational readiness. The Army is completely committed to the readiness of the warfighter and providing the required materiel at competitive prices, not just reducing cost and infrastructure.

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# TRANSFORMING THE ARMY'S AMMUNITION

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COL Jyuji D. Hewitt

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## Introduction

Near the middle of the United States, in a secluded area in South-eastern Oklahoma, is one of DOD's premier strategic assets—McAlester Army Ammunition Plant (MCAAP). MCAAP is leading the way in ammunition life-cycle operations. From ammunition production through demilitarization, MCAAP performs a myriad of ammunition projects while applying a broad spectrum of technologies. The plant uses a wide range of techniques—from “dumb-bomb” production to cutting-edge precision munitions production. More than an industrial complex, MCAAP provides strategic ammunition logistical support to warfighters.

With a passion to develop and maintain the latest manufacturing techniques, MCAAP works with private businesses such as Boeing,

Lockheed Martin, General Dynamics, PB/Nammo Demil LLC, Austin Powder Co., Pendulum Management Co. LLC, Raytheon, World Wide Demil LLC, and ML Marketing. Partnering with these businesses also allows MCAAP to maintain use of its facilities and remain current in the latest production techniques.

Covering almost 45,000 acres, the plant has the largest ammunition storage capacity in the United States, with more than 2,400 explosive and component storage facilities covering 7 million square feet. MCAAP is one of the first installations called upon to load and ship ammunition during a contingency. MCAAP's ability to meet national requirements of shipping 400 military vans a day for 30 days was greatly improved after completion of several strategic mobility programs costing \$35 million.

MCAAP is able to accomplish its strategic responsibility because of its highly trained and motivated workforce, established emergency loading and shipping procedures, critical equipment maintained at high-readiness rates, and a well-maintained ammunition stockpile.

## About The Plant

McAlester's leadership in applying modern manufacturing techniques makes it America's flagship ammunition plant, one of the few government-owned, government-operated (GOGO) facilities in the United States. As a GOGO facility, McAlester provides a flexible and experienced workforce capable of responding to the immediate needs of warfighters. MCAAP is considered the premier bomb-loading facility for DOD.

At MCAAP's subordinate facility, the Red River Munitions Center (RRMC) in Texarkana, TX, skilled technicians perform the maintenance and fabrication of training systems for a variety of missiles, including the Maverick and Stinger. In addition, RRMC also renovates high-explosive projectiles, 2.75- and 3.5-inch rockets, mortars, grenades, and other small-caliber munitions.

*MCAAP is able to accomplish its strategic responsibility because of its highly trained and motivated workforce, established emergency loading and shipping procedures, critical equipment maintained at high-readiness rates, and a well-maintained ammunition stockpile.*

## Production

MCAAP mixes explosives for all types of bombs including conventional explosives such as Tritonal (a mix of TNT and aluminum powder) and H6 as well as the less sensitive plastic-bonded explosive. During the production process, the plant can also apply a thermal coating to the thermal arc spray. This thermal coating is designed to delay explosion in the event of a fire, a safety feature that emphasizes protecting the Navy's ammunition handlers.

MCAAP's production lines can load and assemble explosive bombs as well as inert bombs, which can be loaded with concrete or Filler E, a mixture used to simulate explosive-loaded munitions. Other production-line work includes loading assembled warheads for Harpoon missiles; loading, packing, and shipping propelling charges for naval munitions; disassembly and demilitarization of Maverick missiles; and integration of the Joint Stand Off Weapon and High Speed Anti-Radiation Missiles.

Behind the activity of the production line is the production planning office that is responsible for each project, from job estimate to its completion. Production planning's job begins with an estimate that includes costs of labor and consumable supplies. After funding is received, office personnel are involved in technical reviews to ensure that the product is built to customer specifications. They also write standard operating procedures for item production and take care of movement of all materials to and from the production lines.

The plant produces bombs that are either cast-filled or melt-poured. Cast fill is a process by which the plastic-bonded explosive is injected into bombs from giant mixing bowls. Melt pour is achieved by pouring liquid explosive into the bomb body.

Both processes require strict quality control and attention to safety.

When the bombs are completed, they must be prepared for shipment. MCAAP produces its own metal and wooden pallets to specification for shipping. The current dunnage mill facilities have 17,000 square feet and an outload capability of 92,000 board feet per day. Dunnage is necessary to block and brace munitions to prevent movement during shipment.

## Operations

MCAAP has a number of facilities that allow the plant to perform operations associated with most types of ammunition. These operations include production, modification, conversion, maintenance, disassembly, and demilitarization. A multipurpose maintenance facility is used to renovate anything from 105mm cartridges for the Army to 5-inch projectiles for the Navy.

MCAAP is implementing "lean thinking" throughout its processes. The basic tenet of the lean process is to eliminate "nonvalue" activities including wasted motion, excess paperwork, inventory, and setup times. By fully implementing lean thinking, MCAAP can reduce wasteful processes, thus saving money and hastening response time to warfighters.

MCAAP has two primary missions: ammunition production and ammunition logistics. Currently, 36 percent of MCAAP's workforce is involved in producing and renovating munitions, while 28 percent of the workforce is engaged in ammunition storage and receiving operations. Power projection and storage capabilities are directly tied to the installation's logistics operations. MCAAP's power-projection mission is to rapidly load and ship ammunition stocks to warfighters. The combination of ammunition production with

ammunition logistics provides the strength of power projection and makes MCAAP a vital DOD asset.

## Environment

The plant is also a steward for our Nation's environment. Under an environmentally friendly program developed in conjunction with the Joint Munitions Command at Rock Island, IL, and the Army Research, Development and Engineering Center at Picatinny Arsenal, NJ, MCAAP is reusing explosives melted out of obsolete munitions. Instead of burning these explosives, MCAAP has designed a system that allows it to recycle quality TNT flakes, within military specifications, that can be reused in new munitions. Based on the projected quantity of TNT that was needed to support munition requirements 3 years ago, an economic analysis determined that reclaiming TNT melted out of obsolete munitions versus reactivating an old Army facility to manufacture new TNT would save \$50.8 million over a 5-year period.

*MCAAP is implementing "lean thinking" throughout its processes. The basic tenet of the lean process is to eliminate "nonvalue" activities including wasted motion, excess paperwork, inventory, and setup times.*

MCAAP also performs demolition of unserviceable and obsolete munitions, working with the Defense Ammunition Center (DAC) and leading industrial companies to develop safer and more efficient methods of demilitarization to reuse, recover, or recycle valuable resources. In fact, MCAAP's ratio of environmentally preferred processes to reclaim, recycle, reuse, or renovate (R4) versus open burn/open detonation (OB/OD) is at 75 percent for R4 and 25 percent for OB/OD.

One example is MCAAP's ongoing recovery of Tritinol from 750-pound bombs and old TNT from 8-inch howitzer shells that will be used to produce new bombs. MCAAP has invested more than \$83 million since 1996 on mission improvements such as TNT recovery systems.

A second program, scheduled to begin in 2004, involves using a cryofracture process to demilitarize obsolete munitions. The cryofracture process in general involves the freezing of munitions in liquid nitrogen and eventually transporting to a fur-

nace for burning. The DAC, General Atomics, and MCAAP partnered to design and build this fully automated facility that will provide an environmentally friendly method to decrease the stockpile of obsolete munitions. This process is aligned with the Joint Munitions Center's goal to increase use of new technology to rid DOD of unusable and obsolete munitions in an environmentally friendly manner.

### Strategy

The strategic role MCAAP plays in the Army's joint mission is best demonstrated by its support of the war in Iraq and the global war on terrorism. Since the terrorist attacks of September 11, 2001, MCAAP has grown from 850 employees to almost 1,200. In addition, the number of production-line workers has tripled. In fact, MCAAP, which has not used a night shift since the Vietnam War, is now working multiple shifts on an extended workweek. Logistics operations have seen a comparable increase in workload. The chart below compares shipping and receiv-

ing figures in two categories: FY01/02 and the first 6 months of FY02 versus the first 6 months of FY03.

### Conclusion

With its world-class shipping and receiving operations and its flexible and responsive workforce, MCAAP lives up to its reputation as the premier bomb-making facility in DOD. In summary, McAlester Army Ammunition Plant's technology-driven cradle-to-grave munitions management is proof positive that MCAAP is on the cutting edge in joint munitions production and renovation. Its strategic power projection, logistics operations, and environmentally friendly demilitarization strengthen its position. More importantly, as a responsive and versatile GOGO installation, MCAAP is prepared to respond to any crisis at any time as a major strategic player in our Nation's overarching defense strategy.

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Timeline	Shipping (Short Tons)		Percentage Increase or Decrease	Receiving (Short Tons)		Percentage Increase or Decrease
FY 01/02	FY01 56,796	FY02 60,523	6.60% increase	FY01 42,541	FY02 55,510	30.5% increase
First 6 months of FY02 versus First 6 months of FY03	FY02 27,038	FY03 48,800	80.5% increase	FY02 24,854	FY03 41,025	65.1% increase
The first row shows a significant increase in shipping and receiving for FY02 (which incorporates post-September 11, 2001, activity) as compared to the previous FY. The second row shows a more dramatic increase as the global war on terrorism heated up with combat action in Afghanistan and Iraq.						



# THE FUTURE OF THE ARMY'S GOVERNMENT-OWNED INDUSTRIAL BASE

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Frederick L. Smith

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## Introduction

Ask 10 people what they think the Army should do with its government-owned industrial base in the future and you will probably get 10 different answers. Some will argue that it is a valuable national treasure with critical capabilities of which the Army would be foolish to divest. Some will argue that it is an antiquated albatross with a significant amount of unused capacity, high rates, an unwillingness to transform itself, and should be divested of as quickly as possible. Others believe the answer lies somewhere between these two extremes.

With the option to close many of its installations available to DOD in 2005, the Army must soon make a decision on this controversial issue. If the Army believes its government-owned industrial base is too antiquated, too costly, and incapable of transformation, it will have the opportunity to offer much of it to the Secretary of Defense as base closure candidates. This avenue creates an irreversible decision that the Army should only make if it is sure it will never need control of those capabilities again.

To help assess this situation, the Army contracted with the RAND Corp. to study the government-owned industrial base and provide independent recommendations on what to do with it. RAND's findings indicate the government-owned industrial base does provide some critical capabilities, but the current statutory and regulatory impediments create an environment that makes it nearly impossible for these installations to operate efficiently. Their recommendation is to either privatize the Army's manufacturing arsenals or form a Federal Government Corporation (FGC) to manage them. By removing the arsenals from DOD, they would be free to pursue

additional workload and operate more like a business.

Privatizing the arsenals must be given serious thought, for once that action occurs, they are gone forever, including the Army's only foundry and only large caliber gun tube manufacturing capability. Even though the option of an FGC retains government ownership of the arsenals, it removes them from the direct control of the Army. And, as RAND admits, gaining congressional approval to do so may present an uphill battle and, even if successful, would likely take as many as 7 years to implement.

So what is the answer? In a perfect world, the Army would retain its government-owned industrial base and transform it into an efficient and effective business unit. This new business unit would reduce the government infrastructure, increase partnerships with both private industry and the field Army, significantly increase the use of capacity, and lower labor rates to a level comparable with industry. Furthermore, this would all be possible without the need for subsidized funds. Impossible, you think? Think again, and then say hello to the U.S. Army Tank-automotive and Armaments Command (TACOM) Ground Systems Industrial Enterprise (GSIE).

## Background

The GSIE was formed on Oct. 10, 2002, merging the capabilities of six Army facilities into a single Enterprise—Anniston Army Depot in Alabama, the Lima Army Tank Plant in Ohio, Red River Army Depot in Texas, Rock Island Arsenal in Illinois, Sierra Army Depot in California, and Watervliet Arsenal in New York. GSIE was the brainchild of MG N. Ross Thompson III, Commanding General of TACOM, and MG Wade H. McManus Jr., Com-

manding General of the then Operations Support Command (now the Joint Munitions Command). Both general officers understood the benefits of leveraging the capabilities of these valuable complexes.

The intent of GSIE is to leverage the government-owned ground systems industrial base in such a way as to create a complementary and synergistic mix of manufacturing, maintenance, storage, and outloading capabilities. Imagine the potential of combining 32 million square feet of manufacturing and repair space, 36,000 acres of high-desert storage, a 7,168-foot runway, approximately 4,500 pieces of industrial plant equipment, and 481 of the latest Computer Numeric Code (CNC) machine tools, along with 5,600 dedicated employees. These highly skilled workers include more than 300 engineers, 350 welders, and 500 machinists, many of whom are deployed around the world at any point in time. Imagine if the installations that possess these capabilities would work together instead of competing against each other, sharing workload and acting as ambassadors for one another. And imagine if they were free from bureaucracy in their business processes, reducing their rates so that they are comparable with private industry without the need for subsidies. The goal of GSIE is to make this a reality without the Army having to lose control of this valuable resource.

The truth of the situation, though, is that these installations are currently governed by a substantial amount of legislation and government bureaucracy. Eleven statutes affect work being done at Army industrial installations, most of which were introduced by individual members of Congress for particular reasons and to benefit particular sites. While these statutes are

well-intended, they tend to cause confusion and unneeded consternation about exactly what work can and should be performed at which installations and under which law. To help simplify this situation, GSIE formally submitted, as one of its first initiatives, draft legislation that clarifies several of the most-used statutes in question while continuing to meet their intent. This single piece of legislation complements and reinforces the current statutes to pave the way for new and innovative strategies for increasing workload at the government-owned installations.

Legislative reform is simply the first step in creating an efficient industrial enterprise. Another significant impediment that must be addressed is the current financial system. As an industrially funded organization, GSIE facilities must recapture all costs in their rates, even though many of these costs have nothing to do with the actual cost of the product. For example, certain customers are paying the so-called fully burdened rate at one installation so that the Army can pay for things such as environment-related issues at other installations. The phrase "put it in your rates" has become all too common and creates financial havoc at GSIE installations. The more these extraneous costs are included in the rates, the higher the rates climb. The higher they climb, the less workload that develops. This financial death spiral must be reversed for the Army to retain its government-owned industrial capabilities. To do so, GSIE installations must be able to offer different rate structures and firm-fixed-price contracts to certain customers when the situation permits.

## GSIE Approach

GSIE's plan of action encompasses four objectives—continually improve support to soldiers, reduce infrastructure, increase efficiency, and increase workload.

*Continually Improve Support To Soldiers.* As the U.S. Army Materiel Command (AMC) assumes more of the field Army responsibilities, GSIE must provide a closer link between its installations and the Army's posts, camps, and stations. The transfer of the operational control of the supply and maintenance mission of the Fort Knox Director of Logistics affords TACOM a

chance to showcase its immense talent to the field Army. By proving their ability to bring value-added assets to help the field, the TACOM workforce is leading the way in logistics transformation.

*Reduce Infrastructure.* Nearly everyone acknowledges the existence of excess infrastructure across the industrial base, and reducing the unneeded portion of the infrastructure is a major GSIE initiative. The question is how much to reduce and how to go about it. Under GSIE, the requirement for the government-owned footprint will be reduced around the installation's critical capabilities, thereby freeing up space for partnering or tenant use. A footprint reduction has just been completed at Watervliet Arsenal, resulting in 290,000 square feet of excess space in three buildings, along with 527 machines. This space is now available to tenants who generate revenue that offsets costs to the Army.

*Increase Efficiency.* Increasing the efficiency of the retained capabilities is a never-ending journey with GSIE. GSIE installations are currently pulling from a kit bag of efficiency initiatives to tailor a package that is best suited for their operations. One of the prominent efficiency initiatives being aggressively implemented within GSIE installations is the leaning of our operations. Lean manufacturing is the process of reducing waste and streamlining manufacturing processes to better use resources (equipment, inventory, and labor) in an organization. The lean philosophy is to continually improve processes by eliminating non-value-added waste from the system. Using tools such as value stream mapping, which refines processes, and rapid improvement events, which focus on rapid improvements in a specific work area, GSIE's goal is to increase the efficiency of selected maintenance and manufacturing lines by 10 percent.

*Increase Workload.* Even with infrastructure reduction and increased efficiencies, it is important for the GSIE to generate new workload for the installations. While a significant increase for cannon assembly and gun mount orders is not likely, there are requirements for the capabilities that make these items. A major strategy for GSIE is to tap into new and innovative work that matches with these critical capabilities. That work might come from other services, the field Army, foreign

military sales, or private industry. It is important to note that GSIE does not intend to compete with private industry. Rather, the intent is to provide potential industry partners with another source for hard-to-get items, or simply to offer them the capabilities that can make them more competitive in the global marketplace.

## GSIE Oversight

A GSIE Leadership Council consisting of the installation commanders and GSIE corporate directors is managing the accomplishment of these objectives. Their responsibilities are to approve major workload assignments, capital expenditures, process improvements, and transformation initiatives across the enterprise.

A GSIE Corporate Board of Directors, consisting of major customers such as representatives from selected Program Executive Offices, the U.S. Army Forces Command, private industry, and academia, oversees the GSIE. The board's responsibilities are to review and approve major strategic and resource decisions for the enterprise, as well as ensure an integrated customer and industry partner interface.

## Conclusion

All of these initiatives are designed to offer the U.S. Army an efficient and effective alternative to full privatization or an FGC. By implementing the legislative and financial changes, improving support to customers, reducing infrastructure, increasing efficiencies, and attracting new workload, GSIE can achieve the benefits of privatization without having to relinquish control of the assets. GSIE can, and will, continuously increase support to soldiers while reducing the enterprise rate to a level comparable with industry without the need for subsidies.

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# AMC AND THE AAE PARTNER TO IMPLEMENT PERFORMANCE-BASED LOGISTICS

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Michael D. Connor

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## Introduction

The Army Materiel Command's (AMC) traditional role is to provide just about everything the warfighter needs to survive in battle and other operations around the world. The phrase "if a soldier shoots it, drives it, flies it, or eats it, AMC provides it," permeates the hallways of HQ AMC and its Major Subordinate Commands (MSCs). From AMC's establishment in 1962 until last year's completion of the realignment of Army program executive officers (PEOs) and program managers (PMs) under the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT)/Army Acquisition Executive (AAE), AMC staff has decreased in size while maintaining its core missions of sustaining and supporting the Army.

AMC went through turbulent times in the mid-1990s as the Army downsized, but remained relatively robust across commodity and some functional lines. In the 21st century, Army transformation and other initiatives under DOD's Future Logistics Enterprise dictate that AMC solidify its role in the transforming Army and change to better support its ultimate customer—the warfighter.

There is no greater challenge than adapting to a new way of planning, overseeing, and executing logistics—that is what performance-based logistics (PBL) requires. Since last year's memoranda from the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) and the ASAALT directing the implementation of PBL, stakeholders have surfaced

many immediate and far-reaching challenges and barriers to successful PBL implementation. Those that directly and jointly impact the AAE and AMC include proliferation of support strategies and structures; performance-based agreement (PBA) oversight, management, and reporting framework; funding constraints; data collection and evaluation; and core capabilities and infrastructure impacts.

AMC and its MSCs still provide programmatic advice and assistance to PMs. The major challenge to the AAE and AMC, however, remains how to integrate the required "vertical" support to the PEOs and PMs and their weapon systems with the common or "horizontal" support AMC traditionally provides the Army—those support arrangements that stretch across weapon systems and commodities. This is graphically portrayed in Figure 1. The Army Chief of Staff's focus on the three logistics enablers of enhanced deployment, reduced combat support and combat service support footprint, and reduced logistics costs, demonstrates that the main objective of the AAE and AMC remains effective support to the warfighter. To accomplish this, many value-added initiatives are well underway at AMC.

## Value-Added Initiatives

Last fall, AMC established a PBL Integrated Process Team (IPT) to include the MSCs and other subordinate agencies as well as ASAALT. The IPT immediately began finalizing its charter after AMC Commander GEN Paul J. Kern approved an initial frame-

work for implementing PBL within AMC and signed an Implementation Memorandum. The IPT's overarching mission remains to influence Army PBL implementation and develop AMC guidance and procedures along with institutionalizing them. Specifically, the IPT continues to develop and refine strategies for implementing PBL within AMC and managing PBAs. This includes the following mission-essential tasks:

- Identify AMC goals and objectives.
- Develop an AMC position on PBL implementation within AMC and the Army.
- Develop an internal structure to manage PBAs.
- Develop and provide guidance to the command.
- Develop a plan to market AMC's capabilities and value-added initiatives.

AMC plans an integrated logistics enterprise approach to support PBL implementation within the Army. This approach integrates economic and business processes for PEO, PM, and sustainment communities and emphasizes the use of partnerships. This approach also leverages the expertise of MSCs, structures required matrix support, and exploits AMC's newly established Research, Development and Engineering Command (RDECOM) along with other subordinate organizations and agencies. It also ensures that PBL initiatives are in concert with lean thinking, logistics transformation and, in the end, adds value to providing

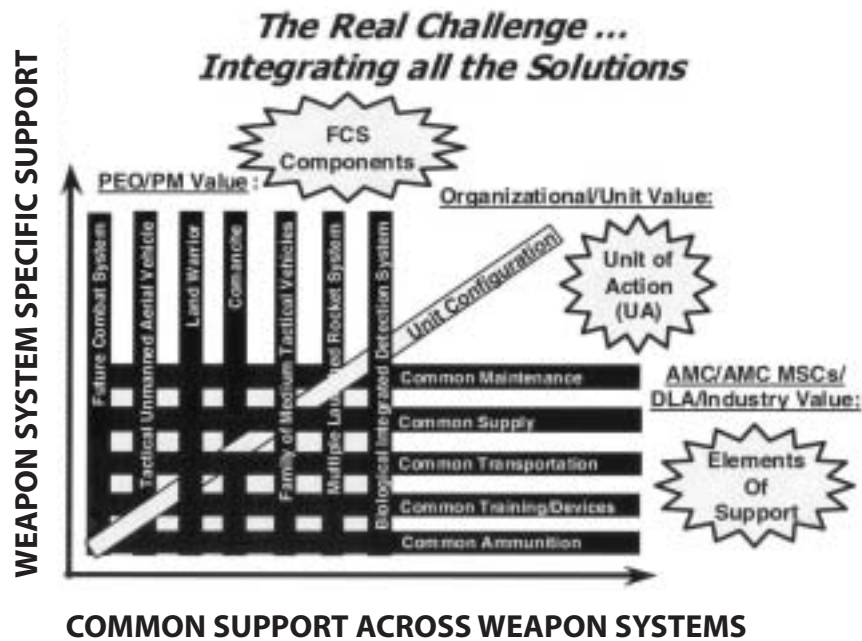


Figure 1.

required support to the warfighter. As such, AMC is developing integrated, economically and operationally feasible PBL strategies from a total Army perspective in concert with the AAE. It will continue to provide matrix support to assist PMs in developing viable PBL strategies compliant with Army-specified boundaries, considerations, and decision criteria such as:

- Existing statutes, regulations, and Army warfighting doctrine.
- Seamless integration into financial and logistics business systems while maintaining total asset visibility, using distribution hubs and Standard Army Management Information Systems and remaining transparent to the user.
- Consideration of the sunk costs of maintaining organic logistics infrastructure that cannot be downsized or disposed of without enabling legislation.
- Independent validation of business-case analysis.

AMC intends to remain an active participant in the coordination of concepts, doctrines, and policy initiatives in implementing PBL within the Army. AMC considers PBL an initiative that both energizes and synchronizes internal and external logistics communities of excellence for the betterment of the Army. PEOs and PMs are responsible

for the total life-cycle systems management of their programs. AMC retains a vital role in supporting the PEOs and PMs while ensuring that organic logistics systems and the sustaining base remain robust and flexible enough to be competitive and viable. Other value-added capabilities that AMC provides PEOs, PMs, and warfighters include the following:

- In-house contracting expertise.
- Institutional knowledge.
- RDECOM capabilities.
- In-house industrial facilities.
- U.S. Army Logistics Support Activity database capability.
- Experienced field service support expertise (e.g., logistics support element).
- Life-cycle management experience.
- Commodity management experience.
- Equipment distribution and delivery.
- Spares management.

### Implementation

How does AMC plan to task organize for PBL while remembering that integration of “lean and mean” logistics enterprises remains the key objective? There are three major PBL domains that require AMC’s participation—planning, oversight and approval, and execution. Each is addressed below.

### Planning

AMC provides matrix support to the AAE’s PEOs and PMs under PBL. The key difference under PBL implementation, however, will be more focused and integrated participation on IPTs at the integration IPT (IIPT), supportability IPT (SIPT), or working IPT (WIPT) level. Actions taken by AMC and AAE IIPT members at the beginning of the PBL process would include requirements development, cost estimation, alternative evaluations, logistics management, cost-performance trade-offs, and PBL strategy development. Members shall also assist the PM in development of the WIPT structure. AMC representatives, most likely from the MSCs, will sit on the SIPT where one key action will be to provide PBA development assistance. Along with any other roles and responsibilities as directed by the PM and as outlined in DOD’s IPT Guide, an objective of all IPTs is to elevate issues to a higher level in a timely manner. This is where and how AMC Headquarters will participate in the oversight and approval process.

### Oversight And Approval

Participation in the PBL and PBA oversight and approval process inherently involves looking at regulatory, statutory, and resource implications for AMC and the Army in general. Figure 2 shows the Army’s PBA staffing and

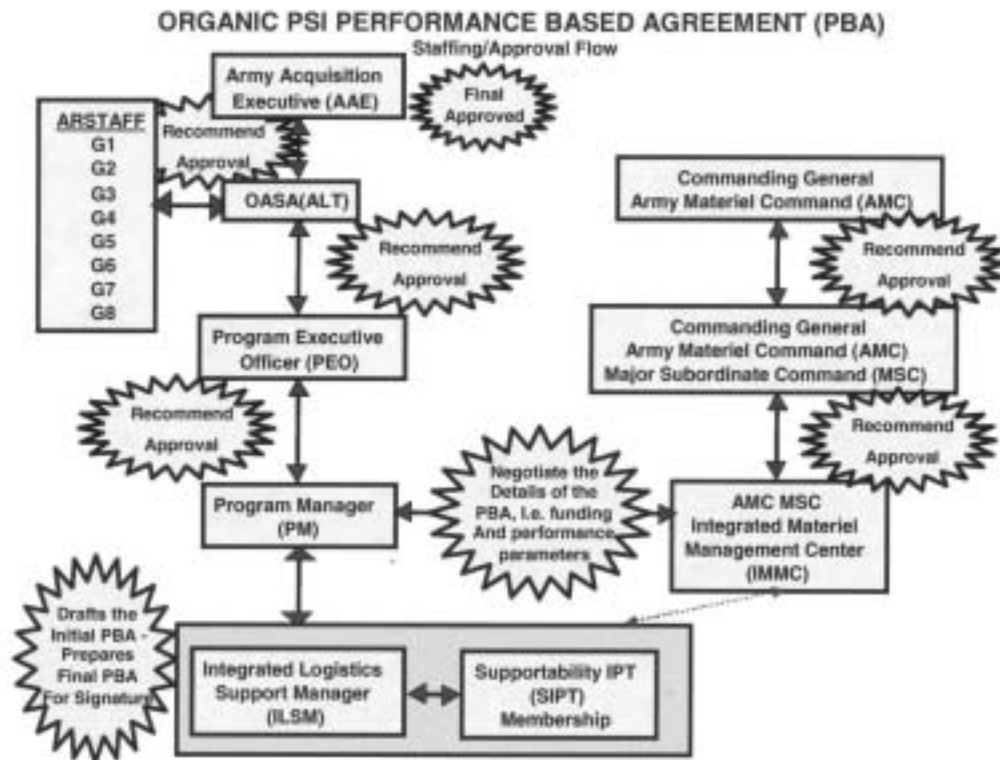


Figure 2.

approval flow for an organic organization serving as the product support integrator (PSI). Key ancillary involvement by HQ AMC or its MSCs includes validating the economic and business-case analysis required before promulgating any PBA between the PM and a PSI or product support provider (PSP). It also includes eventually being a PBA signatory along with the PM. But what about the key tenets of PBL that were envisioned when implementation was directed by the USD(AT&L) just over a year ago? The USD(AT&L) stated that, "as a minimum, product support management planning shall address integrated supply chains; segmented support by system or subsystem; maintaining a relationship with the warfighter based on system readiness; selection of best value, long-term product support providers based on competition, measuring support performance based on high-level metrics ..." How do AMC and the AAE plan to work together to execute those tenets?

### Execution

AMC, through its MSCs, plans to market itself as the PSI or PSP of choice depending on the weapon system and different cost-benefit analyses. The

major focus of the AMC PBL IPT is to provide and refine PBL guidance and policies concerning AMC participation in PBL product support as PSIs and PSPs. MSCs, with the assistance of HQ AMC and ASAALT, will continue to resolve those barriers to total PBL implementation during the life cycle of a weapon system as identified throughout the acquisition and sustainment communities. The MSCs have identified early on that they need guidance in many areas to successfully complete and accomplish their role as the PSI or the PSP. Some of their requirements include the following:

- Ground rules (for engaging PEOs and PMs and competing with other MSCs).
- Multilevel metrics (from existing metrics).
- Tracking mechanism(s).
- Marketing.
- Problem resolution.
- Training and contracting.
- Reporting and monitoring.

### Conclusion

As the AAE and his PEOs and PMs find it necessary to transition to PBL practices completely, and as more per-

minent feedback and guidance make their way back to HQ AMC and MSCs, AMC will organize and apply best-business practices throughout the command to include integrated logistics enterprise principles. This, done in concert with maintaining constant and two-way dialog with the ASAALT/AAE along with the myriad of subordinate AMC organizations, will move AMC forward and embrace PBL and its implementation with lean and mean vigor.

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# LEAN MANUFACTURING

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## Introduction

Facing challenges is certainly not a new experience for the Army Materiel Command (AMC) workforce and its leaders. However, the current environment is one of unprecedented challenge. The requirements of a future workforce, the impact of high technology, the global war on international terrorism, Operation Iraqi Freedom, supporting Army transformation, and the evolving changes in our national culture all coalesce to present AMC with huge challenges. This new environment calls for new approaches and new ways of thinking about what we do and, in this, there is potential for great progress. Implementing "lean" practices should catapult AMC to the forefront of innovation and productivity in DOD and permanently establish the organic base as a vital and essential component in future industrial base strategies.

## Tobyhanna Army Depot

Tobyhanna Army Depot (TYAD), PA, is DOD's largest facility for the repair, overhaul, test, design, and fabrication of communications-electronics systems and components. Throughout its 50-year history, TYAD has established a reputation for quality, productivity, and efficiency. Striving to ever improve that record of performance, TYAD is aggressively incorporating lean thinking into all aspects of depot operations. TYAD's initial efforts began in June 2002 with the establishment of a full-time Lean Core Team to lead implementation of lean concepts throughout the organization.

Value-stream analysis on the Sidewinder (AIM-9) guidance and control section overhaul line and the AN/TRC-170 communication system overhaul line marked the depot's first of many lean events. The Sidewinder is the primary air-to-air missile used by the Air Force, Navy, and many foreign military allies. The AN/TRC-170 is a critical piece of the tactical communications networks used by the Army, Air

Force, and Marine Corps. Both systems have shown improvements in materiel movement, flow days, and unit maintenance costs as a result of this analysis.

TYAD is also targeting industrial processes common to many of their value streams for lean improvement. These include large- and small-component refinishing operations that support most depot projects and numerous value streams. Lean efforts in these areas will improve every aspect of the depot's performance of its maintenance mission.

These activities are the prelude to TYAD's aggressive plan of action for the months ahead. TYAD will extend lean thinking to all operations to improve processes in every area of its communications-electronics mission. TYAD personnel are planning further lean events for a robust list of additional systems critical to warfighter readiness throughout the remainder of FY03.

## TACOM's GSIE

The Army Tank-automotive and Armaments Command's (TACOM's) Ground Systems Industrial Enterprise (GSIE) is incorporating lean manufacturing in its daily operations. GSIE has five installations conducting lean activities: Red River Army Depot, TX; Anniston Army Depot, AL; Watervliet Arsenal, NY; Sierra Army Depot, CA; and Rock Island Arsenal, IL.

*Red River Army Depot.* The Red River Army Depot began implementing lean manufacturing in May 2002. In February 2003, the depot completed its first pass of lean implementation on the Heavy Expanded Mobility Tactical Truck (HEMTT) engine and the Small Emplacement Excavator (SEE) vehicle.

The HEMTT provides transport capabilities for resupply of combat vehicles and weapon systems. The SEE is an engineering vehicle designed to excavate below the ground surface on which the machine rests. The vehicle is fitted with a backhoe and a front-end loader.

Implementing lean concepts in both projects resulted in the reduction of travel time by placing parts, tools,

and technical data within reach of the individual (point of use) and a reduction in throughput time by implementing standard work and one-piece flow. In addition, SEE lean efforts reduced the parts inventory, which will allow future relocation of assembly-line support operations immediately adjacent to the assembly line and will lead to additional savings.

Lean implementation has begun on the Cummins 903 engine assembly operation used by both the Bradley Fighting Vehicle and the Multiple Launch Rocket System. The projected savings from lean implementation on the HEMTT and 903 engine lines is more than \$2 million. Personnel will accomplish these savings by converting batch engine assembly operations into assembly lines, resulting in fewer labor requirements to meet current demand.

*Anniston Army Depot.* Anniston Army Depot began in-house-supported lean manufacturing efforts in May 2002. These efforts were concentrated on the AVDS 1790 reciprocating engine process. Improvements to date include providing all parts necessary for engine assembly at point of use through kit-ting, instituting one-piece flow, eliminating non-value-added activities, and establishing several pull "supermarkets." Successes to date include reduced man-hour expenditures and improved on-time delivery.

In February 2003, the Anniston depot began initial efforts in the M1 Abrams main battle tank turbine engine process. After performing a value-stream analysis, the depot identified areas of opportunity for improvement and established aggressive goals to improve productivity and customer support.

*Watervliet Arsenal.* Watervliet Arsenal recently completed a lean project on the T-53 helicopter rotor component. The component is an aircraft engine turbo prop carrier-reduction piece that is used on various helicopters. Watervliet Arsenal has developed the process for reclaiming the five bores by chrome plating and grinding bore diameters to specified tolerances and locations. Depot personnel studied this process using lean principles. This led to the identification of manufacturing and tooling problems, which were subsequently resolved and resulted in a reduction in manufacturing time. Watervliet Arsenal's future lean projects include the 60mm barrel process re-engineering project. In addition, Watervliet Arsenal is anticipating benefits of

reductions in material handling and unit standard time.

*Sierra Army Depot.* Sierra Army Depot personnel began implementing lean efforts in January 2003. The depot's first lean project involves Class VIII medical supplies, storage, issues, and receipts. Presently, Class VIII medical is located approximately 9 miles from the main operations area, which is not conducive to normal workflow of operations. Sierra personnel plan to use lean efforts to relocate the program to a more efficient work area. Sierra's future lean efforts include long-term storage (medical hospitals) and central-receiving projects.

*Rock Island Arsenal.* Personnel at Rock Island recently completed their first lean manufacturing value-stream analysis on the Forward Repair System (FRS). Personnel use this system to repair battle-damaged heavy combat systems onsite. Rock Island Arsenal will implement lean tools to reduce direct and indirect labor resources, decrease floor space and tool load area, and improve the production process. The goal is to reduce delivery time from 10 months to 6 months by February 2004. Rock Island Arsenal has set an additional stretch goal of a further reduction in FRS delivery time to 3 months in 2005. The arsenal will start applying lean thinking to improve processes in acquisition, the Contact Maintenance Truck (Heavy) manufacturing and assembly lines, and the assembly of the Explosive Ordnance Disposal System. The arsenal is also integrating its current quality initiatives, such as six sigma and ISO 9000, into its lean program.

## AMCOM

U.S. Army Aviation and Missile Command (AMCOM), AL, personnel implemented lean thinking in the Black Hawk recapitalization at Corpus Christi Army Depot (CCAD), TX, and in the Patriot recapitalization line at Letterkenny Army Depot (LEAD), PA.

*CCAD.* At CCAD, the initial value-stream analysis on the Black Hawk recapitalization line revealed a number of opportunities for substantial improvements. The main items found were lack of flow in the dock stage process (e.g., aircraft was stationary within major processes, aircraft status was difficult to determine, and wasted space was found) and parts storage and retrieval problems (e.g., parts stacking and clutter, parts damaged or lost, and no smooth flow to or from

back shops). The conversion from the initial dock stage to the flow process was completed in June 2003. Once lean processes are fully implemented, turn-around time will be reduced by more than 50 percent. Other significant metric improvements include approximately 50-percent reduction of work in process, 75-percent reduction in aircraft moves, and an 80-percent reduction in the total distance traveled by the aircraft. CCAD personnel will implement these improvements as part of a 5-year plan to ingrain lean philosophies throughout the organization. Additional projects include tri-service lines, back shops, and CH-47 recapitalization.

*LEAD.* At LEAD, the initial value-stream analysis of the Patriot launcher revealed similar issues as those at CCAD. However, the Letterkenny approach has differed somewhat in that Patriot is truly a system-of-systems. This led Letterkenny personnel to attack each individual system as its own value stream. LEAD personnel are currently focusing on the Patriot launcher. The results to date indicate that an overall 30-percent productivity improvement and 40-percent floor-space reduction are achievable. LEAD personnel expect to achieve the same improvements on the antenna mast group as on the launcher. Other LEAD projects where work is being accomplished using lean tools could result in a 70-percent improvement in turn-around time and 36-percent reduction in floor space. Additional projects include other major components of the Patriot System (i.e., the Engagement Control Station, Information Coordination Center, and radar).

## Conclusion

At AMC, lean thinking is not another do-more-with-less slogan. Lean tools, techniques, and activities have been successful in both industry and government in improving manufacturing processes and expediting the flow of ideas and development of new technology. Lean thinking involves the entire AMC workforce focusing on efforts to increase the value of its products and services to the end users—our soldiers. Lean thinking is not about reducing the workforce; it is about enabling the workforce to accomplish more. Lean AMC organizations will have world-class manufacturing processes and capabilities that will compete with the best services pro-

vided by private industry. Successful lean implementation will ensure viability of organic capabilities for the long term and will position AMC to meet the enormous challenges of the 21st century. For more information on AMC lean initiatives, go to:  
<http://www.amc.army.mil>.

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# RECAPITALIZATION AND ARMY TRANSFORMATION: THE ROLE OF DEPOTS, ARSENALS, AND THE NATIONAL MAINTENANCE PROGRAM

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Dan McDavid

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## Introduction

In the past, the Army's maintenance depots, arsenals, and its multi-echelon maintenance structure were legacies of World Wars, the Cold War, and extended police actions. The arsenals were set up to do heavy manufacturing of things peculiar to the military and sized to do continuous production of these things in quantities that could support a large Army in a drawn-out war. Depots, similarly, were there for a continuous rotation of worn ground vehicles, aircraft, artillery, missiles, and electronic equipment going in and churning out new equipment after extensive overhaul and repair. Efficiency came from constant work—and that constancy came from a large, heavy Army engaged in extended conflicts much of the time from World War II through Vietnam.

Thirty years have brought a new environment of short-duration contingency operations that are much less damaging to the Army's equipment. And modernization and transformation of the Army brings lighter, more reliable equipment, which in turn requires less maintenance and less of the "heavy-iron" manufacturing that our arsenals do best. And yet these short-notice, short-duration conflicts bring new challenges to our ability to support and sustain. The need for restoration of damaged and worn equipment remains, but at a reduced level. Readiness, and the ability to surge production of specific items, put new emphasis on modern, responsive

industrial facilities under the immediate control of the Army. We are already seeing influences that will force a transformation of depots and arsenals. Our job now is to complete the transformation of these facilities to ones that efficiently produce the equipment and components that keep the Army ready for war, can quickly increase production of any item or component that is needed to meet a contingency, and can just as quickly repair the damage and wear of a war to be ready for the next one. If we had not begun this transformation, and had left the depots and arsenals as they were, they would be only historically interesting relics rather than the relevant facilities they will be for the future Army.

## Army Transformation

The Army continues to change itself to a more balanced force that is lighter, more responsive, and modern. This force will rely much more on control of the battlefield through electronics than on just the brute force of a 70-ton tank. The transformation will take place in phases and include new units—complete with modernized equipment—being fielded one by one until the Objective Force Army emerges. This is a decades-long process and involves supporting two Armies, the "legacy" and the modernized Armies.

As the Army reorganizes itself by forming new units and transforming old ones, there will be three distinct areas where the government-owned

maintenance and manufacturing base will be involved. First, new and modernized equipment will be produced and fielded. Expertise at the government facilities allows their involvement with new manufacturing processes, or, even more so, with the modification and upgrade of existing equipment to a new configuration. Second, there are legacy systems that will remain in the inventory for some time, in some cases even becoming part of the Objective Force. Selected systems will be recapitalized—essentially returned to an as-new condition with newer technology inserted where the opportunity allows (such as using the latest microprocessors or the newest version of an aircraft engine that still fits the old configuration). Finally, while we are modernizing and creating the Objective Force Army, we and our allies continue to operate older systems that must be maintained in a ready-to-fight condition.

## Maintenance And Manufacturing

While supporting Army transformation, depots and arsenals each have bedrock missions that are their reasons for existing. For depots, it is the restoration of Army equipment and major components to like-new condition. Arsenals exist to manufacture items that are entirely unique to the military. These missions are also the only reasons for the Army owning and operating the facilities themselves; we keep them to be absolutely assured of their capabilities in times of emergency. Other work performed in depots



and arsenals is done to ensure economical operation of the facilities or to substitute for core work that is not always available in peacetime. Work beyond core is still important; however, if not for the core mission and the military necessity of keeping it in-house, it likely would be economical to divest of the property and competitively contract for maintenance and manufacturing work as needed. The basic mission will be performed for legacy, recapitalized, and new or modernized systems during and after Army transformation.

Beyond or combined with their basic missions, arsenals, depots, and national maintenance sites that perform some depot-level component overhaul contribute to Army transformation. One large contribution that depots will make over the years is recapitalization of selected equipment. Recapitalization is a complete overhaul of a system, making it as near “zero-time, zero-miles” as is economically feasible. Depots are big players in this effort, and because most of what they do in recapitalization is identical work to their basic missions, they are major contributors to maintaining their core capabilities and to making them economically viable. Both depots and national maintenance sites repair components to a national maintenance standard in companion to recapitalization. Repaired components (engines, transmissions, rotor blades, electronic components, etc.) are available in the supply system to replace worn or damaged components. The depots and national maintenance sites repair all of these to the same standard—all worn parts replaced and the component restored to a known useful life. This effort is essential to successful recapitalization. Without the availability of completely restored components, the first component replacement in the field begins the “decapitalization” process.

Arsenals play a much smaller role in recapitalization. Watervliet and Rock Island Arsenals will likely get some restoration or replacement work on the gun tube and hard-metal parts of combat vehicles and artillery, but not a substantial amount because these items don't commonly wear out. Pine Bluff Arsenal, with its unique dual mis-

sion in specialty munitions and chemical protective equipment, will be involved to the degree their equipment is embedded in systems currently selected for recapitalization, or if the equipment itself is ever selected.

The modernization component of Army transformation—new systems and major upgrades to existing systems—is the part that is in some ways most difficult to involve Army-owned industrial facilities. Yet this may be the best place to ensure the economic viability and modernization of depots and arsenals themselves. By involving Army facilities, even in a small way while a new or improved weapon system is being produced, we gain expertise that will be invaluable in the long-term sustainment of the system. This is particularly valuable for maintenance depots. In depots, we have often used both the private sector and the depot to achieve major upgrades. Since most upgrades involve a combination of overhaul of the basic equipment and manufacturing and installation of new components, it makes sense to use depots for much of the overhaul and the private sector for new manufacturing. Arsenals can also be involved if the upgrade involves manufactured items within their core capabilities. For completely new systems, it is still valuable to involve both depots and arsenals wherever they can be used to establish their related core capabilities early in the system's life.

## Conclusion

If we are to maintain the viability of the Army-owned maintenance and manufacturing base, preserve the core capability essential to the national defense, and continue to support Army transformation objectives, then depots and arsenals must transform in a particular way. First and foremost, all maintenance and manufacturing processes must become as lean and flexible as possible. Flexibility has always been a strength of in-house industrial capability, but lean processes will contribute to higher productivity and affordability. Second, we will continue to operate as partners, not competitors, with the private sector.

Public-private partnerships have emerged as the best way to smooth the

transition from the production of a new or improved weapon system to its long-term sustainment, as well as an innovative way to modernize our facilities. Long ago we proved the value of partnerships in overhaul and upgrade—witness the Paladin and Abrams programs. The next step, beginning with the Stryker Program, is to partner in manufacturing. This has benefits on both sides of the partnership, perhaps even more than in overhaul and upgrade. The private-sector partner can set up manufacturing at the government site, avoiding the need to obtain a facility elsewhere. The depot gets some work during the manufacture, lease income from the facility, and eventually has the use of an upgraded facility for future maintenance. As we extend the partnering concept to more maintenance facilities and arsenals, these benefits will accrue, lowering the cost and increasing the efficiency. We can complete the transformation by establishing national maintenance standards for components overhauled by depots and other Army sites, ensuring that a steady supply of overhaul, recapitalization, and upgrade projects are performed by our depots and their private-sector partners.

In a nutshell, transformation will give us lean, flexible production in partnership with the private sector, and provide a seamless transition from design to manufacturing to lifetime sustainment.

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# ARDEC: PROVIDING DECISIVE LETHALITY FOR THE ARMY'S GO-TO-WAR WEAPONS

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Michael P. Devine

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## Introduction

Situated on a 6,500-acre military installation located in the northwest corner of New Jersey, the Picatinny Armament Research, Development and Engineering Center (ARDEC) plays a unique role in the United States' ability to wage war. There is no other comprehensive armaments facility like it in the country; it is a one-of-a-kind facility that provides virtually all of the lethal mechanisms used in Army weapon systems.

Through the years, Picatinny's major developments in manufacturing and technology have reduced dependence on foreign sources and provided

greater accuracy and lethality to a range of weapons. During World War II, it was the only facility in the United States producing ammunition larger than 50 caliber.

While some applied research in explosives, propellants, and pyrotechnics was conducted, funding for overall research and development was almost nonexistent during the first half of the century. This all changed in the years following World War II when Picatinny was given a leadership role in the research, development, engineering, and production support for advanced weapon systems. From fuzes, propellants, fire control systems, and energetics to the lethal power of mortars,

tanks, and artillery, Picatinny manages the process from birth to battlefield.

## Matching Munitions To The Mission

At the same time that air strikes and cruise missiles were launched in Operation Iraqi Freedom, U.S. Army ground forces were advancing to take control of cities throughout Iraq. Our forces not only had to take the ground, they also had to hold it and, eventually, secure those areas. U.S. policy focused on striking only legitimate military targets and made every effort to protect innocent civilians. The array of warheads, projectiles, cartridges, fuzes,

*A soldier affixes a fuze in the field. Picatinny engineers, scientists, and technicians developed many of the techniques used to design fuzes.*



armament systems, and nonlethal munitions developed and fielded by the people at Picatinny provided field commanders with the flexibility they needed to match the munition to the mission.

Picatinny has high regard for the men and women who use its armament systems and makes a special effort to incorporate their input into weapon designs and upgrades to achieve the highest levels of reliability. Recently, soldiers from the Army's 10th Mountain Division, who fought in Afghanistan during the early stages of U.S. efforts to topple the Taliban, were invited to Picatinny to tell program managers what needed improvement. This interaction between battle-tested soldiers and Picatinny scientists and engineers resulted in superior products tailored to the needs of those who use them on the battlefield. Even now, several Picatinny representatives are in the Iraqi theater monitoring weapon performance.

### Performance In Iraq

The 25mm M919 cartridge, an armor-piercing, fin-stabilized round with a discarding sabot and tracer, has been one of the stellar performers during Operation Iraqi Freedom. Used for the first time in actual combat, the M919 represents the state-of-the-art in

25mm armor-piercing ammunition for the Bradley Fighting Vehicle. It combines higher energetic propellants and a low-drag profile depleted uranium penetrator core to deliver greater lethality and survivability to our troops. Feedback from the field has been extremely enthusiastic. Initial after action reports from the 3rd Infantry Division and the 3rd Squadron of the Army's 7th Cavalry Regiment indicate that this round has been used successfully against BMPs (Russian-made vehicles) and T-72 tanks, as well as against other lightly armored targets. From all indications, the M919 cartridge has met or exceeded expectations for trace visibility, round-by-round accuracy, and lethality, providing our soldiers with the best possible armaments.

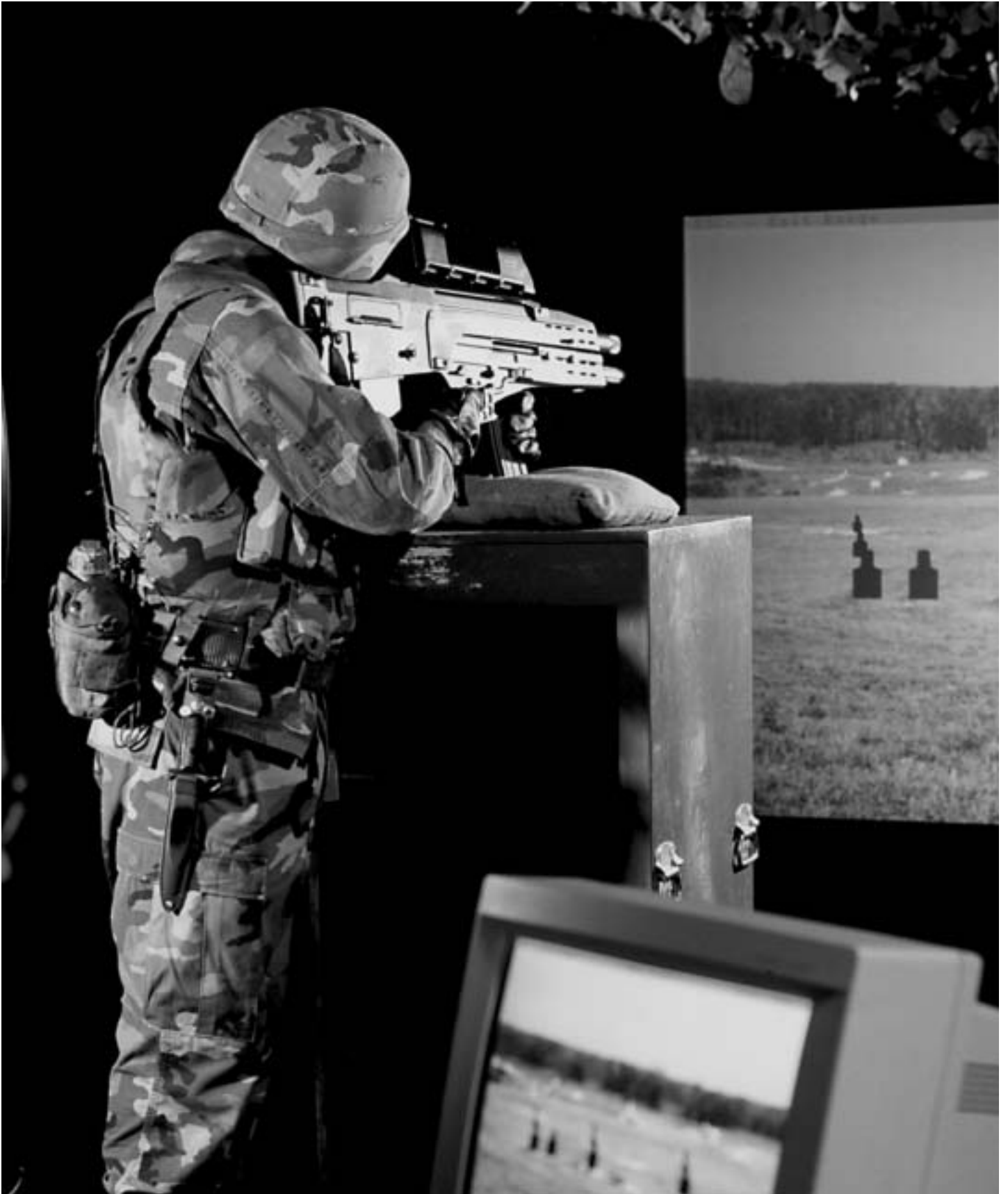
The Paladin 155mm Self-Propelled Artillery System again proved its military value during the Iraqi war. Paladin, fielded just after Operation Desert Storm, can fire a round 30 seconds after stopping, compared to the several minutes required by older self-propelled artillery systems. This greater mobility and firepower significantly increases platform survivability. At any given time during Operation Iraqi Freedom, all three artillery battalions were able to provide responsive, devastating fires at ranges out to 30 kilometers.

The M141 Shoulder-Launched Multipurpose Assault Weapon-Disposable Bunker Defeat Munition (BDM) also proved to be extremely effective, particularly in the urban environments of the Middle East. This shoulder-fired weapon system was designed to defeat earth and timber bunkers, breach masonry walls, and destroy caves with a single shot. During Operation Enduring Freedom, U.S. Forces used the BDM to turn Al Qaeda hideouts into rubble. In close combat situations within cities and outlying areas of Iraq, it has performed equally well.

Other Picatinny-developed weapon systems include ammunition for the 120mm main gun on the Abrams tank, which was widely used in both the Gulf War and Iraq. In the Gulf War, Abrams tank crews engaged large numbers of Iraqi tanks. Here, the kinetic energy long-rod penetrator overwhelmingly defeated the most advanced heavily armored threats. In Iraq, as the emphasis shifted to urban targets (i.e., buildings, bunkers, and dug-in vehicles), Picatinny's 120mm Multi-Purpose Anti-Tank round, which was designed specifically to counter urban targets as well as enemy helicopters, easily achieved its objective by completely destroying the intended targets.



*The Paladin uses an onboard computer system to receive fire missions, compare firing data, select and take up firing positions, automatically unlock and point its cannon, and then fire.*



*The ARDEC simulator has high-tech capabilities including an infrared spot tracker and two computers for data acquisition and control.*

## Nonlethal Weapons

A variety of nonlethal capabilities have been developed under Picatinny's purview. Nonlethal weapons are important because they expand the options available to commanders in situations where the use of deadly force is not the preferred response. Nonlethal munitions developed and fielded by Picatinny have been used with great effect in Kosovo and were recently made available for potential use in Afghanistan and Iraq. The 40mm nonlethal cartridge, or Sponge Grenade, is a prime example. This blunt impact munition can be point-fired from a standard rifle-mounted grenade launcher against belligerent noncombatants and has proved to be enough to halt the threat. However, should it not stop the threat, the soldier can immediately resort to lethal force with his rifle's 5.56mm ammunition. In this way, the field commander is provided with a range of force response options to effectively conduct the mission.

A device called the Portable Vehicle Arresting Barrier is available for use at checkpoints and other high-security locations to stop wheeled vehicles. It employs nylon webbing that can trap a 14,000-pound vehicle doing 35 mph like a fly in a spider's web without fatalities or serious injury to the vehicle's occupants. Another munition, the

Modular Crowd Control Munition (MCCM), a nonlethal variant of the Claymore mine, delivers a payload of 600 rubber balls. It provides crowd control and force protection by deterring hostile groups of noncombatants and is another alternative to lethal force options.

With an ever-widening role in the development of nonlethal systems—whether for use on the battlefield or in peacekeeping missions—Picatinny is currently working on a nonlethal mortar projectile that will permit commanders to use indirect-fire systems to deny areas to large numbers of hostile noncombatants, including those found in urban environments. This poses a unique challenge considering that the objective is to create a payload delivery mechanism that will minimize collateral damage.

Developers say that the ultimate weapon will be truly “scalable” or tunable to the level of force needed, a trait that will allow field commanders to decide whether nonlethal or lethal force is needed to deal with the threat.

## Streamlining Development

Picatinny's mission is to support Army transformation goals. In an effort to streamline the acquisition process and deliver the armaments that soldiers need exactly when they need them—and at an affordable price—

Picatinny has established increasingly close partnerships with universities and industry partners, involving them in collaborative efforts early in the research and development process.

Picatinny uses unique laboratories and special facilities to evaluate prototype designs, thus reducing development cycle time. These facilities are also available to Picatinny's contractors and other government agencies that are part of the national energetic consortium established by Picatinny and the Army Research Laboratory.

For example, Picatinny's state-of-the-art integrated digital modeling and simulation suite facilitates collaborative efforts among engineers, scientists, testers, users, and maintainers. It allows product concepts to be evaluated for warfighting value and manufacturability in a virtual environment that brings every partner into the process. The gains in speed-to-market and reduced testing costs are already an essential ingredient in the plans of the Future Combat Systems Lethality Program.

## Conclusion

What will the battle of the future look like? It will differ greatly from today's battles, with computers and communications dominating its shape. However, it will continue to remain an exercise of lethal effects. Whether massed fire, networked fire, precision strike, or joint strike, future battles will continue to ultimately depend on the combatants' ability to do damage. No other organization in the world can provide this capability as well as ARDEC. Picatinny has proved its expertise in developing the kind of weapons that will keep the U.S. Army the most dominant fighting force in the world. As New Jersey Governor James E. McGreevy recently said, “Never has Picatinny's mission been so clear, or its contribution as valuable.”



**The MCCM is a nonlethal variant of the Claymore mine. Its ability to incapacitate large, hostile groups gives the battlefield commander the option to apply nonlethal force as a first line of defense where appropriate.**

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# PATRIOT IDSS PROGRAM TECHNOLOGY AT REDSTONE ARSENAL SUPPORTS OPERATION IRAQI FREEDOM

CPT James O. McLinnaham and Dr. Dennis G. Beeler

## Introduction

As far back as 1993, DOD had a vision that handling tough diagnostic jobs would entail the use of experts who may be on the other side of the world from the weapon system being diagnosed. In February 1993, a Memorandum of Agreement was signed between the Program Executive Office, Air and Missile Defense (PEO, AMD) and the Office of the Secretary of Defense to use Patriot as a test bed for what was to become the Integrated Diagnostics Support Demonstration (IDSD) Program. The IDSD Program, which integrated commercial off-the-shelf (COTS) and government off-the-shelf (GOTS) technology, was tested over a 3-year period using tactical Patriot systems in both CONUS and OCONUS. Drawing on high-technology experience from Patriot, other systems, and the commercial world, IDSD integrated satellite communications; expert system technology; remotely controlled test, measurement, and diagnostic equipment (TMDE); electronic publications; digital video; and computerized data acquisition. Upon successful completion in 1996, the IDSD Program transitioned to what is now known as the Integrated Diagnostics Support System (IDSS). Between 1996 and 1998, IDSS was to undergo another series of unit tests that really emphasized the technology from the soldier's point of view. From the beginning of the IDSD/IDSS Program, acceptance of the concept of improving maintenance through technology steadily grew. The evaluation of IDSS demonstrated that integrating the basic building blocks of personal com-

puters, test equipment, and communications provided a framework for effective system support and low-cost growth of additional capabilities.

Results of the IDSS evaluation indicated that the goals for maintenance enhancement could be attained, and that soldiers were very enthusiastic about using these new tools and technology. Access to up-to-date information was found to be instrumental in returning a weapon system to an operational status. Computers, normally used to assist in troubleshooting and analyzing data, were also found to potentially reduce errors and speed up procedures.

## IDSS Initial Fielding

Initial fielding of IDSS technologies to the Ordnance Missile and Munitions Center and School (OMMCS) Training Detachment was conducted Oct. 26 to Nov. 5, 1999, at Fort Bliss, TX. The Patriot Project Office, now a part of the Lower Tier Project Office (LTPO), had received final approval from the OMMCS Commandant on Oct. 20, 1999, which set the stage for fielding to the training detachment.

The fielding effort at Fort Bliss began with the installation of sound cards and Institute of Electronic and Electrical Engineers 488.2 Instrument Interface cards on seven Patriot Automated Logistics System (PALS) AN/PSM-80 (V) 1 computers. These cards provide audio and instrumentation support for the various IDSS functions. Upgraded hard drives with IDSS software enhancements were then installed. The new software included: Microsoft® Windows '95

Operating System; Interactive Authoring Display System-based Patriot Interactive Electronic Technical Manuals; Procomm by Quarterdeck to allow data file transfers using the Single Channel Ground and Airborne Radio System tactical radios; Symantec pcAnywhere for file application sharing and remote access and control; and Microsoft NetMeeting to facilitate voice communications among nodes on the new Patriot local area network (LAN).

During the second week of the process, personnel from OMMCS and Raytheon Training Systems received detailed training on the use of the IDSS system. IDSS field analysts began the session by giving students a detailed overview of IDSS Programs. They then taught each student how to set up the LAN and employ the IDSS system using the latest technology. Analysts then taught students the setup of the required modernized TMDE used in the performance of the Computer-Aided Procedures, which were developed by CAS Inc. specifically for the IDSS Program. They also demonstrated the capability to remotely control the test equipment and monitor troubleshooting efforts from locations external to the unit.

In early 2000, the LTPO decided to upgrade the older computers to new Dell™ 7500 laptops. Procurement action was initiated, and the new Dell laptops were obtained as replacements for the PALS computers. This was a major upgrade for the soldier in the field because the Dell laptops had newer operating systems, more memory, and larger hard drives.

## Expanding And Applying IDSS Technology

During Operation Desert Storm, the limited data registered by nontactical portable data recorders and other prototype equipment in the Patriot systems had to be sent to the United States for analysis via courier service or shipped via Federal Express. This method of sending data for analysis took anywhere from 2-14 days depending on the method used. Problems also existed because of more stringent import and export controls. It became apparent early that a method was needed to expedite the transfer of data from remote locations anywhere in the world back to the analysts in the United States. IDSS support personnel from CAS Inc. asked their system engineers for assistance with this issue. Using IDSS technology, system engineers designed a secure satellite communications system capable of transferring the data from remote locations to CAS Inc. servers. Once this was in place, the data-reduction analysts were able to download the necessary data from the servers at the Air and Missile Defense Data Analysis Network (AMDAN) facility. This new methodology provides the capability for sending data, voice, and video in a secure mode to the central AMDAN facility.

Not only does this technology provide the logistical data needed, it also provides a wealth of operational information for the analyst. The Embedded Data Recorder (EDR) provides information such as whether a particular engagement was successful or, if not, why. If anomalies exist, the data-reduction analyst will be able to detect them, and system engineers can recommend corrective measures. This corrective action may be either improving software for a particular item within the system or supporting the issuance of a field bulletin to the units in the field.

When available, the EDRs enable evaluation to determine specific aspects of functional areas of hardware and software as well as overall system effectiveness. Without this data, critics could argue, as they did after Desert Storm, that Patriot was not effective. However, the greatest benefit of recorded data is in the investigation of anomalous events. Recorded data can be quickly distributed to analysts at Raytheon; Lockheed Martin; CAS Inc;

the research, development and engineering center; the LTPO; and other contractors to quickly isolate causes of phenomena that may be a result of weather, atmospheric conditions, hardware faults, software problems, or operational procedures. This can lead to responsive changes that protect the force and enable warfighters to be more effective.

Without recorded data, analysts must speculate about observed problems and, in many cases, it becomes impossible to reproduce the anomaly or discover its cause. The net effect can be delays in adjusting to battlefield conditions, delays in correcting residual problems, and reduced combat effectiveness.

The commander and the soldiers are critical links in the potential benefits that can result from recorded data. The commander must emphasize its importance, and the soldiers must activate the recording of data and maintain the data recorders.

## Supporting OIF

To date, EDRs from Operation Iraqi Freedom (OIF) have been invaluable in assessing Patriot performance and evaluating anomalous events. The lack of recorded data has in some cases impacted ability to be as responsive as desired to some field reports. The EDRs are not considered mission-critical items. The troops can fight without data recording. However, the recorded data and the insight it provides on system performance could be critical to fighting effectively and surviving to fight tomorrow's battle.

This new technology provides literally a foxhole-to-factory means of obtaining data in a timely manner and then being able to use such data as necessary for the support of our soldiers in the field.

## Conclusion

The IDSS Program has truly been a team effort. Patriot's prime contractor, Raytheon, is responsible for the remote maintenance monitor and getting IDSS technology to the field. CAS Inc., Patriot's System Engineering and Technical Assistance contractor, has played a major role in IDSS assisting with the design and development of LANs, computer-aided procedures for performing remotely controlled TMDE processes, and secure satellite communications.

At the U.S. Army Aviation and Missile Command Integrated Materiel Management Center, the Electronics Publications Division manages specialized publication needs. The logistics laboratory has been responsible for developing the video systems. Military users have played an active role in the definition of the system itself and how it should be used. Representatives of the allied nations using Patriot have been an integral part of joint efforts to guide the overall development of IDSS.

While there are challenges associated with integrating COTS and GOTS components, today's environment of funding constraints and streamlined acquisition dictates tailoring the use of commercial products and other integration of technologies as a mainstream approach to contain both cost and risk. Challenges will always exist to provide the soldier with tools, technology, and interfaces that are intuitive while simultaneously imposing minimum impact to the existing support infrastructure. IDSS is meeting this challenge.

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# ACQUISITION EXCELLENCE: PROVIDING CRITICAL OPERATIONAL CAPABILITIES TO THE WARFIGHTER

LTC Anthony W. Potts, Richard M. Szcpaniski,  
and Alvin A. Abejon

## Introduction

Since Operation Desert Storm, the Army's urgency for a versatile digitized Blue Force Tracking (BFT) system for both ground and aviation platforms has intensified. Since September 11, 2001, Operation Enduring Freedom has been a major influence in shaping requirements for BFT capabilities. The Army's newly developed BFT Aviation (BFT-AVN) System is a system-of-systems approach to satisfy the Army's immediate and urgent requirement for providing the maneuver commander with the near-real-time situational awareness (SA) data that are essential to a streamlined decisionmaking process. The BFT-AVN System is an integration of existing and modified commercial off-the-shelf (COTS) and government off-the-shelf hardware and software used to track both ground and airborne platforms and to provide a

dynamic aggregated SA picture of those platforms. The BFT-AVN System employs the Force XXI Battle Command Brigade and Below (FBCB2) hardware and software as a direct interface into the common operating picture (COP) via the Global Command and Control System-Army (GCCS-A). The system

consists of an A-kit and a B-kit and populates the COP through GCCS-A via satellite links. The A-kit is comprised of aircraft modifications such as wiring, cabling, circuit breakers, electrical power, and mounting hardware required for installation of the B-kit. The B-kit consists of BFT-AVN hardware and integrated software as well as data communications and position/location components. The system integrates the most current version of FBCB2 hosted on a military computer, a COTS L-band transceiver, data communications router, and a standard Precision Lightweight Global Positioning System Receiver, housed within a robust mounting rack.



*Photo depicts a Blue Force Tracking Aviation System installed in UH-60L Black Hawk helicopter.*

## Requirements Generation

Initial requirements for a BFT System stem from the Army Battle Command System



Capstone Requirements Document of Nov. 23, 1998, and the FBCB2 Operational Requirements Document of March 26, 2002. The FBCB2 System is supported by the Joint Requirements Oversight Council-approved Mission Needs Statement for Horizontal Integration of Battle Command dated Jan. 10, 1995. The February 2002 Operational Needs Statement for the BFT of U.S. Army Central Command expanded BFT requirements to include the Balkans Digitization Initiative (BDI) to support Operation Enduring Freedom and other Central Command operation plans. Further Army Requirements Oversight Council decisions led to the Operation Enduring Freedom command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) effort, which the BFT-AVN System supports.

### Acquisition Reform

With today's acquisition streamlining initiatives, the "blocked-systems approach" is a practical method used to provide warfighters with critical operational capabilities (i.e., it is critical in providing a 90-percent solution *now* rather than waiting 5 years for the 100-percent solution). The success of the BFT-AVN Program can be measured on the three metrics of cost, schedule, and performance. Despite the critical timeline imposed on the system, the BFT-AVN Product Office was successful in effectively managing personnel and funding resources. The program remarkably continues to stay within budget while maintaining an aggressive schedule; the product office performed approximately 2 years of work in only 6 months; and system performance has met or exceeded user requirements. By performing simultaneous activities throughout the development of the program—aided by the effective teamwork of numerous organizations—the product office was able to break down past acquisition paradigms and

achieve both incremental and overall program successes.

### Participating Organizations

Although numerous government agencies and DOD contractors supported the program, the following organizations played a critical role in executing the BFT-AVN Program:

- *U.S. Army Aviation Applied Technology Directorate (AATD)*. Located at Fort Eustis, VA, AATD provided the overall hardware design, configuration control, and appropriate antenna placement. AATD also provided systems testing, manufacturing, and integration oversight.

- *Aviation Engineering Directorate (AED)*. AED is located at Redstone Arsenal, AL, and was responsible for generation of Airworthiness Releases (AWRs) on the four primary aviation platforms on which the BFT-AVN Systems are mounted. The AWRs certify that the BFT-AVN A-kits and B-kits do not adversely affect the flight and missions and, where applicable, identify specific operational limitations of the BFT-AVN System. AED was instrumental in implementing acquisition reform initiatives and transforming development of BFT-AVN AWRs, which can take several months to produce and issue to the field. Because of the program's high visibility, AED's management was able to effectively prioritize the efforts and provide the manpower requirements to support the program's accelerated schedule requirements.

- *BFT-AVN Product Office*. The BFT-AVN Product Office is located near Redstone Arsenal and is collocated with the Tactical Operations Centers/Air and Missile Defense Command and Control Systems (TOCs/AMDCCS) Project Office in Madison, AL. However, the FBCB2 Project Office at Fort Monmouth, NJ, provides oversight to the BFT-AVN Product Office. The project offices of both TOCs/AMDCCS and FBCB2 are

within the organizational structure of the Program Executive Office for Command, Control, and Communications Tactical (PEO, C3T), also headquartered at Fort Monmouth. The BFT-AVN Product Office is responsible for the execution of the acquisition of planning, programming, budgeting, and life-cycle engineering support.

- *Information Assurance Community*. Functional and technical experts from offices such as the Defense Information Systems Agency, National Security Agency, Department of the Army, and PEO, C3T coordinated to resolve major program issues regarding the Defense Information Technology Security and Accreditation Process, the secret and below initiative, an interim authority to connect and operate, and other C4ISR-related issues.

- *Aviation and Missile Command (AMCOM) OLR Project Office*. The AMCOM OLR Project Office has facilities and personnel at various Army installations throughout the United States and overseas. This team installed BFT-AVN A-kits and B-kits on various aviation platforms.

- *PEO, Aviation*. PEO, Aviation is located at Redstone Arsenal and was responsible for total life-cycle planning of the Army's inventory of aviation platforms. PEO, Aviation provided essential platform aviation expertise.

- *Prototype Integration Facility (PIF)*. PIF is located at Redstone Arsenal and is a component of the Engineering Directorate of the Aviation and Missile Research, Development, and Engineering Center (AMRDEC). PIF provides an in-house, rapid-response capability for generating hardware solutions; mechanical fabrication, cable assembly, and integration expertise; and platform integration coordination and test support. This AMRDEC facility was paramount in the rapid manufacturing of prototypes and production of BFT-AVN Systems and spares. Considering

PIF's intrinsic capabilities, its slogan—"Turning Ideas Into Reality"—could be considered an understatement.

- *Redstone Technical Test Center (RTTC)*. RTTC performed the electromagnetic environmental effects (E3) testing required on aviation platforms equipped with BFT and provided support personnel and facilities. The E3 Test Branch successfully conducted the appropriate levels of electromagnetic environmental testing to support AED's development and issuance of AWRs.

- *Aviation Unit Participation*. Aviation units from Fort Campbell, KY, provided aircraft, aircrews, and critical maintenance support—all of which were necessary during the BFT-AVN Proof of Principle Demonstration, integration of the BFT-AVN systems-level mission packages, E3 testing, and first article installations.

- *U.S. Army Aviation Logistics School (USAALS)*. USAALS assisted in the development of training and operating manuals for all four aviation platforms equipped with the BFT-AVN mission packages.

- *U.S. Army Staff*. Primary staff offices included G-3 (Operations and Plans), G-6 (Communications), and G-8 (Programs). In addition, the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology prioritized requirements and provided funding resources and program oversight.

## Team Synergism

The Army-led BFT Team effectively used the "flexibilities of acquisition reform" in the near-real-time design, development, and production of BFT Systems. Because of national priority, fielding requirements, and time constraints imposed upon the system, the BFT Product Office assumed many risks—the near-simultaneous design, manufacture, installation, and integration, qualification and flight testing of BFT-AVN Systems contributed to

these risks. Concurrent activities such as ordering long lead-time items and starting production prior to the release of approved engineering drawings, unforeseen changes, and increased testing resulted in additional program risks. Despite these schedule, manufacturing, and integration risks, the product office was effective in managing overall efforts. For example, scheduling of A-kit and B-kit integration was updated on a daily basis so that the integration and subsequent fielding of BFT-AVN hardware was achieved within time constraints. Even during the design, a total life-cycle system and systems engineering approach were established simultaneously as training, logistics supportability, and sustainment plans were being developed. The synergistic effects of the entire team were realized in the fielding of 200 BFT-AVN Systems installed in different Force Mod aviation platforms to include the UH-60A/L Black Hawk, HH-60L MEDEVAC, Army Airborne Command and Control System, AH-64A Apache, AH-64D Apache Longbow, and CH-47D Chinook helicopters.

## Conclusion

The BFT-AVN Product Office has been highly successful as a result of the synergism of its talented and proactive team members, astute application of acquisition reform, and the use of bold leadership at all levels of management. The BFT-AVN Product Office has high visibility, national priority, and its successes can be used as a model for future acquisition excellence initiatives and transformation for larger programs throughout the aviation and other DOD communities. By eliminating the few remaining antiquated acquisition paradigms, and by implementing new and more innovative approaches, acquisition excellence and streamlining can be realized and the potential for program success can be maximized regardless of the

program's acquisition category. Nevertheless, the principal element of any successful program is cohesive teamwork across the spectrum of disciplines focused on the program's goals.

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# TAMING THE DATA MONSTER

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John W. Knapp  
and Susan Newell

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## Introduction

Some time ago, the U.S. Army's Communications-Electronics Command (CECOM) Acquisition Center's (Fort Monmouth, NJ) leadership recognized that its disparate legacy systems were adversely impacting its business transformation efforts. As process visionaries, they knew significant improvements could be made. Data required for monitoring, analyzing, answering data calls, and reporting purposes were spread throughout a number of major legacy systems and dozens of other smaller systems residing on various desktop computers. Some of the data were redundant and required manual data entry, which precipitated errors and severely impeded accurate and timely analysis. Reporting was difficult, cumbersome, and time-consuming for all involved. Reports from different systems used different parameters, thus causing "apples and oranges" comparisons. Additional limitations were encountered when information from remote sites had to be consolidated. To tame this unwieldy data monster, CECOM pursued development of the Acquisition Resource Center (ARC).

## Project Description

The ARC is a data mart coupled with a suite of tools. It was designed by contracting functional experts and allows management and end users to access disparate data, from small local databases to large legacy databases. This data can be consolidated into an intuitive "business intelligence" tool for the contracting workforce and managers.

More than 75 CECOM Acquisition Center employees are currently using the ARC. These users represent all levels of the workforce (i.e., senior executives, sector and group chiefs, and contracting officers). The ARC offers many benefits, including Web-based data entry screens incorporating data validation logic, a data warehouse to replace older stand-alone systems, and a robust and intuitive reporting tool. Data in existing enterprise-level sys-

tems are accessed directly rather than duplicated. Users can now report on data in existing systems as well as data previously available only in hard-copy, monthly produced formats. Information can be easily consolidated from all of the CECOM Acquisition Center's locations.

Many positive impacts have been realized since the implementation of the ARC. In the past, CECOM's Monitoring and Analysis Group (consisting of procurement analysts) had to query multiple sources residing in different software systems (i.e., Oracle®, Sybase®, Model 204®, SQL-Server®), and even hard-copy reports, to respond to data calls. The group was required to construct queries in the native software languages of the database that the information was stored in or had to rely on the software development team to create these queries. Further, the group was limited to using only one data source at a time. Now the group can achieve the same results using "drag-and-drop" technology and has the ability to marry data from different sources in one report.

Key business reports are published on the CECOM Acquisition Center knowledge portal—the Knowledge Center—in PDF format. This gives the entire workforce access to the information. Reports are automatically refreshed weekly during off-hours, thereby eliminating the need to impact daily business processes.

## Report Sharing

Another way that ARC users share reports is through BusinessObjects®, a powerful business intelligence tool. BusinessObjects is a commercial off-the-shelf (COTS), Microsoft® Windows-based reporting tool that enables users to query and analyze data from a corporate database. Reports can be published to the BusinessObjects InfoView Web site where users can retrieve, view, and refresh the reports. Other Acquisition Center campus offices needing report information can create the report and then be in complete control of retrieving the data whenever required. Numerous organizations that formerly contacted the Monitoring and Analysis Group for data were given access to BusinessObjects and now have unprecedented access to their own data. Remote users can easily edit existing reports for their particular needs or create new reports or ad hoc queries from scratch.

Tying together different data systems and sources has provided the opportunity to improve many of CECOM's business processes. There are several areas where these processes have replaced tedious and time-consuming manual processes. For example, the reconciliation of the *Individual Contracting Action Report* (DD Form 350), a laborious report effort conducted at the end of each year, is now automated and tracked throughout the year to ensure that reports are

timely and accurate. Additionally, there is an automated process, which moves this improved data from one database to another. Aside from eliminating a duplicative data entry burden, this new system has tremendously improved data accuracy.

### Other Efforts

Many other process and access areas were simplified and streamlined by the ARC. Wherever possible, data are accessed directly, rather than replicated. In most cases the ARC is able to connect directly to CECOM's legacy systems to cull reports. Supplemental data are copied into a data mart and augmented with data entered locally by CECOM Acquisition Center users for additional management decision support reports.

A number of smaller, local databases are not in an enterprise-level system, but rather reside on just one computer at an employee's workstation. If the data owner is on leave or on travel, or having PC problems, the data are unavailable, thus making these systems undesirable "single-user" platforms. These systems are in the process of being replaced with an enterprise-level Oracle database, Web-based front-end data-entry screens, and BusinessObjects reports. Customer-focused systems are also being used to help validate data on the data-entry screens as well as produce dynamic drop-down lists for a real-time list of values on the screens.

The Knowledge Center is planning to integrate these enhanced systems to effect an Armywide shift toward improved knowledge management and broader accessibility. This integration promises to further the Acquisition Center's business transformation goals.

### Decision Process

The initial phase of the ARC project evaluated current processes and established the potential for tapping into existing systems. The team began the arduous process of establishing which systems contained needed data, and how and what to access. One of the initial goals was to access the required data without replicating it,

provided that the systems were already enterprise-level. Local Access databases, Excel worksheets, and proprietary stand-alone databases were evaluated with an eye toward migrating them to a robust enterprise-level system.

Once the analysis and prioritization process was completed, available technologies were evaluated. Three main technological areas of the project needed to be addressed:

- First, a robust, intuitive reporting system needed to be selected.
- Second, a Web-based, front-end data entry form technology had to be identified.
- Third, a robust, enterprise-level database management system had to be agreed upon.

For the project to succeed, the reporting systems needed to be easy to use and intuitive. One of the project's goals was to shift report development from technical developers to end users with domain knowledge of the data. These end users may or may not have advanced computer skills, making an intuitive application a necessity. To choose the appropriate tool, several evaluation criteria were considered. These included scalability, integration, quick setup, ability to handle multiple data sources, and cost. After evaluating the major players in the business intelligence field, BusinessObjects was selected as the reporting tool for the ARC.

Because security was a major feature to be considered, BusinessObjects was evaluated and found to offer a robust security module enabling administrators to restrict access to the system and to report categories, specific reports, data sources, and even data down to the field and record level. User roles can be created to group similar users. Password rules and change frequency can also be established to ensure that information security is maintained.

IBM Lotus Notes® was selected as the tool of choice for the front-end development. It has a rapid development framework and ensures easy integration with other CECOM

Acquisition Center systems also developed in Lotus Notes. Similarly, Oracle was selected as the relational database management system of choice to more easily integrate with existing legacy systems and tap into existing resources.

### Conclusion

The ARC has had a very positive impact on the CECOM Acquisition Center. It has helped to streamline many business processes and improved data entry and reporting. These accomplishments include the elimination of duplicative processes and manual data entry, enhanced reporting through the ability to join and migrate legacy and local information, and augmented data entry by incorporating pick lists and online data validation. This resulted in major time savings and improved accuracy and detail suitable for all levels of management.

The flexibility and ease of reports produced using BusinessObjects has improved CECOM's responsiveness to data calls and transformed the emphasis from report production to analysis of the data. This will provide the CECOM Acquisition Center with the opportunity to pursue even more improved technological advances to facilitate its extended business goals. For the time being, the monster has been tamed.

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### FROM THE DIRECTOR ACQUISITION SUPPORT CENTER

I'm pleased to announce that the Acquisition Support Center (ASC) has launched its *new* and *improved* Web site at <http://asc.rdaisa.army.mil>. The Web site is our prime means of communicating with prospective members of the Acquisition, Logistics and Technology Workforce (AL&TWF) and of promoting the accomplishments of current AL&TWF members. I hope you will bookmark our site and visit it at least once a day.

ASC is gearing up for this year's Acquisition Senior Leaders' Conference, to be held August 11-14, 2003, in Seattle, WA. This invitation-only event, themed "Strengthening Our Link with the Warfighter," is our opportunity to meet with top senior acquisition leaders and spend some quality time with soldiers at Fort Lewis, WA.

Be sure to mark your calendar for the Fourth Annual Army Acquisition Corps (AAC) Ball that will be held at the Hyatt Regency Crystal City, VA, Sunday, October 5, 2003. The AAC Ball precedes the Association of the United States Army's 2003 Annual Meeting, October 6-8, in Washington, DC. ASC will represent the AAC at this prestigious event. So stop by, say hello, and take a look at our new booth, which showcases our many acquisition professionals' accomplishments and links those accomplishments to our warfighters' success on the battlefield.

I'd like to take this opportunity to welcome ASC's new Strategic Communications Director, Mike Roddin. He is leading ASC's efforts to promote the U.S. Army Acquisition Workforce Campaign Plan and all other ASC communication and outreach activities. (See related article on Page 40.)

COL Mary Fuller  
Director  
Acquisition Support Center

### From The ASC FA51 Proponency Officers

In an effort to achieve better customer relations and information exchange, the Lockheed Martin Program Management Institute (PMI) has redesigned its curricu-

lum and opened its doors to military program managers. The executive-level course targets promotable majors through colonels and is held in the Washington, DC, metropolitan area at the new Center for Leadership Excellence in Bethesda, MD.

PMI's objective is to get at least one uniformed officer from each Service at every course offering. There is no tuition fee to military program managers and this calendar year has two remaining offerings: Sept. 9-12 and Oct. 28-31, 2003.

The course is designed to be an intensive 3½ days and will feature a number of Lockheed Martin and outside speakers. Moreover, it will address the challenges of managing large, complex programs, particularly those with high visibility and/or risk; share lessons learned and best practices in program management techniques; and strengthen intracompany program management cooperation and teamwork. The course is not mandatory and is offered as professional development only.

Members of the Army Acquisition Support Center attended the pilot offering in May 2003. A report on the course's validity will appear in a future issue of *Army AL&T* magazine. Contact MAJ John Lemondes and Al Kinkella at the following addresses for military and civilian workforce questions respectively:

[john.lemondes@us.army.mil](mailto:john.lemondes@us.army.mil)  
[alan.kinkella@us.army.mil](mailto:alan.kinkella@us.army.mil)

### Army Acquisition Corps Ball

This year's Army Acquisition Corps Ball will be held Oct. 5, 2003, at the Hyatt Regency Crystal City, 2799 Jefferson Davis Highway, Arlington, VA. Cost of the ball and dinner is \$65.00 per person. This year's theme is "To The Soldier," and Program/Product Manager and Acquisition Commanders of the Year Awards will be presented. Dress for the evening is Army blue or mess and black tie for civilians. For more details and reservation information, contact Jean Aleman (703) 806-3837.

### ASC Shoulder Sleeve Insignia And Distinctive Unit Insignia

There have been many questions about the Acquisition Support Center's (ASC's) shoulder sleeve insignia (SSI) and distinctive unit insignia (DUI). These questions include: which individuals are authorized to wear the insignias, and are they considered the Army Acquisition Corps (AAC) insignia? This overview will clarify misconceptions in the field about ASC's SSI and DUI.

# CAREER DEVELOPMENT UPDATE



**ASC SSI Symbolism:** Black, white, and yellow are the colors of the AAC emblem. The Greek letters alpha and omega are adopted from the AAC's emblem and symbolize the intricate and continuous acquisition process and mission.



**ASC DUI Symbolism:** Black, white, and yellow are the colors of the AAC emblem. The eagle, our national symbol, represents vigilance and military preparedness. Laurel symbolizes honor and achievement.

## Background

The current SSI and DUI were approved by the Institute of Heraldry for the U.S. Army Acquisition Executive Support Agency (AAESA) in 1998. When the Acquisition Career Management Office and AAESA were merged to create the Acquisition Support Center in 2002, ASC retained the SSI and DUI of AAESA.

ASC's SSI and DUI patches are to be worn only by those military personnel assigned to the ASC Table of Distribution and Allowances (TDA). This includes those Program Executive Offices (PEOs) and staff elements assigned to the ASC TDA. Another indication that you are allowed to wear the patch is if your Military Acquisition Position List (MAPL) number begins with "AE." This is a position under the ASC TDA.

In a survey conducted last fall regarding the ASC SSI, respondents from various PEOs said that they would like to have an SSI and DUI. Because all PEOs are assigned to the ASC TDA, they are authorized to wear the ASC SSI and DUI. This includes the two most recent PEOs stood up under ASC—Program Executive Office for Simulation, Training, and Instrumentation and Program Executive Office for Chemical and Biological Defense.

Although the patches are based on the AAC logo, they are not an Acquisition Corps SSI or DUI, nor are they prescribed for wear by individuals not assigned to the ASC TDA. Individuals assigned to other organizations or units should wear the SSI and DUI of their respective organization or unit. For example, a contingency contractor assigned to the 82nd Airborne Division should wear the SSI and DUI of the 82nd Airborne.

There is no plan to develop an AAC SSI or regimental affiliation. Although it is the Army Acquisition Corps, military personnel are actually managed as a functional area, not a true branch. Military personnel retain their basic branch and are managed by the Acquisition Management Branch at U.S. Total Army Personnel Command.

For information on obtaining the SSI or DUI, contact SGT Dorothy Jackson, Administrative Noncommissioned

Officer, ASC, at (703) 805-2924, DSN 655-2924, or [Dorothy.Jackson2@us.army.mil](mailto:Dorothy.Jackson2@us.army.mil).

## CON 353 Pilot Courses

Effective Oct. 1, 2003, CON 353 will replace CON 301 and CON 333 and will be the new Level III course required for certification training in contracting. Two pilot courses are scheduled in the 4th quarter.

Pre-Course Start	Resident Start	Resident End	Pilot Location
Jul. 14, 2003	Aug. 12, 2003	Aug. 22, 2003	Fort Belvoir
Aug. 11, 2003	Sep. 9, 2003	Sep. 19, 2003	Fort Belvoir

Individuals requiring Level III certification in contracting who have not completed CON 301 or CON 333 should apply for one of the pilots.

As part of the e-mail notification of attendance, the student will be directed to the CON 353 course Web site at <http://qp.dau.mil/con353>. Students will be given their pre-course assignments at that site.

Pre-course work includes students starting assignments that they will finish in class. An example of one of the pre-course assignments is meeting with the supervisor to identify a local contracting-related challenge and describing the challenge to the class. As part of the course, students will recommend solutions to their supervisors. Specifically, they will develop a point paper and material for their organizations.

Another example of pre-course work is that the class will be assigned a senior leader challenge to work as part of the course. Students will work together to take a position on the challenge and to develop recommended approaches and alternatives. Students will brief a senior leader at the end of the course.

If you have completed CON 333 but not CON 301 by Sept. 30, 2003, then your Level III contracting Defense Acquisition Workforce Improvement Act certification training requirements are satisfied, and you are not required to complete CON 353.

If you have completed CON 301 but have not completed CON 333 by Sept. 30, 2003, then you will be required to take the new CON 353. All but four CON 301 classes will be removed from the 4th quarter Defense Acquisition University schedule. All CON 333 classes will initially be removed from the 4th quarter, then additional classes will be added back to the 4th quarter schedule to support individuals who need CON 333 to complete their certification training this fiscal year.

## CDG Program Member Defends Our Country

Competitive Development Group (CDG) Program Year Group 01 member LTC Kenneth L. Wright, who was recently selected Product Manager (PM) on the FY04 LTC/GS 14 PM/Acquisition Command Board, has been called to active duty. He was mobilized for 90 days to Aberdeen Proving Ground, MD, where he served as Battalion Commander.

Wright is the Commander of the 326th Maintenance Battalion, located in Owings Mills, MD. The 326th Maintenance Battalion has more than 700 soldiers assigned with a variety of maintenance specialties. The work performed is primarily on wheeled equipment and vehicles. The 326th was constituted in the U.S. Army in 1943 and served in the European theater during World War II. The unit received campaign participation credit for the Rhineland, Ardennes-Alsace, and Central Europe campaigns.

Wright is a member of the Army Acquisition Corps and the CDG Program. His last civilian position was with Project Manager, Information Management and Telecommunications working on the Pentagon Renovation Program. Previously, he has been assigned as Acting Executive Officer for the Military Deputy to the Assistant Secretary of the Army for Acquisition, Logistics and Technology; Acquisition Manager, on the Future Combat Systems Task Force; Staff Action Officer, Troop Support, Office of the Deputy Chief of Staff for Logistics; and Assistant Program Manager with the Marine Corps Systems Command and the Navy Sea Systems Command.

Wright has a bachelor's degree from the University of South Carolina and an M.B.A. from Strayer University. He also graduated from the U.S. Army War College with a master's degree in strategic studies and completed the Advanced Program Manager's Course at the Defense Systems Management College. He is Level III certified in program management and acquisition logistics and Level I certified in information technology. In addition, Wright is a recipient of the Achievement Medal for Civil Service and numerous exceptional performance awards.



## *PERSCOM Notes ...*

### FY02 Colonel Promotion Board Results

The release of any promotion list is always followed by an exhaustive data analysis to “map” the characteristics of the considered and selected populations. This article summarizes the Acquisition Management Branch's analysis of the Army Acquisition Corps (AAC) population for the FY02 Colonel Promotion Board.

#### Overall AAC Results

The selection board chose 40 officers for colonel from all zones of consideration. Board members reviewed the files of 55 AAC officers in the primary zone. From this population, 35 officers were selected for promotion. The resulting selection rate of 63.6 percent was above the Operational Support Career Field rate of 54.7 percent and above the Army Competitive Category rate of 52.8 percent. The Army Competitive Category rates are based on published career field statistics.

Board members also reviewed the files of 30 AAC officers from above the zone. From this population, three officers were selected for promotion, a selection rate of 10 percent. The above-the-zone Operational Support Career Field selection rate was 5.5 percent, and the above-the-zone Army Competitive Category selection rate was 2.8 percent.

Board members further reviewed the files of 66 AAC officers from below the zone. From this population, two officers were selected for promotion, a selection rate of 3.03 percent. The below-the-zone Operational Support Career Field selection rate was 6.7 percent; the below-the-zone Army Competitive Category selection rate was 6.5 percent.

#### Primary Zone Promotions

Of the 35 AAC officers selected in the primary zone, 31 officers (88.57 percent) were either current or previous centrally selected product managers (PMs) or acquisition commanders (ACs). Of these 31 officers, 26 had at least two command Officer Evaluation Reports (OERs) in their board file.

The average number of command OERs for primary zone officers selected was just under three. All officers had only DA Form 67-9 command OERs. Selectees had an average of two above-center-of-mass command (ACOM) OERs and an average of less than one center-of-mass (COM) command OER. Officers selected had ACOM and COM+ files.

Fifteen of the 35 primary zone officers selected (42.9 percent) were not Senior Service College (SSC) graduates or selectees prior to the FY02 Colonel Promotion Board.

The majority of selectees (88.57 percent) served or are currently serving as a Command Select List (CSL) PM or AC. No trends were noted with respect to any other category of duty positions.

# CAREER DEVELOPMENT UPDATE

Eighty-one percent of the officers selected served in the Military District of Washington (MDW) at some time during their acquisition careers. A large portion (22 percent) of the officers also served at Fort Monmouth or Picatinny Arsenal, NJ. Other previous acquisition tour locations included Arizona, California, Florida, Georgia, Kansas, Maryland (outside MDW), Michigan, Missouri, North Carolina, Texas, Virginia (outside MDW), Bosnia, Germany, Korea, Kosovo, Saudi Arabia. (No military or civilian school locations were included.)

A large portion of selectees had served in the Army Materiel Command (71 percent) or the Acquisition Support Center (65 percent). However, this is not indicative of any trend; it is simply a result of which commands "own" acquisition positions.

## Above And Below The Zone

All of the officers selected above and below the zone were current or former PMs or ACs. Eighty percent of these completed or were selected to attend SSC. Duty locations during their acquisition careers varied (Arizona, California, District of Columbia, Maryland, Michigan, Missouri, New Jersey, Virginia, Washington, Honduras, and Kuwait). Seventy-five percent of these officers had served in the MDW. As with the primary zone selectees, the above- and below-the-zone officers served in a wide variety of commands. Sixty percent were assigned to the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology at some point in their careers.

## Selectee Trends

Based on this analysis, officers competitive for promotion to colonel generally are serving or have served successfully as a PM or AC. Command performance evaluations include (on average) two ACOM and one COM ratings under the DA Form 67-9 OER system. Overall file quality was ACOM or COM+ (i.e., performed well in whatever positions they have held).

## Who Was Not Promoted?

Of the 20 officers in the primary zone not selected for promotion to colonel, two were either current or former PMs or ACs. Eighteen officers not selected for promotion had not served as a lieutenant colonel PM or AC.

As with selectees, other than CSL PM or AC, no trends were noted regarding duty positions. With respect to assistant PM and deputy PM positions, officers selected for promotion did not hold these positions at any greater rate than did officers who were not selected.

A large number of these officers (65 percent) served acquisition tours in the MDW. Other previous tour locations included Alabama, Arizona, California, Florida, Georgia, Kansas, Kentucky, Maryland (outside MDW), Michigan, Missouri, New Jersey, New York, Ohio, Texas, Virginia (outside MDW), Canada, Germany, Greece, Kwajalein Atoll,

Saudi Arabia, Turkey, and the United Kingdom. Several officers also served short-term rotations in Saudi Arabia and Somalia. These duty locations are very similar to the duty locations listed for the officers selected for promotion.

Officers not selected for promotion (regardless of whether they were current or former PMs or ACs) had an average of one ACOM and two COM DA Form 67-9 OERs. The majority of officers not selected for promotion had overall COM+ or COM performance files.

## Nonselectee Trends

Officers with straight COM OERs are not competitive for promotion to colonel. Officers with COM+ and ACOM files are competitive if they have performed very well (strong COM+ or ACOM) as a lieutenant colonel PM or AC. Late selection for PM or AC can lead to nonselection if the officers do not have any, or a significantly less than the average number of, PM or AC OERs in their board file. Late selection is defined as being selected or activated from the alternate list on your third or fourth looks for lieutenant colonel PM or AC (i.e., timing such that you could not expect to have the average number of command reports before your primary zone look for promotion to colonel). Duty positions (with the exception of PM or AC), duty locations, and specific commands do not show any type of trend.

## General Observations

The file quality of officers selected for promotion continues to be strong. Because of the tough competition, not all successful PMs or ACs will get promoted. Early selection for lieutenant colonel PM or AC can improve the chances of selection simply because of the additional command evaluations available for the board's review (assuming the evaluations support promotion). COM evaluations should have substantive narrative comments provided by senior raters, which should focus on an officer's potential.

## Summary

Competition for promotion to colonel is extremely high. Strongly documented duty performance (including command) is the key to selection. Additionally, officers in all zones should personally review their Officer Record Brief and microfiche to ensure the information is accurate and complete. Photos that are more than 2 years old, are in full-length format, are not current (e.g., awards), or are not particularly good should be replaced.

The bottom line is that promotion to colonel is very tough. Because of AAC shortages at the colonel level, the AAC received a promotion floor this year that resulted in a small number of officers getting promoted who did not command at the lieutenant colonel level. However, overall file quality in addition to ACOM/COM+ performance as a lieutenant colonel PM or AC is crucial.



# CAREER DEVELOPMENT UPDATE

## FY02 AAC Colonel Selectees

The following is a list of acquisition officers selected for colonel by the FY02 Colonel Promotion Board.

Abercrombie, Henry Eugene  
Bonheim, Michael Eugene  
Brouse, Steven Michael  
Burnett, Donald James  
Carson, Peggy Roxanne  
Colon, Angel Luis  
Coutteau, Charles George  
Dixon, Timothy Dean  
Eberle, Nathan Roy  
Economy, Anas Tommy III  
Eveland, George Dean Jr.  
Fierko, Francis Xavier  
Goddette, Timothy Gerard  
Grubb, Susan Kay  
Hansen, Richard Donald Jr.  
Harris, Earnest David  
Harrison, Theodore Courtland  
Incorvati, Anthony Ralph II  
Jones, Kermit Calvin  
Kendrick, Robert III  
Lambkin, Glen David Jr.  
Mahanna, Cory Wade  
McGuire, Paul Arthur Jr.  
Montford, Leonard Ray Jr.  
Neumann, Susan Bottorff  
Parker, William Ernest  
Ralph, James Robert III  
Ramos, Enrique  
Rider, Mark Devor  
Scarborough, Jess Allen  
Sears, George Albert II  
Stevenson, William Wayne  
Stoleson, Michelle Darling  
Sullivan, Christopher Cyril  
Ulsh, Gregory Jay  
Vaughn, John Kendrick  
Waller, Henry Hall  
Walters, Stephen  
Wolfe, Daniel Glenn  
Yarborough, Michelle Faith

## FY04 LTC/GS-14 PM/AC Board Results

The U.S. Total Army Personnel Command's (PERSCOM's) Acquisition Management Branch (AMB) recently completed an analysis of the FY04 Product Manager (PM)/Acquisition Command (AC) Board results and overall command opportunity for Army Acquisition Corps

(AAC) officers and civilians. The selection board was held Dec. 7-13, 2002, and the selection list was released April 3, 2003. The following paragraphs summarize the results and indicate possible trends.

### Overall Results

Board members reviewed the files of 294 AAC members and selected 48 principals for PM, AC, or contracting command assignments. The selectees included 39 acquisition officers, 3 Medical Service (MS) officers, and 6 acquisition civilians. Of the 42 military officers chosen, 28 are slated for PM or AC assignments, while 14 are slated for contracting command assignments. The overall selection rate was 16 percent. The military selection rate was 17 percent (42/241), and the civilian selection rate was 11 percent (6/53). Officer results by year group (YG) are as follows (not inclusive of revalidated or MS officers): YG87 (6), YG86 (17), YG85 (9), YG84 (5), YG83 (1), and YG82 (1).

### Who Was Selected?

All of the civilians and more than 90 percent of the officers slated for PM or AC assignments served as assistant or deputy PMs. Additionally, more than 85 percent of those slated in PM or AC assignments served on a major headquarters staff (such as Army Test and Evaluation Command; Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology; or Army Materiel Command (AMC)) and/or an executive officer assignment. Eight of the 14 officers (57 percent) slated to be contracting commanders had at least 4 years contracting experience at either the Defense Contract Management Agency, Defense Logistics Agency, AMC or Forces Command. Four officers with only a program management background were slated to contracting commands. Everyone selected has a master's degree, and one officer has a Ph.D. Nine officers were not previously selected for resident Command and General Staff College but completed the nonresident course.

### General Observations

Consistently strong evaluations were common among selectees. The average number of Officer Evaluation Reports (OERs) under the new DA Form 67-9 was 4.6 for selectees, 4.9 for alternates, and 4.9 for officers not selected as a principal or an alternate. The average number of above-center-of-mass OERs under the DA Form 67-9 was 3.5 for selectees, 2.8 for alternates, and 1.8 for officers not selected as a principal or an alternate. The average number of center-of-mass OERs under the DA Form 67-9 was 1.1 for selectees, 2.1 for alternates, and 3.1 for officers not selected as a principal or an alternate.

The civilians selected as principals and alternates had very strong comments on their Senior Rater Potential Evaluations (SRPEs). In addition, they had previously been

## CAREER DEVELOPMENT UPDATE

selected for either the Competitive Development Group Program, Senior Service College Program, or had performed duties as a deputy project/product manager. For military officers, the trend for first-look selection continues. For civilians, the principals and alternates were selected on their second or third time considered.

### Conclusion

Before future PM/AC boards convene, it is imperative for officers to personally “scrub” their Officer Record Brief and microfiche to ensure that accurate information is conveyed to board members. Approximately 180 days prior to the board convening, officers should check their Official Military Personnel File (OMPF) online at <https://www.perscom.army.mil>. (Click on the OMPF icon.) You will need your Army Knowledge Online user name and password to access your OMPF. Traditionally, the board meets in December each year. Until the Army Selection Board System is fully operational, AMB will scrub packets for officers in the zone of consideration 30-45 days prior to the date of the board. If your official photo is more than 2 years old, replace it. Prior to taking a new photo, check the awards, branch, and U.S. insignia on your uniform. Attention to detail makes a difference. Until further notice, two hard-copy photos must be forwarded to PERSCOM along with the electronic Department of the Army Photograph Management Information System photo.

To be competitive for future selection as a PM or commander, captains and majors should seek career-broadening experiences. Officers should seek jobs that offer experiences in program management, combat development, testing, and contracting. With a limited number of positions in program offices, PERSCOM will continue to rotate captains and majors at 24- to 36-month intervals to ensure a sufficient pool of experienced, qualified officers for future PM and command positions is available. Officers who want to be competitive for contracting commands should seek contracting officer positions in pre-award, post-award, and contingency contracting officer environments.

Civilians should take time to ensure that their application packages are complete and contain all required documents. Special attention should be given to ensuring the information contained on the Acquisition Career Record Brief (ACRB) is accurate. Dates reflected on the ACRB should match dates shown on the résumé (e.g., dates of assignments on ACRB should match dates recorded on the résumé). Current ACRBs may be obtained from Acquisition Career Managers (ACMs) and submitted with application packages. Discrepancies such as missing evaluations should be explained. Remember, the application package reflects your career and defines your training, education, and experience to

the board. Civilians must also stress to their supervisors the importance of the SRPE. Weak comments or the lack of comments may negatively impact the board's selection decision. Your ACM at PERSCOM is the best source of information with respect to board preparation.

Congratulations to the following lieutenant colonel, major promotable, and GS-14 PM/AC selectees. (Note: Civilians are indicated by an asterisk.)

Baez, Jose Luis  
Ballew, Mark Edward  
Barraclough, Brett Allen  
Bernritter, Travis Laymon  
\*Brewer, Carlton E.  
Bushey, Douglas Bowers  
Carrick, Kenneth George  
Cole, William Edward  
Contreras, Andres  
Daniels, Debra Deena  
Day, James Victor  
Dedecker, Craig Alan  
Dietz, James Eric  
Fahy, Stephen Robert  
Finley, Alfonso Jay  
Fouse, Scott Dale  
Hess, John Powers  
Hinds, John Conrad  
Jacobsen, Scott Alan  
Jones, Walter  
Kelleher, John Henry Jr.  
Lazar, John Matthew  
Leaphart, John Russell  
Lindsay, Michael Anthony  
Marion, Robert Lee  
\*Martin, Jose F.  
Mason, William Ross  
Morton, Dwayne Allan  
Nagel, James Roger  
\*Nichols, Marvin W.  
Noble, Earl David  
Peterson, Kevin Bryan  
Rand, Jaimy Susanna  
Riggins, David Wilburn  
\*Rubens, Shirley C.  
Schleder-Kirkpatrick, Lisa R.  
Smith, Earle II  
Smith, Todd Lyndall  
Tamilio, Douglas Alan  
Tarca, Kenneth Robert  
\*Thomas, Robert L.  
Trulock, Troy Eugene  
Wood, Kelvin Renard  
\*Wright, Kenneth L.  
Young, Reed Fisher  
Zoppa, Robert Joseph

## FY03 Army Experimental Test Pilot Board

One of the responsibilities of the U.S. Total Army Personnel Command's Acquisition Management Branch (AMB) is to manage the Army's Experimental Test Pilot (XTP) Program. This 11-month program is open to active duty Army aviators and is offered at the U.S. Naval Test Pilot School (USNTPS), Patuxent River Naval Air Station, MD.

AMB conducted the FY03 U.S. Army XTP Selection Board on Feb. 19-21, 2003. The XTP Board's mission was to select the best-qualified commissioned and warrant officers as candidates to attend the USNTPS, with ultimate certification as a U.S. Army Experimental Test Pilot. Congratulations to the following "best-qualified" commissioned and warrant officers selected to attend the USNTPS:

Buhr, Todd CPT  
Crispino, Jesse A. CPT  
Frasier, Johnathan B. CPT  
Gonzalez, Hector A. CPT  
Phillips, David C. CPT  
Goggin, Sean D. CW4  
Moore, Rucie CW4  
Grady, Stephen T. CW3  
Logwood, Clinton G. II CW3  
Wagner, Robert M. CW2

The board reviewed a total of 30 applicants (17 commissioned officers and 13 warrant officers) per Military Personnel Message number 03-021. The FY03 board selected five commissioned officers and five warrant officers as primary (best-qualified) candidates. The board also identified an alternate candidate list consisting of seven commissioned officers and three warrant officers.

Prior to the board convening, AMB provided a copy of the U.S. Army XTP Memorandum of Instruction to board members. The board president stressed the importance of the XTP Program because of the complexity and risk levels that are inherent in experimental and developmental flight-testing and the significant investment the Army has in each candidate. He also stressed the importance of increased joint-service cooperation in the fidelity of each applicant's packet, to include endorsements from the field, because the packet serves as the only means available to determine the applicant's potential to qualify as an XTP.

The overall selection rate was 33 percent (10 best qualified of 30 applicants). AMB has sent written notification of board results to all considered officers. AMB

will award commissioned officers selected by the board the Additional Skill Identifier of 4M (Acquisition Candidate) and will subsequently manage the officer. The Warrant Officer Division will continue to manage board-selected warrant officers.

The board recommended the following changes redefining the commissioned officer application requirements be taken into consideration for the FY04 U.S. Army XTP Board:

- Commissioned officer applicants must have at least a bachelor's degree in an engineering discipline or a degree with an engineering- or science-heavy curriculum that includes the following academic courses: calculus I and II, classical physics, statics and dynamics (engineering mechanics), and computer science.

- Other desirable academic courses include differential equations, aircraft stability and control, thermodynamics, heat transfer, strength of materials, fluid mechanics, propulsion, vibration analysis, and aerodynamics and performance.

- Officers must be branch-qualified prior to closing date of packet submission to the board, and a copy of a branch-qualifying Officer Evaluation Report must be in the application packet.

- Officers must have a minimum of 200 hours of pilot-in-command time in rotary-wing aircraft.

There were no changes recommended for application requirements of warrant officers.

XTP selectees will serve in utilization assignments based on the needs of the Army. Initial tours will be served at the Aviation Technical Test Center, Fort Rucker, AL, or the Aviation Applied Technology Directorate, Fort Eustis, VA. USNTPS graduates will serve as XTPs or in organizational staff positions that directly affect the type, design, and configuration of Army aircraft.

For additional information, go to:

<https://www.perscomonline.army.mil/OPfam51/EXP.htm>.

Commissioned officers interested in applying should contact MAJ Keith Harvey at (703) 325-3128/DSN 221-3128 or e-mail [Keith.Harvey@hoffman.army.mil](mailto:Keith.Harvey@hoffman.army.mil). Warrant officers interested in applying should contact CW3 Kimberly Young at (703) 325-5228/DSN 221-5228 or e-mail [Kimberly.Young@hoffman.army.mil](mailto:Kimberly.Young@hoffman.army.mil).

## FY04 White House Fellowship Program

The President's Commission on White House Fellows annually selects exceptionally promising individuals to serve as White House fellows. The White House Fellowship Program is an opportunity for soldiers to receive unique training and firsthand experience in the process of governing the Nation. Fellows write speeches, help

review and draft proposed legislation, answer congressional inquiries, chair meetings, conduct briefings, and otherwise assist high-level government officials. In the past, fellows have worked for the Vice President, the White House Chief of Staff, and the National Security Council.

Candidates for the White House Fellowship Program must progress through a highly competitive process. Applicants are expected to have a record of achievement in their careers, the skills necessary to serve at the highest levels of government, and above-average leadership potential. To be eligible for the program, officers must meet the following criteria:

- Be a U.S. citizen.
- Have no more than 19 years active federal commissioned service as of September 2004.
- Be available for a 2-year utilization tour following the fellowship.
  - Be branch qualified at current rank.
  - Have no adverse actions pending.
  - Meet height and weight standards per Army Regulation 600-9, *The Army Weight Program*.
  - Have a graduate degree.
  - Have no Army educational requirements system utilization obligation at start of the fellowship.
  - Have potential for future military service.
  - Be competing solely for the White House Fellowship Program and no other Army-sponsored program, fellowship, or scholarship.

The U.S. Total Army Personnel Command's (PERSCOM's) Acquisition Management Branch (AMB) will conduct a review board in December 2003 to select Acquisition Corps officers for nomination to the program. Officers interested in applying for the program should go to the AMB Web site at:

<https://www.perscomonline.army.mil/OPfam51/WhiteHouseFellowship.htm>

Please follow the procedures listed for submitting an application. The suspense date for submitting applications is Dec. 1, 2003. Officers are encouraged to review and update their Official Military Personnel File (on microfiche) prior to submitting their application. Applicants should also verify with their assignment officer that all college transcripts and a current photo are on file at AMB.

PERSCOM headquarters will forward Army officer nominations to the White House Commission prior to Feb. 1, 2004. Regional finalists will be selected in March, followed by the selection of national finalists in May. The White House Commission is scheduled to announce the selected fellows in June 2004. The fellowship year runs from September 2004 to August 2005. This is followed by a 2-year utilization assignment that will begin in September 2005.

Officers incur an active duty service obligation (ADSO) for a period of three times the length of the fellowship. The ADSO begins the day after the fellowship is completed.

Additional information is available on the White House Fellowship Program Web site at:  
<http://www.whitehousefellows.gov/home.html>.

## FY05 Army Congressional Fellowship Program

HQDA has announced that the FY05 Congressional Fellowship Program will be conducted August 2004-November 2005. This program offers top Army officers an outstanding opportunity to receive valuable training and experience by serving as staff assistants to members of Congress. Fellows are typically given responsibility for drafting legislation, arranging congressional hearings, writing speeches and floor statements, and briefing congressional members for committee deliberations and floor debates.

The U.S. Total Army Personnel Command's Acquisition Management Branch (AMB) will conduct a review board in October 2003 to select Army Acquisition Corps (AAC) officers for the program. On Dec. 2-4, 2003, the Army Congressional Fellowship Selection Board will convene to review applications and make final selections. To be eligible for the program, officers must meet the following criteria:

- Hold the rank of major or lieutenant colonel with no more than 17 years active federal commissioned service as of Jan. 1, 2004.
  - Be a graduate of the Command and General Staff College (resident or nonresident).
  - Be branch qualified at current rank.
  - Have no adverse actions pending.
  - Meet height and weight requirements per Army Regulation (AR) 600-9, *The Army Weight Program*.
  - Be available for a utilization tour immediately following the fellowship.
  - Not be competing for any other sponsored program, fellowship, or scholarship.
  - Have potential for future military service.

The Congressional Fellowship Program begins with an August-December 2004 HQDA orientation and attendance at the Force Integration Course and a variety of meetings and seminars. Following the orientation period, fellows serve as staff assistants to members of Congress from January-November 2005. After completing the program, officers incur an active duty service obligation of no less than three times the length of the fellowship (per AR 350-100) and must serve a 2-year utilization assignment in a position that requires knowledge of congressional activities.

To apply for the FY05 Congressional Fellowship Program, AAC officers should go to:  
<https://www.perscomonline.army.mil/OPfam51/CongressionalFellowship.htm>.

Please follow the directions for submitting an application. The suspense date for submitting applications to AMB is Oct. 7, 2003.

Army civilians (GS-13 to 15 or equivalent pay-/broadband) are also eligible for the program. For details, go to:  
<http://cpol.army.mil/train/catalog/acfp.html>.

Additional information on the Congressional Fellowship Program is available at the Office, Chief Legislative Liaison Web site at:  
<http://www.hqda.army.mil/ocll>.

## TARDEC Demos Key Vetronics ATDs

On March 13, 2003, the U.S. Army Tank Automotive Research, Development and Engineering Center's (TARDEC's) Vetronics Technology Area associates hosted the Vetronics Technology Integration (VTI) Program VIP Day at McGregor Range, Fort Bliss, TX.

Vetronics, or vehicle electronics, is the discipline of total ground vehicle electrical and electronics systems integration. TARDEC's Vetronics Technology Area conducts research in intelligent systems, robotic mobility, crew stations, embedded simulation, system architecture and telematics while leveraging advanced automotive technology. This provides soldiers with the world's most advanced ground vehicle systems and logistics support equipment.

The VTI Program encompasses the Army's Crew Integration and Automation Test (CAT) bed and the Robotic Follower Advanced Technology Demonstration (ATD). ATDs are critical to the Army's transformation and the Objective Force, said TARDEC Executive Director for Research Dr. Grace M. Bochenek.

She added that ATDs are a vital part of the Army's science and technology (S&T) program because they help mature advanced technologies to upgrade existing systems and enable development of next-generation and future systems. Thus, personnel can experiment with technology-driven operational issues and be better informed when preparing requirements documents prior to milestone decisions.

The Army needs smaller, lighter combat vehicles with increased lethality, survivability, and mobility. In addition, the Army must assimilate and distribute more information to, from, and within its vehicles. A digital battlefield also requires marked increases in vehicle command, control, communication, and computer system performance. As such, future combat vehicles need highly integrated multimission-capable crew stations. The CAT ATD addresses this need.

Moreover, the Objective Force will be rapidly deployable, extremely lethal, and highly survivable. Extensive infusion of unmanned ground vehicle systems offers a viable path toward achieving those goals. The Robotic Follower ATD addresses a comparatively low-risk approach to unmanned ground vehicles than the more complex "out-front" robots.

VTI officials said the CAT ATD goal is to design an advanced two-man crew station for a system of less than 20 tons incorporating the Future Combat Systems (FCS) fight, carrier, reconnaissance, and command and control of unmanned systems. TARDEC Vetronics Technology Area Deputy Director Bruce Brendle said some of the key CAT requirements include vehicle crew stations, control of unmanned systems, speech recognition, 3-D audio, indirect vision driving, autopilot, robotic follower path generation, drive by wire, position navigation, and embedded simulation.

Brendle explained that the Robotic Follower ATD would develop, integrate, and demonstrate the technology required to achieve unmanned follower capabilities for future land combat vehicles. This technology will provide a core capability to conduct a wide variety of FCS and Objective Force applications such as ruck carrier, supply platoon, non-line-of-sight and below-line-of-sight fire, and rear security. It will also support manned combat, tactical, and other support vehicles.

The March 13 ATDs were key to bringing combat and materiel developers together with industry to explore the technical feasibility, affordability, and potential of technologies to support current and emerging warfighting concepts. ATDs investigate technical options and eliminate unattainable technologies in the early stages of a program. The Fort Bliss demos were important milestones in the VTI initiative and will provide substantial data for FCS Milestone B.

The Fort Bliss VTI event showed contractors, Joint Robotics Program officials, and a variety of key Army stakeholders that CAT and Robotic Follower technologies are ready for integration into the FCS Program and are critical to the Objective Force.

Attendees were briefed on what they would be witnessing prior to heading to McGregor Range. The ATDs integrated CAT and Robotic Follower technologies onto a Stryker chassis, and the attendees witnessed robotic follower line-of-sight following that included perception technology taken from the groundbreaking Demo III program that was "migrated over." Demo III was a Defense Department program aimed at developing and demonstrating new, evolving, fully autonomous vehicle technologies with an emphasis on perception, navigation, task planning and intelligent system architecture.

Attendees also witnessed demos including high-speed autonomous Stryker road following; dismounted robotic follower, where an experimental unmanned vehicle autonomously followed a soldier; a Robotic Follower chase, where guests piled into High Mobility Multipurpose Wheeled Vehicles to chase and observe an autonomous Stryker while it traversed rugged desert terrain; Robotic Follower observation from a bus on a dirt road; and CAT operation, where crew members tele-operated the experimental unmanned vehicle and supervised the Robotic Follower in autonomous mobility mode. Finally, VTI guests viewed a Stryker off-road following demo.

Bochenek said that the ATD demos were major milestones on the road to fielding the Objective Force. She added, "The CAT ATD is the linchpin to advanced two-man crew stations for FCS, and the Robotic Follower ATD seeks to mature and demonstrate key robotics technology required for early insertion into FCS."

Concluding, Bochenek stated that TARDEC's Vetronics Technology Area clearly showed how the ATD pacing technologies are generating critical data to support FCS Milestone B. Additionally, TARDEC's partners are playing a major role in furthering these critical Army S&T objectives for FCS.

### Parachute Accuracy Improved At YPG

A C-130H aircraft flown by members of the Wyoming National Guard recently droned over Sidewinder Drop Zone at U.S. Army Yuma Proving Ground (YPG), AZ, at a height of 15,000 feet above sea level, poised to drop a small electronic device. The several pound piece of hardware, known as a "drop-sonde," gathers meteorological data for use in parachute drops of cargo weighing more than 500 pounds. Through use of the device, heavy parachute drops that took place moments later were unbelievably accurate, hitting the ground within 100 meters of the target.

We've all seen movies in which parachute drops of supplies to waiting soldiers went awry and fell into enemy hands. According to Paul Mortaloni, Acting Chief of the Air Delivery and Soldier Systems Division, that's exactly the situation drop-sondes were designed to avoid.

Drop-sondes are deployed from aircraft through a chaff dispenser or by an unmanned aerial vehicle in advance of a parachute payload drop. "Drop-sondes provide real-time wind and meteorological information," Mortaloni explained. "This enables people onboard cargo aircraft to recompute the release point to make the actual drop more precise, based on the near real-time weather information." In the past, parachute drops were computed with meteorological data that were up to several hours old.

The drop-sonde itself is a very small device, weighing no more than a few pounds and is easily handled. However, each drop-sonde packs an electronic punch that can be a great force multiplier.

Cargo loads ranging between 1,100 and 2,200 pounds can be dropped with great accuracy through use of the drop-sondes. Although cargo loads at the proving ground are simulated with weights that weigh the same amount, actual parachutes are used. In the case of the parachutes used to drop the recent 1,100-pound loads, high-velocity 26-foot parachutes delivered the cargo to the ground at 70 to 90 feet per second. A cushioning system of honeycomb-like crushable corrugated cardboard takes up a great deal of the shock when the load hits. An actual load for this type of drop might consist of rations, blankets, boots, clothing, and many other items.

According to Mortaloni, this type of testing is important because it improves the precision of resupply drops. This particular test has taken place for about 3 years. In general, the Army is focused on developing 100-meter accuracy for all resupply drops. This can be done in various ways, such as using drop-sondes or guided technologies like global positioning systems (GPS).

YPG has performed the lion's share of the developmental testing for guided parachute systems. Most recently, Mortaloni returned from receiving his master's degree in aeronautical engineering at the Naval Postgraduate School in Monterey, CA, where he developed the aerodynamic model for the ram air parafoil system for use in the development of guidance algorithms for precision-guided systems. Precision-guided systems will eventually be capable of steering themselves to accurate, pinpoint landings. One

of the considerations is cost, so several technologies are currently being studied.

The Natick Soldier Systems Center, located in Massachusetts, manages the development of these systems for the Army but relies heavily on YPG's airdrop systems expertise. YPG engineers help evaluate the systems being tested to eventually down select to a single precision-guided system for fielding.

Tests take place throughout the year with aircraft flying into the proving ground at least every other week to conduct a number of parachute drop missions.

*This article was written by Chuck Wullenjohn, YPG Public Affairs Officer.*

### Apache Combat Mission Simulator Gets Rapid Enhancement To Support Operation Iraqi Freedom

The U.S. Army Program Executive Office, Simulation, Training, and Instrumentation (PEO, STRI) in Orlando, FL, recently commissioned Northrop Grumman Mission Systems and CAE Inc. to add a critical training capability to an AH-64A Apache Combat Mission Simulator at the Fliegerhorst Army base in Hanau, Germany.

Early in the Operation Iraqi Freedom conflict, several U.S. Army Apache helicopters and their pilots experienced "brownout" over the sands of Iraq. A brownout results from the swirling sands and debris caused by rotor downwash, which diminishes pilot visibility and orientation. To address the brownout problem, the Army wanted the ability to deliver high-fidelity training for this condition to Apache pilots who would be deployed to the Gulf region in the near future.

PEO, STRI; Northrop Grumman; and CAE Inc. performed a major upgrade to the Apache Combat Mission Simulator in Hanau over the past 20 months, and the simulator was nearing its formal "ready-for-training" date. A major part of the upgrade work was the addition of the CAE Medallion visual system, a state-of-the-art visual system designed for high-performance, high-fidelity training. In late March 2003, the Army identified brownout training to simulate the conditions experienced in Iraq as an immediate requirement. The team quickly incorporated the enhancements requested, and 33 crews from the 1st Battalion, 501st Aviation Regiment began training April 1 for the brownout conditions during day and night takeoffs and landings.

"While we've provided the capability to conduct training in blowing sand and brownout conditions in our AH-64A Combat Mission Simulators since the early 1990s, the experiences of our Apache pilots in the early stages of Operation Iraqi Freedom dictated that we needed a greater level of visual realism in the simulator," said COL Kevin S. Noonan, PEO, STRI Project Manager for Combined Arms Tactical Trainers. "The new visual system in our Apache Combat

## NEWS BRIEFS

Mission Simulator is capable of delivering the fidelity and realism required for special conditions such as brownout. The quick response by the Army/industry team enabled our combat pilots to more adequately prepare for missions they were likely to encounter on the battlefields in Iraq," he added.

PEO, STRI provides the life-cycle management of interoperable training, testing, and simulation solutions for soldier readiness and the Defense community. The command produces a host of high-technology simulation programs for the U.S. Army and is responsible for supporting most of the Army's training systems around the world.

## AWARDS

### Army Technology Transfer Awards

Scientists from the U.S. Army Soldier Biological and Chemical Command's Edgewood Chemical Biological Center (ECBC) and Natick Soldier Center (NSC), both components of the U.S. Army Research, Development and Engineering Command (Provisional), received Federal Laboratory Consortium (FLC) Awards for Excellence in Technology Transfer for 2003. Winners were honored at the FLC Annual Meeting held in Tucson, AZ, this past May.

The FLC is a congressionally chartered network of federal laboratories designed to promote and strengthen technology transfer nationwide. The FLC established this annual award to recognize individuals or teams from federal laboratories and commercial sector partners who have done outstanding work in transferring technology to the commercial marketplace.

Nominations are submitted by the laboratories and are judged by a panel of technology transfer experts from industry, state and local government, academia, and the federal laboratory system.

The Army received three of the four awards won by DOD laboratories this year. Recipients of these awards and highlights of their achievements follow.

***Design, Development, Training, Fielding, And Continued Consultation For Mobile Laboratories.*** In the event of a chemical, biological, or radiological terrorist attack, first responders, military leaders, and local and federal agencies need tools that will allow them to sample and analyze materials in a precise and uniform manner. This will enable the efficient and accurate field analysis of chemical and biological materials.

The technologies developed by the team of Monica Heyl, Charles Henry, and Dr. Dennis Reutter included turnkey capabilities that integrate and standardize field sampling as well as the analysis tools that support the users. Numerous partnerships using various technology transfer mechanisms contributed to the success of the project. Some of these partners include Purified Microenvironments, QuickSilver Analytics Inc., the FBI, and the FDA.

Both the public and private sectors have benefited from these mobile laboratory technologies. This team has provided enhanced strategies that will ultimately help to improve law enforcement efforts to protect the U.S. against terrorism and the threat of weapons of mass destruction.

***Antibody Engineering For Expression In Insect Cells And Larvae.*** This technology addresses an advanced method for manufacturing recombinant proteins in insect cells and larvae. It consists of genes for a recombinant antibody that binds a biological warfare agent (botulinum toxin). The genes were cloned in such a way that makes it possible to produce the antibody in insect larvae. These antibodies are currently used as the recognition component of sensors that can detect biological threat agents.

Award recipients included Dr. Kevin O'Connell, Patricia Anderson, and Dr. James Valdes of ECBC and Terry Chase of Chesapeake PERL Inc. (C-PERL). By way of a Cooperative Research and Development Agreement (CRADA) between ECBC and C-PERL, C-PERL scientists are pioneering a technology that transforms insect larvae into miniature protein factories. This represents the latest attempt to manufacture biological material for use in a new generation of medicines and diagnostic tests.

The CRADA has proven successful for both parties, and the partnership has enabled C-PERL to more than double the size of its staff. Last year, the company won the Maryland Biotech/Life Sciences Incubator Company of the Year Award.

***Small-Scale Cogeneration Of Heat And Electrical Power.*** The first practical, small-scale cogenerator, developed by the NSC team of Don Pickard and Frank Dileo, efficiently provides the energy needs of a battalion-level field kitchen. Cogenerators produce heat and electrical power from a single process that is 80 percent more efficient than separate heaters and generators. A high-temperature two-phase mixture of steam and water is injected into an expander, and an alternator coupled to the expander produces electrical power while the remaining heat is used for cooking and sanitation.

The team worked with engineers from Yankee Scientific, a company in Medfield, MA, to adapt the liquid

injection cogeneration process to field kitchens. Subsequently, Yankee Scientific and ECR International formed a joint venture called Climate Energy LLC to further develop and market the technology. In 2001, the technology was fully developed and tested with kitchen appliances and was integrated into a fully functioning kitchen in 2002.

Electric power generation using small-scale cogenerators offers significant environmental advantages and other benefits when compared to conventional power plants—less fuel is burned, the burning is cleaner, and the fuel is burned over a broader area, unlike the concentrated pollution produced by a conventional power plant.

**Laboratory Director Of The Year Award.** The FLC also honors those laboratory directors who have made maximum contributions to the enhancement of technology transfer in their organizations. Joseph (Jim) Zarzycki of ECBC received a 2003 Laboratory Director of the Year Award for his initiative and tireless efforts in promoting technology transfer at ECBC. This resulted in more widespread dissemination of ECBC's technologies and capabilities, the development of new business opportunities, strengthened relationships with industrial and academic partners, and increased outreach to state and local agencies.

*This article was submitted by James K. Wanko, the Army Domestic Technology Transfer Program Manager at the U.S. Army Research Laboratory, Adelphi, MD.*

## Value Engineering Team Receives Award

DOD annually presents value engineering awards to the commands that have exceeded their savings goal by the greatest percentage. The U.S. Soldier and Biological Chemical Command's (SBCCOM's) Value Engineering (VE) Team won the 2002 Value Engineering Award, marking the second time in the past 4 years the team has achieved this distinction. SBCCOM exceeded its goal by 285 percent in 2002.

On May 22, 2003, SBCCOM Commander MG John Doesburg presented the plaque and certificate of appreciation to VE Team members Michael Ostrowsky and Kenneth Rice. He stated that SBCCOM's VE Program not only meets its goals but also continually exceeds them. He added that although the systems that SBCCOM works on are small ones, the VE Team can make monumental changes for the soldier. "At the end of the day," Doesburg said, "it's all about what's good for the soldier."

VE is a process that encourages government and industry personnel to work together to reduce development, acquisition, logistics, and sustainment costs. Sav-

ings can be generated through redesigns, modifications, changes in materials, elimination of unused or redundant parts, increased reliability or efficiency, and reduced maintenance and logistics support.

Joseph Mackoul, Office of the Product Manager, Force Sustainment Systems, joined Ostrowsky and Rice in accepting the award. Mackoul's efforts on the Barracks Replacement Heater project was the largest contributor to SBCCOM's savings, accounting for more than 50 percent of the total savings realized.

Rice said it was an honor to receive such a prestigious award. He added that it is not just the office that manages the VE program that is responsible for the savings, but also organizations such as the Integrated Materiel Management Center and the program, project, and product manager (PM) offices. "That's why we wanted to make sure we had Joe [Mackoul] here," Rice said, "to ensure the PM gets the recognition also."

Ostrowsky, VE Manager, said that his predecessor, Tony Yablony, can take much credit for SBCCOM getting the award, and that he would continue to work to increase the savings realized through VE.

For more information about the Soldier Systems Center and SBCCOM, go to <http://www.natick.army.mil>.

## Army Civilians and Contract Partners Receive DSP Awards

The Defense Standardization Program Office (DSPO) honors individuals and organizations from military and DOD organizations who have achieved significant improvements in interoperability, cost reduction, quality, reliability, and readiness standardization. Each year during a formal awards ceremony, DSPO recognizes these outstanding performers.

Martin L. Snyder, U.S. Army Tank-automotive and Armaments Command, was the sole recipient of the 2002 Distinguished Achievement Award at the 2003 DOD Standardization Symposium. He received the award for his significant accomplishments in the development of a new, multivolt infrared-secure blackout driving lamp. Unlike previous versions, this lamp puts enough light in front of military vehicles to enable drivers to see where they are going while minimizing detection. The new lamp complies with international standardization agreements enabling interoperability with NATO forces, has an estimated life of 100,000 hours, and is a direct field replacement for all tactical and commercial vehicles configured with blackout lights. The lamps were put into production in June 2002 on the Army's Heavy Expanded Mobility Tactical Truck and other tactical wheeled vehicle systems.



## AWARDS

A U.S. Army Communications-Electronics Command (CECOM) team also won a 2002 DSP Award for its accomplishments in the development and implementation of a tool to test and diagnose data buses built to MIL-STD-1553. When fully deployed, the single standardized Advanced Multiplex Test System (AMTS) will significantly reduce the logistics footprint, enhance readiness through onboard testing, and save dollars for Army and multi-service platforms. For example, the Apache Longbow pilot program demonstration projected a 6-year payoff of more than \$10 million dollars. The AMTS can apply to all electronics systems using the MIL-STD-1553 data bus on their host platforms. The CECOM-combined Logistics Readiness and Software Engineering Centers' team included Kenneth Capolongo

and Lisa Russo-German, CECOM; John Klubnick Sr. and John Lippert Sr., Aspen Consulting; and Gerard Boyan, ARINC Inc.

Additionally Bob Billmyre, U.S. Army Corps of Engineers, was recognized as a member of a joint team that developed a contract to enable service architects and engineers Internet access to nongovernment standards (NGS). These standards are established by organizations such as the American Society for Testing and Materials and the American Society of Heating, Refrigerating, and Air-Conditioning Engineers. Ready access to NGS allows up-to-date technology to be applied, increases productivity, and results in reduced construction and engineering costs.

## CONFERENCES

### 2003 SMART Conference

The U.S. Army Tank Automotive Research, Development and Engineering Center, Warren, MI, and the Army Model and Simulation Office, Arlington, VA, will co-sponsor the 2003 Simulation and Modeling for Acquisition, Requirements and Training (SMART) Conference Sept. 8-11, 2003, at the Hyatt Regency, Dearborn, MI. The theme of the Army's premier modeling and simulation (M&S) conference is "Learning From Our Future Combat Systems (FCS) Experiences: Synthesizing a Cross-Domain SMART Approach to the Objective Force." The goal is to sharpen the focus of military, civilian, and industry modeling and simulation professionals in using M&S technologies to further Army transformation. The conference objective is to establish an environment where key lessons learned from FCS Milestone B experiences can be studied and applied to the System Development and Demonstration (SDD) and to subsequent fielding of the Objective Force systems key to Army transformation.

Conference highlights will include guest speakers from the Big Three automakers (General Motors Corp., Ford Motor Co., and DaimlerChrysler) and new Army leadership who will facilitate discussion and analysis of FCS lessons learned to date and the way ahead for the SDD. Tours of local M&S facilities and area technology and manufacturing centers as well as a reception at the world-renowned Henry Ford Museum will be highlights of the conference. The annual SMART Awards Banquet is scheduled for Sept. 10 and will feature thought-provoking guest speaker Ray Kurzweil, inventor of the Kurzweil Reading Machine for the blind and noted author of "The Age of Spiritual Machines—When Computers Exceed Human Intelligence."

For additional information, visit the Web site at:  
<http://conference.brtrc.com/2003Smart/info/default.aspx>.

## ASC Launches New Web Site

The Army Acquisition Support Center (ASC) launched its new Web site, <http://asc.rdaisa.army.mil>, May 19, 2003. ASC's focus is preparing for the future and supporting the readiness of the Army's warfighters. To do this, the latest cutting-edge technology must be made available to the acquisition workforce so that they are able to provide their customers with the best products and services possible.

ASC's new site is a valuable tool that will familiarize users with ASC's striking new brand and make information more readily available. A few new features on the site include the home page and its focus on the latest news and events impacting the acquisition community, a site map, and quick links to program executive offices and other acquisition-related sites.

One of the biggest changes is that ASC's Web site is now a two-part site with a public focus and a portal used to share information within the ASC community. This two-part approach enables users to find the information they are seeking quickly and efficiently. Newcomers to the ASC site who are seeking general information on ASC, its programs, events, and career opportunities, or who are interested in learning about joining the Army Acquisition Corps, will find the information they need in the public site. Users who need more detailed information, such as ASC policies, procedures, forms, access to ASC's publications (*Army AL&T* magazine, the *Career Management Handbook*, etc.), or the

Acquisition Demonstration Project, will find the information in the new site's portal section. The portal contains the information from the old ASC Web site, but in a more user-friendly format. If you cannot find the information you seek, use either the site map or any of the new drop-down menus for speedy navigation.

ASC Director COL Mary Fuller wanted a site that could be used as a tool to send and receive information and, in turn, would better serve its customers and, ultimately, warfighters.

"Strong ties to the warfighter are key to effectively meeting the Army's needs," said Fuller. "We strive to ensure professional development opportunities for our workforce through training, education, and broadening experiences. Our workforce must be prepared to operate in a dynamic environment using leading-edge concepts and technologies."

Fuller has encouraged everyone in the acquisition community to spend time looking through the new site to familiarize themselves with the new layout, design, and site navigation.

"We want to hear from the workforce about the new site," Fuller added. "I urge you to use this new tool we developed and let us know what you think—we need your feedback to make this a better site."

Check out the new ASC Web site today! Comments and suggestions can be made by using the feedback link at the bottom of every page.

## Army AL&T Magazine Welcomes New Editor-in-Chief



It is our distinct pleasure to welcome Michael I. Roddin to *Army AL&T* Magazine as our new Editor-in-Chief. He joins the editorial staff from the private sector where he directed the public relations, advertising and marketing communications initiatives for several national and international companies in the banking, financial services and technology industries. In addition to his editorial duties and responsibilities, Roddin will also be responsible for oversight, management and execution of all Acquisition Support Center strategic communication programs and for providing direction and a comprehensive approach to communicating the vision and mission of the Army Acquisition Corps within the acquisition community and across the Army.

Roddin is a retired career U.S. Army Public Affairs Officer. His last assignment was as Editor-in-Chief/Managing Editor of the Army's professional Journal, *Military Review*, at the U.S. Army Command and General Staff College, Combined Arms Center, Fort Leavenworth, KS. In a career that spanned more than 20 years, Roddin also served as the Public Affairs Officer for the 2d Infantry Division, Camp Red Cloud, Korea; the U.S. Army Third Reserve Officers Training Corps Region, Fort Riley, KS; the U.S. Army Recruiting Command, Fort Sheridan, IL; and as the Army Advertising Program Manager, The Pentagon, Washington, DC.

Roddin is a graduate of the U.S. Army Command and General Staff College and holds a master's degree in marketing from the University of Southern California. He is also a graduate of the Defense Information School and holds Bachelor of Science degrees in English and journalism from the University of Maine. Roddin is an Army Training With Industry Program alumnus and three-time Army Keith L. Ware Journalism Award recipient.

## ARMY AL&T WRITER'S GUIDELINES

<http://asc.rdaisa.army.mil/>

*Army AL&T* is a bimonthly professional development magazine published by the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology. The address for the Editorial Office is DEPARTMENT OF THE ARMY, ARMY AL&T, 9900 BELVOIR RD, SUITE 101, FORT BELVOIR, VA 22060-5567. Phone numbers for the editorial staff follow:

Editor-in-Chief	(703) 805-1035/DSN 655-1035
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Managing Editor	(703) 805-1034/DSN 655-1034
Contract Support	(703) 805-1007/DSN 655-1007
	Fax: (703) 805-4218/DSN 655-4218

### Purpose

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

### Subject Matter

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

### Length of Articles

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

### Photos and Illustrations

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

### Biographical Sketch

Include a short biographical sketch of the author(s) that includes educational background and current position. Please also include acquisition certifications and AAC membership if applicable.

### Clearance

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

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

### Submission Dates

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

### Submission Procedures

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