ARMY LOGISTICIAN

JANUARY–FEBRUARY 2004

Connecting Logisticians

PB 700-04-1 Headquarters, Department of the Army

Coming in Future Issues—

- Joint Distribution Operations
- New Zealand Defence Force Logistics
- Unmanned Aerial Logistics Vehicles
- What Is the 21st Theater Support Command?
- The Revolution's 'Short List'
- Sea Basing and the Maritime Pre-positioning Force
- Base Closure Planning
- Parts Tracker—A Unique Tool for the Warfighter
- Joint Medical Asset Repository
- Maintenance Depots in Afghanistan and Iraq
- Management of Contractors in Joint Operations

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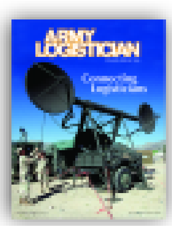

Cover: "Connect Logisticians" is one of the focus areas of Army Logistics Transformation. The goal in this area is to improve the "precision, speed, and agility" of support to the warfighter using information and communications technologies. The article beginning on page 3 summarizes this and the other focus areas of Logistics Transformation. The cover shows service members setting up a wideband radio system in the field. Other articles on logistics connectivity begin on pages 16, 20, and 31.

World Wide Web address:
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ALOG NEWS

ARMY NAMES NEW G–4

Lieutenant General C.V. Christianson was promoted to his current rank and appointed Deputy Chief of Staff, G–4, U.S. Army, on 2 October. General Christianson succeeds Lieutenant General Charles S. Mahan, Jr., who retired from the Army.

General Christianson served as the Assistant Deputy Chief of Staff, G–4, with duty as the Chief of Logistics, Coalition Forces Land Component Command, at Camp Doha, Kuwait, from August 2002 until July 2003, when he returned to Headquarters, U.S. Army. In September, he became the Acting Deputy Chief of Staff, G–4, where he remained until his current assignment. He has held many other duty assignments in a variety of locations in the United States and five other countries.

General Christianson has a bachelor's degree in industrial engineering from North Dakota State University. He is a graduate of the Infantry Officer Basic Course, the Ordnance Officer Advanced Course, the Armed Forces Staff College, and the Army War College.


Lieutenant General C.V. Christianson

DOD POLICY MANDATES RFID USE BY 2005

In a key initiative designed to improve supply chain management, the Department of Defense (DOD) in October issued a new policy that will promote the use of radio frequency identification (RFID) technology.

RFID technology is an application of automatic identification technology that quickly collects and reports item, location, time, and transaction data embedded in tags that are placed on containers, pallets, and packages. The data are collected by readers, or interrogators, equipped with antennas. RFID tags can be either active—the tag has its own power source (a battery) to transmit data—or passive—the tag is powered by energy transmitted by the interrogator.

Use of RFID technology will streamline DOD business processes, improve in-transit visibility of materiel, support the logistics requirements of combatant commanders, increase the efficiency of life-cycle asset management, and permit DOD to shift personnel from logistics to warfighting functions.

The new DOD policy will require suppliers to place passive RFID tags on the lowest possible part, case, or pallet packaging by January 2005. This tagging requirement will apply to all items except bulk commodities such as sand, gravel, and liquids. DOD components will need to create an initial capability to read tags at key sites in preparation for the January 2005 implementation date.

A DOD-level integrated product team will refine the policy, designate initial RFID projects for testing emerging RFID capabilities, and develop a long-term implementation strategy. An analysis of the initial projects will be completed by May 2004, with approval of the final policy and implementation strategy to follow in June. (See related stories beginning on pages 16 and 20.)

USTRANSCOM NAMED DEFENSE DISTRIBUTION PROCESS OWNER

The Department of Defense (DOD) announced in September the appointment of the Commander, U.S. Transportation Command (USTRANSCOM), as the Defense Distribution Process Owner. This designation is a significant step forward in transformation

(ALOG NEWS continued on page 49)

LOG NOTES

Standards, Readiness, and Quality

In the article, "Quality Control Versus Average Cost Per Unit" in your July–August issue, Sergeant Adams addresses minimum standards, readiness, and quality control. I would like to clarify these terms for the maintenance community.

Minimum standards are established in the life cycle model. The standards set the criteria for manufacturing, quality, performance, and repair data for components, end items, and systems. Maintainers can comment on the model during development. Once the minimum standards are established, maintainers cannot increase or decrease the requirements. However, when the product is fielded, they can recommend changes.

Readiness is typically associated with being fully mission capable (FMC). Someone once said, "Readiness is the combination of equipment, personnel, and training. Without investment in training, the other two elements are wasted." The maintainer, as well as the operator, must be trained properly in the equipment's operation and maintenance. Otherwise, the equipment soon will become NMC (not mission capable).

Quality can be defined as the degree of excellence in a product. The degree of excellence is set by minimum standards, such as military specifications or commercial standards. For maintainers, the minimum standards are in the technical manuals. To ensure the standards are being met, a quality program must be in place.

We tend to think inspections can control quality. That mindset provides a false sense of security. An inspection only verifies past performance. We must know what to inspect, when to inspect, how to inspect, who will inspect, and the acceptance criteria.

A quality program consists of more than inspections and should be transparent throughout the process, except for inspections. A quality program provides accountability, responsibility, verification, feedback, analysis, evaluation, and corrective action. The ISO 9000 standard defines quality as a system and the responsibility of all, from CEO to janitor and general officer to private.

In response to Sergeant Adams' question about why two like items can differ in quality, the answer is either leadership failure or unenforced standards. Variations can occur in training, facilities, hardware, software, material, planning, scheduling, funding, leadership, supervision, crisis management, contractor performance, workloads, and many other things.

We, as maintainers, must do our part to ensure that each product complies with the repair and performance requirements and the degree of excellence prescribed in the technical manuals and is fully mission capable in readiness. Our primary weapon for fighting noncompliance is training.

CW4 Kenneth W. Day, USAR
Charleston, SC

Air Force Fuels

"What Army Logisticians Should Know About the Air Force," which appeared in your September–October issue, was well written and gave a complete description of how the military services meet the logistics needs of the combat forces.

There is, however, one clarification that I would like to offer. The author discusses the various fuels used by the Army and Air Force units and mentions that Jet A–1 is used worldwide. I, too, believed that Jet A–1 was the commercial standard for jet fuels worldwide until recently, when problems evolved in obtaining that fuel for Operation Enduring Freedom. Air Force units reportedly had to procure, and are currently procuring, the Russian TS–1 jet fuel because Jet A–1 is not available in eastern European countries. The TS–1 is presumably being used in lieu of Jet A–1 for all Air Force aircraft year-round in Afghanistan and in their diesel-powered ground equipment during the winter. More than likely, the Army and other ground units under the single fuel forward concept are also using the TS–1.

Although both Jet A–1 and TS–1 are considered to be kerosene-type aviation turbine fuels, TS–1 has significant differences in its requirements, such as lower thermal stability, lower volatility, and lower aromatics than Jet A–1. The requirements for TS–1 fall between those of JP–4 and JP–8 without the additive package that is required for those two fuels. Air Force personnel have since commented that TS–1 is being used in the absence of any definitive or long-term testing to assess potential impacts in aircraft systems resulting from continued use of this fuel.

Maurice E. Le Pera
Harrisonburg, VA

Log Notes provides a forum for sharing your comments, thoughts, and ideas with other readers of ***Army Logistician***. If you would like to comment on an ***Army Logistician*** article, take issue with something we've published, or share an idea on how to do things better, consider writing a letter for publication in ***Log Notes***. Your letter will be edited only to meet style and space constraints. All letters must be signed and include a return address. However, you may request that your name not be published. Mail a letter to EDITOR ARMY LOGISTICIAN, ALMC, 2401 QUARTERS ROAD, FT LEE VA 23801-1705; send a FAX to (804) 765-4463 or DSN 539-4463; or send an e-mail to alog@lee.army.mil.

Delivering Logistics Readiness to the Warfighter

The success of the Current and Future Forces will depend on networking logisticians so they can communicate with each other and with the warfighters they support.

"The Army—At War and Transforming." Those words, which greeted attendees at last October's annual meeting of the Association of the United States Army (AUSA) in Washington, sum up the situation facing the Army as it begins this new year. Since 11 September 2001, the Nation has been at war—an unprecedented global war against terrorists and the rogue regimes supporting them that has put new emphasis on speed and precision, intelligence and communications, joint operations, special operations, and multinational partnerships. The strategic pause at the end of the Cold War, which seemed to afford the Army and the other armed services time to methodically pursue transformation into a 21st century military force, ended abruptly on 11 September. Since then, the Army has found itself in the stressful and demanding position of transforming—and supporting Department of Defense (DOD) transformation—while simultaneously fighting a war and rebuilding nations in farflung regions of the world.

As retired Vice Admiral Arthur K. Cebrowski, DOD's Director of Force Transformation, noted at the AUSA meeting, the global institutions created after World War II and matured through the decades of the Cold War are under tremendous stress. The fundamental global division has changed form East versus West (the Communist bloc versus the Free World) to the nations of the "functioning global core" (politically stable, economically integrated, and technologically advanced) versus "nonfunctioning nations" (politically unstable, economically underdeveloped, and increasingly alienated from the functioning nations).

The changed world geopolitical environment has led to the Army's current operations in Afghanistan and Iraq; it also has led to an accelerated process of transformation and experimentation. Military transformation, as Major General James M. Dubik, Director of Joint Experimentation at the U.S. Joint Forces Command, observed, is "driven from the top down," with Army transformation forming a component of the larger DOD process. Transformation is driving all of the services toward a new emphasis on joint operations and on improving their abilities to support joint warfare. At the same time, the world environment is driving a new emphasis on multinational operations and strategic partnerships. These imperatives have defined the goal of Army transformation: to develop a future force that supports the needs of the joint task force (JTF) commander.

Networking the Battlefield

To participate in a military environment increasingly characterized by joint, interagency, and multinational (JIM) operations, the Army, according to the commander of the Army Training and Doctrine Command, General Kevin P. Byrnes, needs to have a "joint and expeditionary mindset." The Army's Future Force will be joint, modular, networked, responsive, deployable, repositioned, unit-manned, and rotation-based—a force that is flexible and mobile enough to deploy, fight, and sustain itself in support of any requirement of the joint warfighter.

A logistician without communication is nothing but an aggressive watcher.

Major General Terry E. Juskowiak
Commander, Combined Arms Support Command and Fort Lee

The key to achieving the Army's Future Force and fitting it into a joint operational environment is information—acquiring it and, more importantly, sharing it. A transformed Army will be based on a command and control network that connects operators and supporters at all levels of the battlefield. This emphasis on information and networking will be a hallmark of the Future Combat Systems (FCS). The FCS will be more than a hardware program that features the latest weapon and vehicle technologies; it also will incorporate information networks so that soldiers at the tactical level will participate in a common operating picture and achieve situational understanding of the battlefield.

Logistics Transformation

Army transformation depends on logistics transformation. The Army's logistics forces must not be an obstacle to the success of fast, agile, technologically advanced, battlefield-dominating combat forces. The logistician needs the same information and communications capabilities and the same flexibility as the warfighter.

That the Army's logistics forces do not have those capabilities yet was demonstrated in Operation Iraqi Freedom, as a number of speakers at the AUSA meeting noted. For example, the Army's new Deputy Chief of Staff, G–4, Lieutenant General C.V. Christianson, pointed out that logisticians in Iraq could not see the requirements of combat units on the move; those units reported their needs only when they stopped. The result was a lack of continuous, "24/7" connectivity to the operational requirements of maneuver forces. The Army's logistics forces do not have the connectivity they need to contribute to operational success.

In a recently released publication, *Logistics Transformation: Adapting to Next-Generation Warfare and Technology Change*, General Christianson described the challenge of logistics transformation like this—

> The bottom line is that logistics information technology connectivity, coupled with an integrated suite of logistics air and surface delivery capabilities and enablers, will provide our CSS [combat service support] forces with the required wherewithal to accomplish logistics re-supply and sustainment missions. And we will be able to do so at the right place, at the right time and with the right supplies in support of the JTF commander's CONOPS [concept of operations] and his ever-changing/dynamic Battlefield Distribution requirements. This represents the essence of our ongoing Logistics Transformation.

Connect Logisticians

- **Agile, assured, 24/7 data capability into the enterprise.**
- **Plug/unplug as required.**
- **Enable "sense and respond" logistics.**
- **Include logistics, personnel, medical, and engineer support.**

A logistics network for logistics data
Logistics common operating picture (LCOP)
Total asset visibility (TAV)
From factory to foxhole

Modernize Theater Distribution

- **Single proponent.**
- **Enable control with 100-percent visibility.**
- **Single doctrine, force structure, and training.**

Flexible and responsive
Distribution system rapid, precise delivery

Modernize Force Reception

- **APOD/SPOD; distribution, life support.**
- **Strategic connectivity—theater logistics command and control node.**
- **Embedded sustainment capability.**
- **Life support equipment.**

CONUS infrastructure greatly improved
Focus now on APOD, SPOD,
theater opening packages

Integrate Supply Chain

- **Single proponent.**
- **Eliminate stovepipe suboptimization.**

Collapse materiel management center structure
Collocate logistics command and control
Structure to support rapid re-task organization

Focus areas for Army Logistics Transformation.

The same publication defines four focus areas that will govern Army Logistics Transformation—

• ***Connect logisticians.*** This area reflects the emphasis on acquiring and sharing information. As *Logistics Transformation* puts it, "Connectivity for logisticians on the battlefield is critical. Supporting information systems and communications must provide a '24/7' sense and respond capability. [The Army] must be able to see the [warfighter's] requirement across the spectrum of operations, understand the requirement, and respond with precision, speed, and agility."

• ***Modernize theater distribution.*** "A modernized theater distribution capability must be characterized by coherent and workable information systems architectures, commercial off the shelf solutions, refined distribution tactics, techniques, and procedures, and leaders and soldiers trained to understand and apply logistics support to continuous operations over extended distances."

• ***Improve force reception capability.*** "[The Army] must aggressively focus on development of theater opening capabilities characterized by rapid distribution, theater logistics command and control capabilities fully networked to a larger enterprise, and improved Aerial Port of Debarkation (APOD) and Seaport of Debarkation (SPOD) operations."

• ***Integrate the supply chain.*** "An integrated supply chain is essential to developing a logistics capability that can quickly adjust and adapt to the difficult and high-risk challenges on the battlefield. This supply chain must be optimized for major combat operations, but fully capable across the full spectrum of . . . operations, providing real options for the Combatant Commander. The supply chain [must] provide a framework for vertical and horizontal integration in a [JIM] environment."

Maneuver Sustainment

Transforming logistics in these four areas will require implementation of several concepts. One of the most important is maneuver sustainment. This is basically the idea that, on battlefields that are increasingly large, discontinuous, and fast-paced, sustainment must be rapid, agile, flexible, assured, and synchronized with the maneuver commander's battle rhythm. The intended result is the integration of sustainment into maneuver, thereby tearing down historical barriers between operators and supporters. Successful maneuver sustainment will be based on a continuous flow of information from combat forces to logisticians.

Deployment

Another key concept behind logistics transformation is deployment—getting to the fight. Achieving maneuver sustainment depends on the Army's ability to project forces and support into any theater, including those with little or no infrastructure. Improved deployment capabilities, of course, will require improved airlift and sealift and greater stocking of pre-positioned materiel. But they also will call for a reduced in-theater sustainment footprint, improved intermodal transfer capabilities (smoothly moving materiel from ships to trucks, for instance), 100-percent total asset visibility (TAV), and better deployment planning tools.

The greatest change in deployment will be a melding of deployment and sustainment. The old conceptual boundaries between moving a force into a theater, sending that force into battle, and bringing in materiel to support the force during the time it is in theater (deployment, employment, and sustainment) will converge into one seamless process. Soldiers and their weapon systems will arrive in a theater ready to fight, and logisticians similarly will arrive ready to provide immediate support, without interrupting or slowing the pace of operations. TAV will become a part of the larger system of command, control, computers, communications, intelligence, surveillance, and reconnaissance (C4ISR) that supports the JTF commander.

Joint Logistics Corporate Enterprise

The connectedness of logisticians with each other and with operators will be based on an increasing integration of information systems. Maneuver and sustainment will become, more and more, "network-centric." As General Byrnes observed at the AUSA meeting, the Army must get the network right. The fundamental logistics piece of the future network will be the Joint Logistics Corporate Enterprise, a collaborative, integrated, interoperable sustainment architecture that will replace today's duplicative, noninterfacing, stovepipe systems.

The Joint Logistics Corporate Enterprise will be the sustainment architecture component of the Army Knowledge Enterprise Architecture and the Future Force Integrated Enterprise Architecture. It also will support the Business Enterprise Architecture-Logistics (BEA–LOG), which is DOD's concept for transforming logistics over the next 5 to 10 years to ensure end-to-end customer service to the warfighter.

The Joint Logistics Corporate Enterprise is designed to attain the "holy grail" of logistics transformation: a common logistics operating environment. What that means is that knowledge will be integrated both vertically and horizontally—"from the foxhole to the factory"—so that crews in the field, commanders at all levels, and logisticians all will have access to the information they need to make decisions.

Major General Terry E. Juskowiak, the commander of the Army Combined Arms Support Command, noted at the AUSA meeting that the existing Combat Service Support Control System (CSSCS) no longer is sufficient for providing a logistics common operating picture and will be replaced by the Battle Command Sustainment Support System (BCS3). BCS3 will incorporate some features of CSSCS, along with features from the Joint Deployment Logistics Model (JDLM), Integrated Logistics Analysis Program (ILAP), and In-Transit Visibility (ITV). JDLM, ILAP, and ITV constitute the logistics common operating picture currently in use in Kuwait.

Information Dominance

- **First and foremost—Connected.**
- **Satellite and sensor data—fully interpreted and understood.**
- **Dramatically increased data storage and processing capabilities.**
- **Increased capability to transmit information, both wireless and other means.**
- **Flexible, mobile, easily deployable communications.**
- **Each soldier will have a personal communications assistant, with computing and communications capabilities integrated into clothing.**
- **Multifunctional sensors will give new meaning to "situational understanding."**
- **Information technologies to help identify and track assets rapidly and automatically.**

Weapon Systems

- **Require less frequent repair.**
- **Easier to repair.**
- **Self-healing subsystems.**
- **Built-in high-reliability feature.**
- **Easier to deploy.**
- **Further increases in fuel efficiency.**
- **Active suspension systems for vehicles.**
- **Advanced propulsion systems.**
- **Increased autonomy of operations.**
- **Renewable, portable power and energy sources.**
- **Electric drives and power-conditioning systems.**

Mental and Physical Performance

- **New vaccines and pharmaceuticals return soldiers to healthy status faster.**
- **Detailed medical status and condition accurately tracked.**
- **Reduced training injuries.**
- **Improved alertness and performance for night operations.**

Logistics transformation: What it means for the Soldier.

Distribution-Based Logistics

Distribution-based logistics will be the fundamental logistics business practice of the future. In essence, it will be an integrated "pipeline" of organizations, physical infrastructure, business processes, and information systems, and that pipeline will extend beyond the Army to include DOD, private industry, and, when needed, coalition partners. As General Juskowiak observed at the AUSA meeting, distribution-based logistics is in agreement with Joint doctrine and is included for the first time in Army doctrine in the new Field Manual 4–0, Combat Service Support.

According to *Logistics Transformation*, distribution-based logistics will be based on "fundamental principles . . . [of] velocity over mass, centralized management, optimization of the distribution system, maximum throughput, reduced customer wait time, minimum essential stocks, continuous and seamless two-way flow of resources, and time-definite delivery." The result of distribution-based logistics will be a single logistics and decision-support system that will provide warfighters and logisticians with near-real-time visibility of accurate, timely logistics information.

A distribution-based logistics system will include the following characteristics—

• ***Modular systems design.*** Most systems and platforms will be designed with modular components, which should simplify sustainment requirements.

• ***Two-level maintenance system.*** Modular design of systems, in turn, will reduce maintenance to two levels: field and sustainment. The two-level maintenance system can be summarized as "replace forward and repair rear." Field maintenance will concentrate on returning systems to the fight quickly, as much as possible by removing and replacing systems components. Sustainment maintenance will concentrate on repairing major items and components for return to the supply system.

• ***Smart distribution.*** Three hardware subsystems together will facilitate smart distribution. The Modular Platform System will connect with the rails in Air Force airlift planes, will be handled by the load-handling systems on current and future trucks, and will be capable of airdrop and slingload delivery. The Intelligent Load-Handling System will combine a load-handling arm with software for configuring loads. Finally, the Future Tactical Truck System will be a family of trucks designed to keep up with the mobile, dispersed operations of the Future Force.

• ***Configured loads.*** The use of supply loads configured to support specific customers will reduce materiel-handling requirements and facilitate precise delivery of supplies to units in the field.

• ***Direct delivery in the battlespace.*** Direct delivery of supplies to units in the field will rely on greater use of dedicated aerial delivery platforms and intratheater airlift vehicles. Deliveries will be integrated into the pace of the warfighter's tactical operations.

Demand Reduction

Achieving the speed and agility envisioned under Logistics Transformation will require that the logistics "tail" be reduced. Although information and communication systems, new business practices, and new hardware and organizations can contribute to reducing the "tail," the concept of demand reduction targets the problem directly.

Demand reduction will rely to a considerable degree on the results of scientific research and the application of technological advances. Systems that are more reliable and efficient will result in reduced demand on the logistics system because they will need less maintenance and will consume fewer commodities such as fuel, water, and ammunition. These future systems will be designed and built with such features as highly reliable components, self-reporting prognostics, onboard water generation, lightweight armor, and efficient propulsion systems.

Performance-Based Logistics

The concept of performance-based logistics seeks to ensure that systems provide the capabilities that warfighters need. It does this through the use of measurement (clearly defined metrics) to analyze the performance of systems and assign responsibility and accountability to manufacturers and program managers. As Vice Admiral Gordon S. Holder, the Director for Logistics, J–4, on the Joint Staff, succinctly summarized the basis of performance-based logistics at the AUSA meeting, "It's about the metrics."

According to *Logistics Transformation*, performance-based logistics "means that weapons systems are more reliable, can be maintained more efficiently with fewer resources, and can be supported at a reasonable cost." The success of performance-based logistics will rely on the increased use of—

• Logistics modeling, to improve logistics plans and validate logistics requirements.

• Military-industrial partnerships, to leverage the capabilities of private companies.

• Enterprise resource planning, to create a single enterprise that integrates business processes and merges data from logistics, financial, and acquisition transactions.

• Life-cycle management, to design reliability and sustainability into systems, which should reduce life-cycle costs and increase readiness.

Iraqi Freedom Perspectives

The AUSA meeting provided an opportunity for Army and DOD leaders to share some observations on Operation Iraqi Freedom. General Christianson highlighted as successes bulk petroleum supply, the use of ITV with ammunition supply and with ships coming into the theater, and the performance of consolidated command logistics command posts, which helped to create a common logistics operating picture. He also noted several areas that need fixing. In addition to the lack of 24/7 connectivity noted above, General Christianson pointed to the need for better force reception and supply-chain management capabilities. The armed services have concentrated on improving force projection in recent years; now they need to focus on improving the reception and integration of personnel and materiel in the theater. The supply chain must be improved to reduce delays in moving supplies forward from ports of debarkation.

The Army's new Chief of Staff, General Peter J. Schoomaker, in presenting his view of the Army's current situation, said at the AUSA meeting, "We were looking to the future. But now the focus is on the present. We have got to make sure that we are doing the right thing by our Soldiers. I don't think we should put Soldiers in harm's way without doing the very best we can to equip them." So the Army focuses on current demands while continuing its transition to the future. For logisticians, that defines today's reality: "Delivering Logistics Readiness." **ALOG**

—Story by Robert D. Paulus

What's Missing in ARSOF Logistics?

BY COLONEL JORGE E. RODRIGUEZ

The logistics problems of Army Special Operations Forces in Operation Enduring Freedom indicate that a reorganization of the support structure is needed.

The Global War on Terrorism has changed the way Army Special Operations Forces (ARSOF) deploy, fight, and are supported. Following the Vietnam War, ARSOF focused their operations at the team level, and their logistics requirements, or "logistics tail," were minimal. However, that operational posture began to change on 11 September 2001. Even as the President announced that the United States was beginning a Global War on Terrorism, an entire Army Special Forces group was preparing to deploy to central Asia. Not since Vietnam had such a large number of Green Berets deployed to such a concentrated area of operations.

However, because of the small number of support personnel assigned to its organic support company, the deploying Special Forces group was unable to support itself logistically. Instead, the ARSOF turned to the U.S. Central Command (CENTCOM) to task its intheater executive agent to provide the base operations support and direct support needed to sustain the more than 3,000 ARSOF personnel in the area of operations. The requirement to support a Special Forces group put an unsupportable strain on an executive agent that did not have any logistics infrastructure in place in the theater. As a result, the executive agent scrambled to request the deployment of a limited Active-duty logistics force structure. This process proved to be too slow to be of benefit. To provide immediate life support to the group, the Army Special Operations Command deployed the limited logistics assets from its organic Special Operations Support Command (SOSCOM). (See the chart on page 8 for SOSCOM's current organization.)

Although transformation of the Army's conventional support structures is well underway, the deficiency of support within the ARSOF community, as demonstrated by the problems of the deploying Special Forces group, is not being addressed. This deficiency was not wholly apparent until Operation Enduring Freedom in Afghanistan, with its extensive use of large numbers of ARSOF. Throughout Enduring Freedom, ARSOF have struggled with an inability to execute logistics at the same level as operations. The Global War on Terrorism will be a lengthy campaign, and it is setting a precedent for the employment of ARSOF. ARSOF personnel likely will be deployed in large numbers in many future operations, and they often may be the main military effort. Given this new reality, the logistics support structure for ARSOF must be transformed to sustain increased operations.

In view of the ARSOF's prominent role in the Global War on Terrorism, why don't the 15,000 soldiers in the ARSOF have a more robust organic logistics force structure? Why is the premier light infantry force in the world, the U.S. Army's Rangers, the only infantry unit in the Army without an adequate support unit? These questions spotlight the issue of how best to support ARSOF. The answer is creation of a definitive, habitual structure to support ARSOF operations.

The only thing harder than getting a new idea into the military mind is to get an old one out.

—B.H. Liddell Hart
British military historian

ARSOF Support Structure

In contrast to the Army's conventional forces, the ARSOF logistics structure is severely under what is needed. A light division with roughly 10,000 troops has approximately 1,500 support personnel. A heavy division with 15,000 to 17,000 troops has a support structure of about 3,300 personnel. In comparison, the ARSOF have a total of over 15,000 operators but only 416 personnel providing combat service support and health service support.

SOSCOM has only one support battalion, the 528th Special Operations Support Battalion. The 528th is organized into two forward support companies and one headquarters main support company. However, these three companies, with a total of roughly 400 soldiers, are tasked with supporting the entire ARSOF force structure as well as augmenting support for classified operations. Though habitual support is typical in conventional brigades and regiments, there is no dedicated support battalion for the 75th Ranger Regiment or the Special Forces groups. SOSCOM, a nondeployable table of distribution and allowances organization, lacks an adequate structure to plan, coordinate, and command logistics support for large-scale ARSOF operations.

Some critics may suggest that ARSOF can be supported through conventional units. Though conventional support units may fill the gaps, they do not have that habitual support relationship with ARSOF that is so cherished by forward support battalions and warfighting brigades in a division. Given the nature of ARSOF operations and the unique nature of their equipment, a dedicated organization accustomed to supporting ARSOF is of paramount importance. The habitual relationship the 528th has with ARSOF is valued by operators, but one support battalion cannot provide all of the support for an organization as large as the ARSOF.

Enduring Freedom Logistics Problems

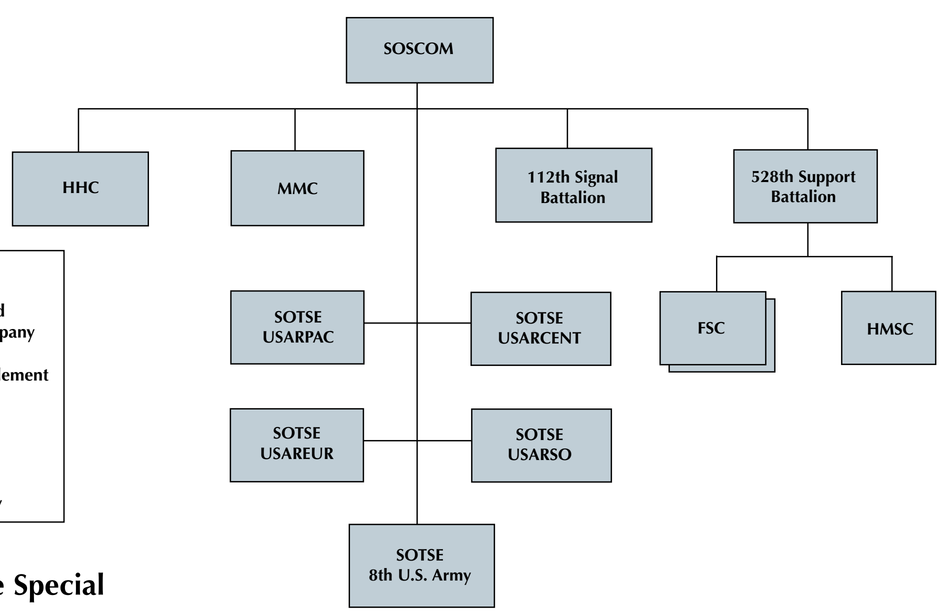
At the beginning of Operation Enduring Freedom, the 528th Special Operations Support Battalion already had a contingent deployed for the Early Victor exercise. It subsequently deployed a tailored package to sustain the 5th Special Forces Group (Airborne) in Uzbekistan. However, the ARSOF's limited support assets required the 528th's contingent to be relieved in place by a conventional support unit after only a few months. Concurrent operations, coupled with future operational requirements, strained the 528th's capabilities.

The CENTCOM executive agent was charged with providing base operating support and logistics for ARSOF in theater. However, the coordination and provision of this support was sketchy at best. The executive agent was focused on providing "big picture" support in an austere theater and was not able to accommodate ARSOF requirements. The result was a lack of logistics support to ARSOF personnel.

Fixing the Problems

An ARSOF direct support logistics structure with a deployable headquarters would have been invaluable in planning and coordinating base operating support for ARSOF, as well as in planning and managing ARSOF combat service support and health service support. This would have reduced the burden on the Special Operations Command within CENTCOM by allowing it to remain focused on daily operations. A deployable ARSOF logistics headquarters would have augmented existing Special Operations theater support elements (SOTSEs) and provided the required logistics command and control to ARSOF units in either a mature or an immature theater. This deployable headquarters also would have served as the logistics integration point with nondivisional support units.

The addition of a movement control center and a medical operations center in the SOSCOM structure would have minimized several difficulties ARSOF experienced in Enduring Freedom. Mission-critical supplies and aircraft repair parts were routinely lost or frustrated in transportation hubs. This ultimately affected ARSOF operational capabilities, which created a serious warfighting issue since ARSOF were the major combat force. A dedicated, deployable movement control center to plan and coordinate intratheater movement requirements with the geographical combatant command's staff would have ensured that critical resupply was moving through the transportation pipeline.



LEGEND

SOSCOM	Special Operations Support Command
HHC	Headquarters and Headquarters Company
MMC	Materiel Management Center
SOTSE	Special Operations Theater Support Element
USARPAC	U.S. Army Pacific
USAREUR	U.S. Army Europe
USARCENT	U.S. Army Central Command
USARSO	U.S. Army South
FSC	Forward Support Company
HMSC	Headquarters Main Support Company

The current organization of the Special Operations Support Command.

The SOSCOM's current organizational structure also lacks a medical operations center. A medical operations center would have served as the SOSCOM's focal point for planning health service support and coordinating the evacuation of patients. It also would have served as the interface between the SOSCOM's limited medical capabilities and corps medical assets in the theater. A small medical operations center to serve in this capacity would have been invaluable because no level III medical care exists in the ARSOF force structure. [Level III care is lifesaving surgery and resuscitative care.] This deficiency could be critical in the future for ARSOF units that arrive before conventional forces in an undeveloped theater without a medical infrastructure.

Reorganizing ARSOF Logistics

A possible solution to ARSOF support problems is shown in the chart below. Under this SOSCOM reorganization, all elements are deployable. This means that fragments of the SOSCOM staff, materiel management center, movement control center, and medical operations center can form the framework of a SOSCOM forward command post that can conduct planning and command and control for ARSOF logistics.

In this scheme, the 75th Ranger Regiment has a direct support battalion composed of three forward support companies, which will allow a Ranger battalion task force to have a dedicated support company. Likewise, the 160th Special Operations Aviation Regiment has a dedicated support battalion. The regiment's support battalion most likely would be broken into separate support companies for each of the 160th's battalions since those battalions normally operate independently. This support battalion could fall under the SOSCOM organization or directly under the 160th. Each Special Forces group also has a direct support battalion broken down into forward support companies that are aligned with each battalion in the group. The remaining support battalion within SOSCOM would provide direct support to other ARSOF units, such as civil affairs and psychological operations forces, and backup support to the Ranger and Special Forces support battalions. This SOSCOM organization can tailor combat service support force packages to support any or all ARSOF missions.

This proposal offers the ARSOF support capabilities similar to those seen in conventional force structures. It may be difficult to resource additional force structure at a time when the Army is focused on transition. However, ARSOF will continue to play a fundamental role in the Global War on Terrorism. To support a robust deployment of ARSOF, there must be dedicated support forces focused on providing world-class support to ARSOF. If ARSOF are the military's best, then they must be resourced properly to provide the support they require. **ALOG**

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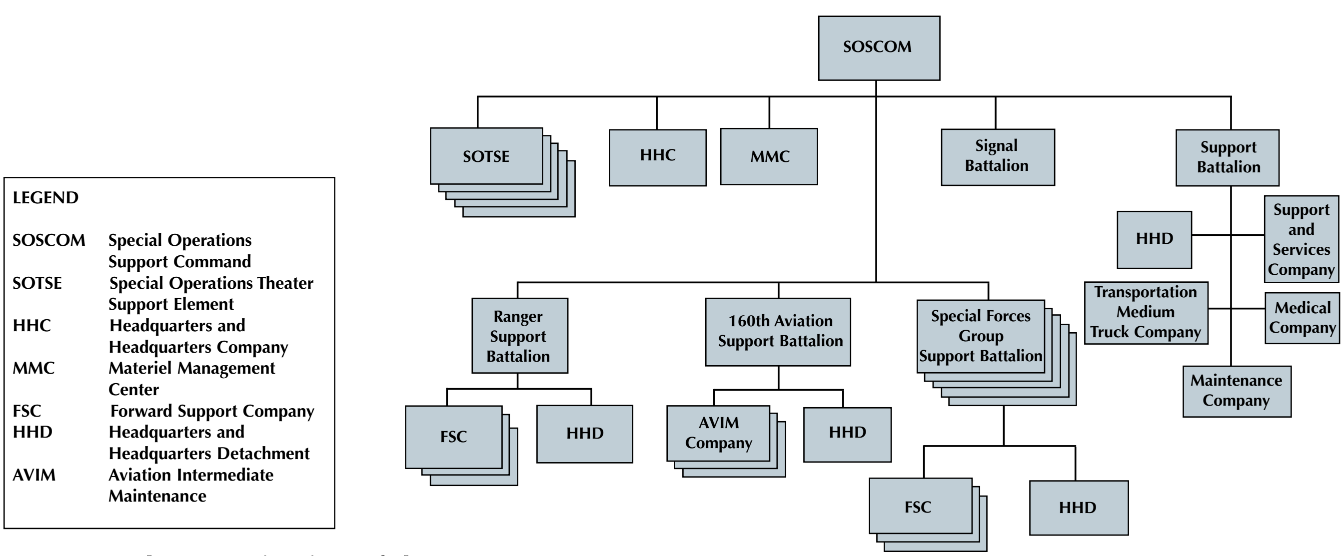

A proposed reorganization of the Special Operations Support Command.

More Tooth for the Tail: The Right Stuff for CSS Operations

BY LIEUTENANT COLONEL SHAWN P. WALSH

The logistics community must take advantage of the lessons that have been learned so far from Operation Iraqi Freedom and press for materiel and doctrinal transformation of our combat service support (CSS) units. CSS units must have the right stuff to better support rapid combat operations, like those conducted by coalition forces in their quick march to Baghdad, and sustain operations in hostile, post-combat environments.

In their swift march to Baghdad in the initial days of Operation Iraqi Freedom, combat units were forced to leave their lines of communication unsecured. During sustainment operations, CSS units unilaterally conducted convoy support and base defense because combat and combat support units, such as infantry and military police, were tasked with other priorities. While combat developers continue to search for ways to reduce the Army's logistics footprint, leaders must ensure that all CSS units, including division-, corps-, and theater-support units, become more lethal, survivable, and responsive in supporting current and future forces. CSS units must have the resources to fight and survive while they support and sustain the warfighter.

CSS for Offensive Operations

The U.S. Central Command (CENTCOM) combatant commander would not give the order to cross the line of departure to start the Operation Iraqi Freedom offensive until certain conditions were met. One of those conditions was a viable fuel distribution system that stretched to the Iraqi border and sufficient fuel stocks on the ground in Kuwait to support combat forces to decisive victory. Until just days before the war, only one Quartermaster battalion, the 240th Quartermaster Battalion, from Fort Lee, Virginia, met the combatant commander's pre-war fuel requirement, but it had limited support, time, and resources. The 240th was tasked to build and protect the largest tactical petroleum terminal (TPT) ever constructed. Soldiers' tactical and force protection awareness was heightened because this TPT was located at the Iraq-Kuwait border and made the 240th the closest Army unit to the border before the war.

The improvised weapon mount on the roof of this HMMWV keeps the soldier's M249 SAW visible, which helps to deter enemy attack and places the weapon in a ready-to-fire position.

After successfully meeting pre-war mission demands, the 240th continued its doctrinal mission 120 miles forward into Iraq, operating the Inland Petroleum Distribution System (IPDS) pipeline and TPT in a hostile area of operations. During execution of their daily missions, the battalion leaders mitigated risks wherever possible. They quickly learned that the modification table of organization and equipment (MTOE) for the theater-level CSS petroleum pipeline and terminal operating (PPTO) companies lacked some essentials. Each day, the soldiers in those companies had to operate in harm's way without sufficient equipment or external support. Some of the same shortfalls were noted in other Quartermaster and Transportation companies assigned to the 240th Quartermaster Battalion during reception, staging, onward movement, and integration (RSO&I) and sustainment operations. It soon became apparent to the battalion leaders and staff that under-equipped CSS units were being required to execute unilateral missions across the battlespace.

Pump Station Security and Pipeline Patrol

While living and operating in searing 130-degree temperatures, enduring sandstorms, and traveling on unsecured supply routes, 240th Quartermaster Battalion soldiers had to protect 15 isolated pump stations and numerous TPTs and patrol and protect over 220 miles of IPDS pipeline snaking through the deserts of Kuwait and Iraq. Daily threats along the pipeline included armed Iraqi fuel thieves and pipeline saboteurs. Approximately a quarter-mile of the actual IPDS pipeline was stolen, most likely for the scrap value of the aluminum pipe. Fuel thefts from the pipeline were almost a nightly occurrence. Saboteurs sometimes broke the pipeline and ignited the free-running fuel, which set portions of the pipeline on fire. To discourage vandalism, the battalion increased the frequency of pipeline patrols and sent the patrols out at different hours during day and night to make it difficult for the enemy to predict the patrol schedule.

Although PPTO companies assigned to the battalion did not have the right equipment to conduct effective pump station security, pipeline patrols, or night operations, the battalion staff quickly learned to cross-level needed equipment from other assigned petroleum supply companies and medium truck companies. At the same time, they submitted numerous requests for the equipment they needed to lessen force protection risks associated with operating the IPDS pipeline and terminals.

Convoy Operations

Divisional, corps, and theater CSS units traveled throughout the battlespace, and all were likely to encounter ambush, sniper attack, and improvised explosive devices. Therefore, they needed a high level of force protection, including hardened vehicles and mounts for crew-served weapons.

During pre-war RSO&I, the 240th Quartermaster Battalion included seven Reserve component medium truck companies (petroleum, oils, and lubricants). These truck companies were tasked with moving fuel to three TPTs being built in Kuwait to store bulk fuel. Each truck company had 60 systems (tanker truck combinations), with 20 systems assigned to each of 3 truck platoons. Once the war started, these medium truck companies were reassigned to theater- and corps-level battalions. Two of the truck companies were assigned to the 3d Corps Support Command and followed the 3d Infantry Division (Mechanized) across the line of departure. One of the truck companies was assigned to the Marine Expeditionary Force and was integrated into Marine combat operations. The other four companies remained in the theater to move fuel to division and corps areas. All of the truck companies supported the warfight while traversing extremely dangerous supply routes in Iraq, often without any external security such as military police support. During convoy operations, the truck companies were responsible for their own force and convoy protection. The current medium truck company design authorizes only two ring mounts for crew-served weapons, which is not adequate for the company to provide effective security for numerous serials.

Once the war started and the IPDS pipeline was extended into Iraq, 240th operations reached from the base TPT in Kuwait City to the head TPT at Tallil Air Base in Iraq—a distance of over 250 miles. Soldiers traveled the hazardous main supply routes daily to support internal administrative and logistics requirements. To lessen travel risks in Iraq, two vehicles with at least one crew-served weapon were required for movement in theater. Since the PPTOs were authorized neither vehicle mounts for crew-served weapons nor hardened high-mobility, multipurpose wheeled vehicles (HMMWVs), they improvised by hardening vehicles with sandbags and placing two plywood "doors" over the canvas roof of the HMMWVs and another sheet of plywood under the canvas roof and roll bar of the vehicle. When the roof doors were open, soldiers could rest their weapons on the plywood on the vehicle roof. This improvised method kept M249 squad automatic weapons (SAWs) in plain sight, which helped to deter attacks and placed the weapon in a ready-to-fire position.

Because of fuel thieves and pipeline saboteurs, pump stations had to conduct frequent patrols, especially at night when the Iraqi renegades would hide under the cover of darkness. External security support from military police simply was not available because of other missions. Soldiers on pipeline patrol were equipped with crew-served weapons, but they had to improvise the weapon mounts. The battalion also borrowed night-vision goggles and global positioning systems for the subordinate companies because these critical items are not authorized on the unit MTOE.

In the future, all CSS units should be equipped with sufficient vehicle-mounted, crew-served weapons to protect independent serial movements or force protection operations and with night-vision goggles and global positioning systems for nighttime navigation and operations.

Pump Station Operations

During Operation Iraqi Freedom, soldiers assigned to the pipeline platoons of the PPTO companies manned the IPDS pump stations. The soldiers lived and worked at the pump stations, which generally covered about an acre of desert. Because some of the pump stations were 70 miles from the nearest base camp, they had to be as self-sufficient as possible. Security provisions for the isolated pump stations included 6-foot-high earthen perimeter berms with concertina wire on top, fighting positions, controlled entry points, triple-strand concertina wire 30 to 50 meters outside the pump stations, and observation towers that were manned 24 hours a day.

Soldiers assigned to the isolated pump stations were some of the toughest in the Army. Living conditions were austere. Soldiers slept in tents and had no running water or dining facility, used burn-out latrines, and endured sand fleas, crickets, and extreme heat. Pump station duties included operating the 800-gallon-per-minute main line IPDS pumps, maintaining high-frequency and FM radios, operating cellular and satellite telephone equipment, and performing patrols of the 11 to 15 miles of IPDS pipeline between pump stations. They also had to maintain unit equipment and carry out the daily tasks associated with running the camp, such as burning trash and waste and serving on security and guard details.

Future PPTO company MTOEs should be revised to provide support for pump station soldiers operating the IPDS or the Rapidly Installed Fuel Transfer System (RIFTS) currently under development. Soldiers at each pump station must have at least one water buffalo for bathing and washing clothes. Water buffaloes (400-gallon water tanks) would be a big improvement over the collapsible water storage bags, because the bags are clumsy to transport and pumps do not come with them.

Camouflage netting must be added to the unit MTOE to conceal fighting positions, hide silhouettes in observation towers, and provide shade to the otherwise open pump stations. The current pump station design calls for only one M249 SAW at each pump

Concertina wire sits atop the berm that surrounds a pump station. To the left, 20-foot MILVANs used as an operations center are sandbagged to provide protection from small arms and indirect fire fragmentation. The 800-gallon-per-minute IDPS pumps are at right.

Twenty-foot ISO containers loaded with components of the Inland Petroleum Distribution System are moved by palletized load system trucks to locations along the pipeline trace in Kuwait and Iraq.

station. The pump stations should have a larger caliber crew-served weapon (M2 or M60 machinegun) and an MK19 grenade launcher for pump station security and pipeline security patrol. Night-vision goggles also are essential for night observation from the pump station tower.

Pump station soldiers also would benefit greatly from better-protected shelter. The tents that the soldiers lived in and operated from provided only minimal protection from blinding sandstorms, determined insects, and 130-degree days in the desert. Some tents were actually blown down during fierce sandstorms. The automated systems and electrical and radio equipment in the pump stations also experienced high failure rates because of dust and sand that blew into even the tiniest crevices during sandstorms.

At the beginning of the summer, the battalion requested that each pump station be outfitted with a 40-foot-long portable cabin, complete with air conditioning and a 35-kilowatt power generator, so the soldiers could get out of the heat to sleep or relax. The portable cabins also protected sensitive equipment from sandstorms. A materiel solution for the pump stations would be at least two dedicated 20-foot ISO (International Organization for Standardization) containers for life support of soldiers and protection of sensitive communications equipment. The containers should have heating and air-conditioning units, power generation, and bunks for the soldiers. Since each pump station's equipment currently is transported in six 20-foot ISO containers, the addition of two more containers would have a minimal impact on moving and establishing pump station operations. The containers in which the soldiers live and operate could be sandbagged on the exterior to protect the occupants from small arms fire and fragmentation.

Organic Transportation

During Operation Iraqi Freedom, the 240th Quartermaster Battalion quickly discovered that theater-level CSS units rarely get priority for support, especially when divisional units are constantly moving, deploying, and redeploying in the theater. The 240th constantly needed external transportation support to move the 1,250 20-foot ISO containers that held the IPDS equipment deployed in Iraq and Kuwait. The battalion movements officer continually fought for any available transportation assets, including 40-foot stake-and-platform trailers, palletized load system trucks, and cargo handling units, and his requests often were denied or put at the end of the prioritized queue.

The lack of transportation assets critically hindered the battalion's mission on many occasions because IPDS containers required immediate movement when missions changed. The battalion lacked the organic assets to effect large moves. Many of the container moves were to and from pump stations or TPTs. A heavy equipment transporter (HET) or a super-HET was required to move the rough-terrain cargo handler or crane. Requests for external HET assets again resulted in negative or slow results.

The materiel solution for the PPTO company is a squad of six cargo-handling units that could move 20-foot containers anywhere along the pipeline and terminal trace without other external support or materials-handling equipment.

The realities of Operation Iraqi Freedom proved that CSS units do get into the fight and therefore must have the right stuff to decisively engage and defeat the enemy while providing support. CSS units support priority corps and divisional warfighting units. However, theater-level CSS units typically are low priority for support, despite having vital missions. CSS units at all levels must become self-sufficient; failure is not an option during war. **ALOG**

Lieutenant Colonel Shawn P. Walsh commands the 240th Quartermaster Battalion (Petroleum Operations), which was deployed in Iraq and Kuwait in support of Operation Iraqi Freedom. He previously was Executive Officer of the 240th Quartermaster Battalion and served as a company commander and platoon leader in petroleum pipeline and terminal operating companies.

A Conventional Class VIII System for an Unconventional War

BY FIRST LIEUTENANT DONALD J. MCNEIL

To support Special Forces effectively, a combat health logistician (CHL) must know his customer base. Army Special Forces conduct unconventional warfare operations that can include special reconnaissance, direct action, foreign internal defense, combating terrorism, civil affairs, psychological operations, information operations, and coalition support. Each of these operations has different class VIII (medical materiel) support requirements, which are described in Field Manual (FM) 8–43, Combat Health Support for Army Special Operations Forces. Forward-deployed Special Forces elements conducting unconventional warfare can deplete class VIII supplies rapidly because the units are in a continuous combat operations environment.

CHLs must understand the need for resupply, both routine and emergency. In addition to supporting a Special Forces group's forward operating bases, operational detachment bravos, or operational detachment alphas, the CHL also may support a conventional unit such as a forward surgical team that is attached to the group. (An operational detachment alpha is a 12-member Special Forces team. An operational detachment bravo provides command and control of the detachment alphas within a Special Forces company.)

The CHL also should be familiar with the unit assemblage lists (UALs). The U.S. Army Medical Materiel Agency (USAMMA) Web site (www.usamma.army.mil) lists UALs for all medical sets, kits, and outfits. The CHL can type in the unit identification code and view all authorized UALs for his unit. He then can determine if his customers need to stock anything above and beyond what is listed in the UAL.

The Combined Joint Special Operations Task Force-Afghanistan medical warehouse.

Preparing for Deployment

Predeployment preparation will save a lot of time and trouble downrange. The CHL should develop a comprehensive packing list that includes shelving for stocking supplies and a printer for receipts and reports. Nonexpendable and durable equipment and supplies should be accounted for on hand receipts before deploying. This will help the CHL update shortage annexes as shortages are filled, account for new equipment and supplies being used for missions, and provide justification for refit in the event of a combat loss. The CHL should ensure that the unit has a derivative (deployed) Department of Defense address activity code (DODAAC). To ensure proper delivery of supplies, he also should make sure the "type address code" address reflects the unit's deployment address.

The CHL may be able to use the Army and Air Force excess programs to procure equipment and supplies at little or no cost. The U.S. Army Medical Materiel Center Europe (USAMMCE) Web site (www.pirmasens.amedd.army.mil) has a free issue catalog on the Theater Army Medical Management Information System Customer Assistance Module, and the USAMMA Web site has a link for obtaining both Army and Air Force excess supplies and equipment. This is an economical way to fill shortages.

In-theater Preparations

The CHL should meet with the single integrated medical logistics manager (SIMLM), which may be USAMMCE, a medical logistics battalion or company, or the installation medical supply activity, to strengthen their working relationship. He should explore all transportation options to know what supply routes are available and how to get supplies in a timely manner. The CHL should become familiar with all class VIII support in theater in case he needs something quickly; he may not have to go all the way back to the SIMLM if he knows which assets are available in theater. The CHL should be familiar with the ordering system that the SIMLM uses and, if possible, familiarize his customers with those systems to expedite ordering.

The CHL should develop reorder lists for individual units. These lists should capture the class VIII that is authorized by the UALs as well as nonstandard class VIII that is not authorized by UALs but is ordered frequently for that particular theater. Special Forces-unique, nonstandard medical items may not always be available. FM 8–55, Planning for Health Service Support, states that conservation of supplies and equipment should be a priority. However, under combat conditions, conservation of medical supplies becomes particularly critical. An austere environment requires that clinicians practice supply discipline; they must be prepared to work with and be supported by generic supplies. Lack of physician-preferred brands does not constitute a patient risk.

Supply Discipline

Since poor supply discipline may strain the health service logistics system and cause a risk to patients, supply discipline must be a command priority. UALs must be updated, maintained, and followed. Clinicians must be familiar with their UALs. Providing combat logistics requires the ability to work with available resources.

Push packages. The CHL must develop predetermined emergency resupply and trauma packages for teams and supported units.

Standing operating procedures. Before deploying, the CHL should develop both internal and external standing operating procedures (SOPs) that are conducive to both garrison and field environments. The external SOP should tell customers how the unit operates, its operating hours, class VIII requisitioning procedures, and the documentation required, such as signature cards and commander's orders. Customers must be told which shipment method will be used for their supplies—either push or pull. If the mission requires the CHL to push pallets of supplies to customers, he should know how to palletize and operate a forklift and be hazardous-materials certified before he deploys, as this will reduce the need to rely on outside agencies for assistance

Stocking system. A supply stocking system must be developed. It can be based either on the class of drug or the national stock number (NSN). Army Regulation 40–61, Medical Logistics Policies and Procedures, suggests stocking by NSN, but whatever method that makes the operation run efficiently can be used. An inventory must be developed and kept updated.

Narcotics. Narcotics must be secured properly. A disinterested party (E–7 or above) on orders from the commander must inventory the narcotics monthly. A signature card (Department of the Army Form 1687) signed by the commander must be on file for those who sign for narcotics. The CHL should develop a memorandum of agreement stating the responsibilities of the individual drawing the narcotics, such as storage requirements, turn-in procedures, and documentation of use.

Stockage lists. Authorized stockage lists should be based on UALs and customer needs. When the unit is forward deployed, it is okay to have stocks on the shelves; combat health logistics is not just-in-time logistics. A CHL does not have the luxury of a 24- to 72-hour turnaround time using a prime vendor, as the medical logistician does in garrison. To avoid becoming a crisis manager, the CHL should establish realistic reorder points to ensure he will not run out of supplies. Requisition objectives should be monitored and adjusted as needed.

Medical equipment. The CHL must know his support chain for medical maintenance support because medical equipment must be serviced through that chain. He also should know the procedures for borrowing equipment from the Medical Standby Equipment Program while unit equipment is being serviced or repaired.

Redeployment and Recovery

The keys to a successful redeployment and recovery are knowing what materials and equipment are being shipped and having proper documentation for losses or shortages. The CHL should inventory his stocks before redeployment so he knows what is missing and can attempt to fill shortages before shipping. Accountability is paramount. Before leaving the deployment area, the CHL should have all paperwork documenting losses, such as memorandums for record for destroyed or lost narcotics, statements of damage to equipment, and reports of survey. Since a unit sometimes redeploys on short notice, inventory and shortage annexes are vital to redeployment and recovery.

The CHL should conduct a thorough after-action review. Documenting facts will enable him to maintain acceptable standards and correct mistakes or shortfalls encountered during the deployment. The after-action review should include a compilation of comments from the CHL, his coworkers, customers, and the SIMLM.

Although the face of war is changing, the current class VIII system *will* support it. Good logistics practices—knowing the customer and maintaining good supply discipline—can help the CHL succeed in supporting troops in an unconventional war. **ALOG**

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Embedded Chips and Radio Queries: A Look at the Future

BY MAJOR STEPHEN M. RUTNER, PH.D., USAR

During late 2002 and early 2003, the Army was called on to deploy large numbers of forces based in the continental United States to locations throughout the world. These forces eventually included two mechanized infantry divisions (the 3d Infantry and 4th Infantry) and three light divisions (the 10th Mountain, 82d Airborne, and 101st Airborne). This undertaking required the shipping of massive numbers of vehicles and other bulk items to various ports in the Southwest Asia theater. On many occasions during the upload for these deployments, transportation officers and commanders were asked to locate specific items. Fulfilling these requests often meant that individual soldiers had to stop performing their assigned tasks and physically search the port or ship for a specific item.

While each request was made for an important reason (such as finding missing equipment, removing a vehicle from the shipment, or installing a part), the overall effect was reduced efficiency during a period when timeliness was extremely critical. The manual process of maintaining in-transit visibility (ITV) met the need of the customer (the maneuver forces), but it placed an additional burden on the suppliers (the transporters).

Transporters must recognize that customer requirements for ITV will only increase in the future. Maneuver commanders soon will demand the ability to identify the location of every major end item in transit anywhere in the world. In fact, a common request will soon be, "What is the position of end items within the ship?" This type of detail will be required to plan unloading operations and will be especially important for forced-entry operations.

A number of emerging technologies and processes not only can reduce the difficulties experienced in recent deployments but also can improve the overall effectiveness of the transportation process. Army and civilian logisticians need the ability to identify the specific location of an item throughout the transportation process, whether they are searching for a vehicle at a port or a box of tissues on a store shelf. In both cases, there are numerous benefits to being able to locate that item at any time. For the military, the most likely near-term solution could be radio frequency identification (RFID).

What Is Radio Frequency Identification?

RFID is a process based on the embedding of a computer chip that is so thin it will fit into the width of a paper label. For example, the chip could be placed within the barcode label that is put on the side of a military vehicle or a container being shipped overseas.

RFID is an emerging technology in the marking, or "tagging," of items. The system uses the ultrathin chips to store information electronically in a manner similar to that of an inked barcode label. However, RFID provides a much more powerful tool because of its ability to respond to radio requests or queries. So a simple metaphor for RFID is that it is a "super," or "power," barcode system.

Current RFID "smart tags" are able to store a 96-bit code that can identify over 268 million unique manufacturers, with each manufacturer having over 1 million products. The result is that there are approximately 3.5×10^{51} possible combinations that can be stored with RFID chips. This capability allows civilian companies to track individual items easily. The substantial number of combinations available through smart tags could allow the Department of Defense (DOD) to track every individual end item in the entire military.

Although their capabilities are impressive, RFID tags cannot operate alone. The other major parts of an RFID system are the readers, the repeaters, and the database. To gather information, an electronic query must be sent from a source to the chip or tag. Because the system uses radio signals, this query does not require an unobstructed, direct line of sight as a barcode reader does. The RFID chip replies to the electronic query by providing the information it stores to the reader. Repeaters are used when necessary to relay the data over long distances. The information then is input to the overall control system or database.

Currently, each reader is fairly expensive and has a query range of about 6 feet. However, this situation is likely to improve in the near future as civilian companies continue to refine RFID technology that will allow the use of a few readers to cover a port or the holds of ships and aircraft. Almost 100 global companies and five of the world's leading research universities, including the Massachusetts Institute of Technology in the United States, formed the Auto-ID Center in 1999 as a unique partnership to apply RFID to logistics and transportation processes. DOD is a member of this

Radio frequency identification technology will improve in-transit visibility and logistics efficiency.

group. While RFID is an evolutionary step in technology, the participants in the Auto-ID Center have recognized numerous possibilities for using RFID to improve their overall logistics processes. ITV is just one possible area where RFID could be used in the military.

How Can RFID Be Used by the Military?

It is safe to assume that industry is prepared to increase the use of RFID throughout the supply chain over the next few years. The question therefore becomes, How can the military apply RFID in its operations to gain increased efficiencies and improve ITV? Because of the nature of the technology, the answer is at once simple and complicated.

When a piece of Army equipment is shipped, it receives a shipping label bearing a number of critical pieces of information, including the vehicle's transportation control number, nomenclature, dimensions, weight, port of embarkation and port of debarkation, and a barcode. While this system works well in theory, there are some practical problems that reduce its effectiveness.

The high operational tempo of the modern Army means that the same vehicle may be shipped several times in 1 year. Since the transportation labels are designed to be very hard to remove, a tank could end up with two or three labels attached to its side that reflect different movements. It is common for the wrong label, and thus the wrong barcode, to be scanned. This means that the transportation unit must go back and manually correct the resulting error in the computer system and physically confirm the correction on the vehicle. If that tank already has been loaded onto a ship, someone will have to crawl over other vehicles to find it and then rescan its label (and that assumes the label is accessible, which is not always the case on a tightly packed ship).

An RFID system could help to minimize such problems. First, the chips would be time sensitive, so out-of-date labels with RFID chips would not reply to a query; that would reduce the number of improper scans. Second, since RFID chips do not have to be in a direct line of sight to be scanned, the RFID system would be able to identify the location of any vehicle; a soldier would not have to be physically next to and in the line of sight of the barcode. The RFID system also would improve ITV by using a single query to make a "snapshot" of all the vehicles in a staging area, in a hold, or on a pier; the data then could be downloaded into various systems to obtain ITV. Data from the snapshot also could be downloaded into the Integrated Computerized Deployment System (ICODES), where they could be used to improve the accuracy of trim and stability calculations.

RFID technology can help to improve the most basic transportation functions. However, the military can use RFID in other areas. For example, it is very common for priority cargo lists to change as a mission evolves. RFID could be used to mark the priority items. As changes occur, those items would be recoded as necessary. This would improve the control of priority items by providing an additional check as they move through the system.

Another area that could benefit from RFID is control of hazardous materials (HAZMAT). While RFID would not replace the current HAZMAT marking system, it could provide an additional check on HAZMAT items. For example, requirements for storing containers loaded with class 2 and class 3 products specify minimum required distances between the containers. [Class 2 hazardous materials are gases; class 3 are flammable liquids.] In these cases, the RFID tag could include the types of hazardous materials in the container and could alert users if noncompatible items are stored too closely together. Eventually, the chips would be able to query each other and alert personnel in real time if a stowage violation occurred.

These examples highlight only a few of the advantages of RFID technology to the military; numerous other logistics and operational areas eventually will benefit from its use. Some future possibilities include the control of class IX (repair parts) inventories. Imagine how much easier it would be to reorder parts using a system that automatically queries embedded chips every few minutes and accounts for parts as they are used. Ammunition also could receive RFID chips. Consider the ease of clearing a range if every tank is automatically queried for ammunition as it passes by a reader. Another possibility is the application of RFID to individual weapons, which would allow for tighter control of arms rooms and help in finding the dreaded "lost weapon in the field."

There clearly are many opportunities to apply RFID throughout the Army to improve control not only of logistics and transportation but also of many operational processes. The true limitation of the system will be the creativity of users in employing the strengths of RFID.

What Are the Costs, Limitations, and Concerns?

While the greatest limitation to using RFID technology may be the inventiveness of users, some other significant problems must be addressed before RFID can be implemented fully throughout the military. Five major hurdles must be overcome—

- Total equipment and training costs.
- Information system compatibility.
- Operational locations and distances.
- Security.
- Timeliness.

With shrinking budgets, cost will always be a major issue. The current cost per RFID chip is prohibitive when compared to barcodes. There also appears to be a "chicken or egg" type of problem. Manufacturers suggest that a huge order (in the multiple billion-unit range) will reduce chip costs to be comparable to a barcode label (that is, less than 1 cent each). However, civilian companies will not place a large order until the price for chips is greatly reduced from the current price of just under 1 dollar to approximately 5 cents per chip. Eventually, production quantities will be large enough to reduce costs (possibly due to large DOD or other Government purchases.) Besides the chips themselves, the cost of readers and repeaters remains high compared to similar technologies. So cost remains an obstacle to RFID use in the short term.

The consistency and compatibility of information in the RFID system also is a challenge. Currently, the Auto-ID Center and other organizations are working to standardize the information contained on RFID chips. However, this will be a civilian-led project that may not meet the military's needs. The data also may be designed to feed into existing Enterprise Resource Planning systems and not be compatible with current DOD systems. There are solutions to this problem, but they will take additional time and resources to implement. The best long-term solution is to adopt an off-the-shelf database system (such as Oracle, SAP, or PeopleSoft) that will be compatible with the RFID system to minimize adoption problems.

The Army's requirements for operating at many locations and over great distances represent another challenge for RFID use. For example, an assistant division commander (support) once proudly told me how he was implementing RFID in his division. He had a few tags and two readers, so he was able to track the lead wheeled vehicle of a few convoys when they departed the post and when they arrived at the port. While his heart was in the right place, clearly his equipment was not adequate to provide true ITV. The solution to this challenge is easy in theory but difficult in practice. Most major trucking companies employ satellite tracking on their vehicles. However, current RFID technology cannot reach satellites. The short-term solution, therefore, is to have many portable readers and mobile relay stations. The long-term answer is to improve the technology.

The location-and-distance problem hints at the security issues that using RFID could create. It obviously would not be logical to allow an enemy to query U.S. equipment and receive any data, much less the current location of the equipment. An encryption process is needed that does not allow a chip to respond to an unauthorized signal. This is something that will be critical to civilian uses as well and should not present a major problem for implementation.

The final challenge is the timeframe for implementing the system. As noted above, current prices are causing some delays in implementing RFID technology. However, the implementation process of any major information system must be measured in years. There also are technological problems that must be addressed to meet the unique needs of the military. So it is not realistic to assume that RFID will be implemented before 2007. The use of off-the-shelf technology, existing systems, and civilian applications should help to push the process forward. The military can piggyback on civilian improvements to overcome many problems.

How Could RFID Be Implemented?

The current shortcomings of the RFID system should not deter the military from beginning to use it. Given its long-term benefits, it would be reasonable to start a limited test of the potential of RFID. However, because of the strategic importance of being able to project military forces, the RFID implementation process should err on the conservative side. It therefore should include the following steps—

- Study of the military potential of RFID.
- A pilot project involving limited units and a limited area (such as one battalion and one port).
- Division-wide implementation and a final trial.
- Army-wide adoption.

The first steps already are underway with the inclusion of DOD in the Auto-ID Center. This phase should be limited to no more than 1 year. The potential problem is that, as new applications for RFID are discovered, there will be pressure for further study, which could delay RFID implementation for already-identified functions like transportation.

A limited pilot project could use a unit, such as one of the battalions of the 3d Infantry Division (Mechanized) that is deployed frequently, the U.S. Transportation Command, CSX Transportation (railroad), and a port operator to test various parts of the RFID system in a controlled setting such as a normal exercise or deployment. Then an entire division could be brought on line for a large-scale test. After necessary adjustments and improvements, an Army-wide program could be instituted. Army-wide implementation of RFID could be broadened to include all of DOD to ensure standardization and compatibility as part of the new joint view of operations.

RFID offers an opportunity to DOD and the Army to close the gap with their civilian counterparts.

How Will the Future of RFID Look?

RFID will require a significant amount of time before it is fully implemented in the military. However, as the obstacles and challenges are overcome, improvements to current systems and changes in business processes will allow all of DOD to benefit.

It is easy to imagine a future RFID system that improves management of the transportation process, including ITV. Assume that there is a time when all major end items have embedded RFID chips containing all of the information that is currently available on barcode labels, plus a great deal more. A unit is ordered to deploy. RFID readers verify that all of the information on the chips is updated for the new mission. Deployment support teams verify the dimensions and weight of each item with a quick scan before it leaves the installation; this reduces the need for staging areas before items arrive at the port. Satellite readers track the items to the port of embarkation (whether air or sea).

The seaport of embarkation can verify incoming items. Improved accuracy reduces the number of "frustrated" pieces of cargo at the port. As priorities change, a flick of a switch identifies the new priorities. This capability has eliminated the need to mark vehicles manually with engineering tape and stage them separately. Requests to identify a specific vehicle now take only a minute. A more accurate count of items at the port is available instantly.

Vehicles are loaded onto the ship. As changes are made to the stowage plan, the RFID system accurately reflects the new location of each vehicle, not only by hold but within a few feet of its actual location (assuming the Military Sealift Command equips the fleet with readers and repeaters.) This capability allows the vessel's crew to calculate trim and stability requirements accurately, verify HAZMAT, and confirm the manifest. As the ship sails, supercargoes can find specific vehicles as needed. For instance, they can find a problem vehicle that must be started every 6 hours to keep a charge on its battery.

At the port of debarkation, the maneuver commander knows the approximate order for unloading the vessel and alerts the appropriate subordinate units to send labor. If a staging lot is used, RFID will help soldiers find their specific pieces of equipment. The maneuver forces can control the flow of vehicles and track them to their assembly areas. Once vehicles are in the assembly areas, the commander's evaluation of the tactical situation determines if it is appropriate to continue to use RFID. (The experience of the 507th Maintenance Company in Iraq demonstrates that most support units could benefit from an additional check of location to ensure that they do not wander into hostile areas.)

This example of a future deployment provides a basic vision of the possibilities of RFID in the military. But there undoubtedly are many other possibilities that have not been considered.

The concept of RFID is a sound, practical solution that the private sector is beginning to implement to improve their overall logistics efficiencies. The military has the same opportunity to improve its transportation and logistics processes. The increasing capabilities of companies such as FedEx and UPS to track millions of packages a year in real time demonstrate the possibilities of an exceptional logistics system.

The U.S. military has some unique requirements, but there can be no excuse for not being as good as the best of civilian industry. RFID offers an opportunity to DOD and the Army to close the gap with their civilian counterparts. The maneuver commanders of the future will have grown up with the ability to point, click, order, and track products on line. They will demand the same capabilities from their suppliers: the transporters and logisticians of the 21st century. **ALOG**

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Potential Uses for RFID Data

BY COLONEL ROBERT F. CARPENTER, USAR

Depots and supply facilities in the Department of Defense (DOD) have the capability to "read" and "write" radio frequency identification (RFID) tags. Facilities with RFID interrogators (whether fixed or handheld) scan ("read") incoming cargo with RFID tags attached and add the new location data to the RFID system. Containers and pallets loaded at these facilities are added to the RFID system by "writing" and attaching RFID tags. The interrogators at the facilities' exits (the "out-gates") scan departing RFID tags and add their location data to the system. After the container or pallet is unloaded, the tag is erased and reused ("rewritten") with new data.

Lessons learned from Operation Enduring Freedom and Operation Iraqi Freedom indicate that RFID tags are an underused resource within the continental United States (CONUS) and in the combatant commanders' areas of responsibility. There are several reasons for this—

- Many users are not aware of the capabilities of RFID technology.
- Combatant commanders have not required use of RFID technology. Until Operation Iraqi Freedom, none of the nine combatant commanders had mandated use of RFID tags.
- The Army does not always practice in peace what it will be called on to do in war. RFID tags normally are not used during training; RFID has not been instituted in CONUS as part of the distribution system for sustainment cargo; and the Army Forces Command has not required RFID use for unit moves except on a case-by-case basis.
- The tags may fail. This occurs because a tag has fallen off a pallet or has been damaged or because the battery in the tag has died.
- The tags are not visible in the in-transit visibility (ITV) server. This occurs when there is no interrogator at a location to scan the tags and put information into the system or when the interrogator has failed because of a loss of power, lack of connectivity, or mechanical failure.

We must remember that RFID was not created for ITV, nor does it provide a great deal of usable ITV data at present. RFID can tell you only where the cargo was last seen (in other words, where it was interrogated last), not where it is currently located. For current-location data, RFID must be integrated with other systems—an integration that the military has not completed up to this point. RFID originally was used after the Deputy Under Secretary of Defense for Logistics mandated that the services gain "in-the-box-visibility." RFID provides ITV at the specific nodes where it is used, and it is a value added, but by no means should it be the primary source for ITV. RFID cannot be used effectively for ITV until certain changes are made—

- RFID use must be mandated at the DOD level. Until this happens, use of RFID will be sporadic.
- The problem of who provides the content data of the tags must be solved. Tags should be generated at the locations where pallets are built or changed and containers are stuffed. These locations must be able to pass data into the RFID system so that all information is reliable and accurate.
- Ownership of RFID sites must be determined in order to keep the operational readiness rate of each site at or close to 100 percent.
- RFID data must be integrated with data from other logistics systems to provide true ITV.

What follows are some thoughts on possible uses of RFID technology in an automatic update role to other logistics systems without creating yet another ITV/total asset visibility (TAV) system. The Army and DOD need to start a discussion among functional experts on the possibilities and benefits of integrating RFID data with data from ITV systems.

Government Freight Management

If interrogators are located at the in-gates and out-gates of ports of embarkation (POE), they can be used to transmit cargo arrival data to the Government Freight Management (GFM) system when a container or pallet is scanned on its entry to the port. GFM, in turn, could use these "arrival" data to close out its CONUS movement transactions without input from an operator. Similarly, for cargo retrograding to CONUS from a port of debarkation (POD), the scanning of a pallet or container at the POD's out-gate could result in departure data being sent to GFM.

Worldwide Port System

If interrogators are located at the in-gates and out-gates of POEs and PODs, they could be used to scan RFID tags attached to containers as they enter the port for uploading or when they depart the port for onward movement. Rather than only updating the ITV server, the in-gate event could be used to generate data for the "Cargo Receipt at POE (TYS) Transaction" for the Worldwide Port System (WPS). When an RFID tag on a container is scanned leaving the port, data could be generated for WPS's "Cargo Depart Port (TYW) Transaction."

If interrogators are located at pier side (but not attached directly to the cranes used to load cargo), they could be used to scan RFID tags on containers as they are loaded on or off vessels. The on-load event could be used to generate data for WPS's "Cargo Load at POE (TYU) Transaction." The off-load event could be used to generate data for WPS's "Cargo Discharge at POD (TYS) Transaction."

Global Air Transportation Execution System

If interrogators are located at the in-gates and out-gates of POEs and PODs, they could be used to scan RFID tags attached to pallets as they enter the facility for uploading or when they depart the facility for onward movement. Instead of only updating the ITV server, the in-gate event also could be used to generate data for the Global Air Transportation Execution System (GATES).

Standard Army Retail Supply System

So far we have been talking about possible uses of RFID technology in the Defense Transportation System. If interrogators were located at supply support activities (SSAs) (they already are located at most SSA's in Alaska, Hawaii, Japan, Korea, and Europe, just not in CONUS), RFID tag data could be used to provide arrival data (TK6 transactions) for supplies and parts to the Standard Army Retail Supply System (SARSS). These transactions are already taking place between the ITV servers and the Logistics Integrated Data Base (LIDB). SARSS then could close out matching transactions in the finance system.

Surface Transportation Management System

The Surface Transportation Management System (STMS) is a Military Surface Deployment and Distribution Command effort to join data from GFM and the Integrated Booking System into a new CONUS information system. WPS (or parts of it) will be added later. STMS also should add RFID data for movements within CONUS.

Movement Tracking System

The Movement Tracking System (MTS) is a transponder-based satellite tracking system that provides near-real-time location data for vehicles, much as the Defense Transportation Reporting And Control System (DTRACS) does in U.S. Army Europe, Eighth U.S. Army, and the Coalition Forces Land Component Command in Iraq. MTS could be modified to provide the ability to link RFID tag numbers to MTS-outfitted vehicles. This is a proven capability in DTRACS, which allows the user to see all containers and pallets associated with a DTRACS-outfitted vehicle, including the ability to "drill down" to the level VI detail associated with the RFID tag (that is, down to the national stock number of each item).

TC–AIMS II

RFID data also are being used to track unit movement cargo. RFID tag read-and-write capability has been added to the Transportation Coordinators' Automated Information for Movement System (TC–AIMS II). In the future, if a portable TC–AIMS II is adopted, it also will have the capability to read and write RFID tags. An RF write capability is fully integrated into TC–AIMS II and already is being fielded. RFID equipment is included in the basis of issue plan. TC–AIMS II also should have the capability to read a barcode and generate an RFID tag when necessary.

The current use of RFID in DOD discussed above is based on active RFID technology. In active RFID, the tag has its own power source (a battery). In the commercial world, passive RFID technology is used to track items both in transit (very limited use) and in warehousing operations (much more robust use). In passive RFID, the tag is powered by RF energy transferred from the reader to the tag. To better exploit this technology and reduce its cost, major corporations have created the "Auto ID Center" with research and development facilities at five leading universities in the United States, Australia, England, Japan, and Switzerland.

DOD will be able to take advantage of this work. Although passive-based RFID tags are being used more and more in the commercial world, the business process of using them has not been examined to see if such tags will fit into DOD's business processes. There are a couple of limited tests being run at this time. One is in the Combat Feeding Program, which is attempting to use passive RFID tags to track items down to the box and case level. The only problem is that there is no current tie-in to the DOD standard active RFID tags. In other words, once an item is placed on a pallet or in a container, the data should be aggregated and written to the DOD standard RFID tag in use at that time.

For the short term DOD needs to identify problems with our current system, fix them, and take advantage of RFID technology to automatically update other logistics systems and use those systems to update ITV servers. **ALOG**

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The author thanks Jeff Fee and Sandy Latsko of the Army Logistics Transformation Agency for their assistance in writing this article.

ALMC's E-Classroom Offers Realistic Combat Training for the Future Force

BY CAPTAIN WILLIAM C. JOHNSON, JR.

Students in ALMC's e-classroom rehearse using a rock drill before executing Battle Commander 2010.

Three new high-tech training systems provide a realistic combat environment for students at the Army Logistics Management College (ALMC) at Fort Lee, Virginia. ALMC's first battle command electronic classroom (E-classroom), which was inaugurated in August for students of the Combined Logistics Captains Career Course (CLC3), includes several innovative training initiatives—

• ***Classroom Performance System (CPS).*** Students aim individual handheld infrared transmitters at a classroom screen displaying a question and several potential true-false or multiple-choice responses. Each student clicks the button on his transmitter that corresponds to his answer. After all students have responded, the correct answer appears on the screen. The system tallies the responses, so the instructor can see immediately how many students need additional instruction. If a majority of students miss a question, the instructor may choose to allocate more time to the subject area or examine the validity of the question. The student responses can be posted automatically to an electronic grade book.

• ***3M digital wall display***. A wall-mounted whiteboard integrates teaching materials from numerous computer applications. The instructor can access desired photos, charts, digital maps, and the Internet merely by tapping the screen, and he can digitally write and draw on the screen without casting a shadow. Everything on the wall display can be printed quickly so all students can take away a paper copy. The instructor can save the new information electronically for use in updating his course material.

• ***Battle Commander 2010.*** This intermediate desktop simulation reinforces the military decision-making process taught during the tactics instruction in CLC3. Students see their tactical plans evolve from the map board to the rock drill and, ultimately, to execution during the simulation. They can build task organizations, maneuver units, direct fires, and request close air support, fuel, and ammunition on the battlefield. Instructors can conduct after-action reviews during or at the end of the simulation and save the entire exercise on their computers.

These three initiatives are key educational tools for the CLC3, but they soon will be used in two more of ALMC's mid-level logistics courses. The E-classroom provides doctrinal correctness and fast-paced environments in which to simulate the Future Force. Adding a sense of combat reality to the classroom are sandbags, camouflage netting, and the sounds of exploding ordnance and close air support.

Incorporation of the e-classroom concept into the ALMC curriculum was the brainchild of Colonel Robert J. McNeil, ALMC Commandant. He is excited about the cutting-edge training available at the college. "By requiring our students to perform under stressful classroom situations, we are preparing them to perform competently in actual combat conditions," said McNeil. **ALOG**

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The Officer Assignment Process

BY CHIEF WARRANT OFFICER (W–4) GARY A. MARQUEZ

The Army Human Resources Command (HRC) is a field operating agency of the Army G–1. HRC's primary mission is to manage the Army's military personnel. [HRC was formed in October when the Total Army Personnel Command and the Army Reserve Personnel Command merged.] HRC has two management directorates: the Officer Personnel Management Directorate (OPMD) and the Enlisted Personnel Management Directorate. Although the assignment processes for officer and enlisted personnel are similar, this article will address only officer assignments.

OPMD's primary mission is to manage the Army's officer personnel, including assignment and career management of officers worldwide. OPMD is made up of nine divisions, each responsible for managing a specific group of officers. For example, the Warrant Officer Division (WOD) develops the professional capabilities of individual warrant officers through planned schooling and worldwide assignments while satisfying valid Army requirements for warrant officers. This means placing the right warrant officer with the right skills in the right position at the right time.

Within each division, career managers (CMs) are responsible for assigning officers within specific career management fields. The CMs rely on Army Regulation (AR) 600–3, The Army Personnel Proponent System, and Department of the Army Pamphlet (DA Pam) 600–3, Commissioned Officer Development and Career Management, for guidance in assigning officers worldwide to career developing and enhancing positions or schools while fully supporting the needs of the Army.

The Assignment Process

The assignment process is much more complicated than it appears to be because HRC takes great care in assigning the right officer to the right position and because CM's have rules that they must follow. The assignment process has these elements: Army requirements, availability for assignment, career development needs, officer preference, training and education, personal and compassionate factors, and overseas equity.

Army requirements. Above all else, the reason for making an assignment is to fill a valid Army requirement. In fact, according to AR 614–100, Officer Assignment Policies, Details, and Transfers, assignments involving permanent change-of-station moves are authorized only when required by national security or to ensure equitable treatment of soldiers.

Normally, a reassignment happens when an officer leaves a position and the losing agency generates a requisition for a replacement. Valid Army requirements for personnel are specified on the various tables of organization and equipment and tables of distribution and allowances. Grade, branch, functional area, skill, and special remarks are documented for each position within The Army Authorization Documents System, which is maintained by the Army G–3.

Annually, the Army projects positions to be filled and places officers on orders to occupy the vacancies. Within OPMD, requisition cycles are opened semiannually. The assignment branches then determine which officers meet the position requirements and are available for assignment using the criteria of availability and career development needs.

Availability for assignment. Officers are considered available for assignment when they complete the required tour length specified in AR 614–100 for locations in the continental United States (CONUS) and outside the continental United States (OCONUS). Department of Defense and Army policies for tour length are changed based on a variety of external

Career development is an important piece in the assignment process.

factors, including budget limitations. The Army's goal for a CONUS tour length is 3 years. Normally, an officer can be reassigned after 24 months if he has volunteered to move or if a higher priority requirement exists. CMs use the available officers to fill most requisitions.

Career development needs. Regardless of availability, career development in an officer's functional area is an important piece in the assignment process. For example, the Quartermaster warrant officer (QM WO) has a life cycle development model in DA Pam 600–3 (currently being revised). The model provides the QM WO a career path and goals for institutional training, operational assignments, and self-development goals that may culminate in his reaching the grade of W–5. The CM for QM WOs uses this model to effectively make career assignment and training opportunity decisions for the officers he manages.

Officer preference. Besides Army requirements, availability, and career development, the CMs must also consider each officer's preferences. Officers now can submit their personal duty and assignment preferences via the World Wide Web. CMs routinely check officer preferences in an effort to assign an officer to a location or position that he has requested. CMs cannot always satisfy preferences because of changing requirements, but they try to satisfy as many as possible.

Training and education. When possible, CMs arrange for schooling while an officer is en route to his next assignment to meet the special requirements of the new position. Degree completion programs, long-term training such as the Army Logistics Management College's Logistics Executive Development Course at Fort Lee, Virginia, and training with industry programs also may be considered for exceptional officers.

Personal and compassionate factors. In some cases, officers encounter personal hardships and emergencies. CMs may attempt to assist in such circumstances by adjusting the assignment. In some cases, formal requests for compassionate deferments from assignment or requests for reassignment are required. Two programs that can affect assignments are the Exceptional Family Member Program (EFMP) and the Married Army Couples Program.

Overseas equity. Overseas tour equity is always a consideration when selecting officers for assignments. Officers serve in a variety of OCONUS locations. Some OCONUS assignments are long tours accompanied by families, and some are short tours, or dependent-restricted tours, without families. Every CM's goal is to distribute OCONUS accompanied and unaccompanied assignments equitably among the officers they manage in order to maintain high morale. In many cases, OCONUS tours can broaden an officer's professionalism, and CMs consider this element in each assignment action. However, the Army's needs always come first. For example, currently the demand for military occupational specialty (MOS) 920A (property book officer [PBO]) warrant officers in OCONUS short-tour assignments is greater than the demand for 921As (airdrop technicians) and 922As (food service technicians); therefore, 920As will receive more OCONUS assignments.

Every officer should meet personally with his CM.

Making an Assignment

Let's look at an example of how a decision is made on assigning a junior warrant officer, MOS 920A to Germany. (See chart on next page.) The unit to which he will be assigned is a separate engineer battalion that is authorized one 920A CW2.

Of the 10 920A warrant officers with the most time on station in CONUS, only 3 are available for this assignment: Miller, Negron, and Pitt. CW2 Miller has the most time on station; however, he will be in the zone of consideration for promotion this year and most likely will make CW3. Therefore, he will not be considered for this assignment.

This leaves us with CW2 Negron and CW2 Pitt. Neither officer has served on a long tour or in Europe or has volunteered for this assignment. The CM will review the Career Management Information File (CMIF) of each officer to determine his level of experience and performance. He will contact each officer to determine if there are any reasons that the officer cannot be reassigned.

Since CW2 Negron has 37 months on station and is currently serving on a division property book team, this assignment would be career enhancing for him. CW2 Pitt is currently serving as a separate signal battalion PBO, and this assignment would not be career enhancing since he would only be going from one battalion to another battalion. Ideally, CW2 Pitt's next assignment would be to a division PBO team or to a brigade. The CM decides to assign CW2 Negron to Germany.

Although this is an over-simplified example of how the assignment process works, it is typical of how

Warrant Officers Available for Consideration for the Assignment		
Name	Time on Station (months)	Factors
CW2 Adams	42	Approved for retirement
CW2 Jones	41	Joint domicile
CW2 Johnson	39	Promotable
CW2 Miller	38	Available
CW2 Marks	38	EFMP—cannot be assigned to that location
CW2 Negron	37	Available
CW2 Nelson	35	Serving in engineer battalion
CW2 Pitt	32	Available
CW2 Pyle	30	Last OCONUS tour was long tour
CW2 Zain	30	Newly promoted

assignment decisions are made. The assignment process is not science; it is more an art that is constantly changing and being refined based on the latest requirements, information, and personal desires of the officers being managed. The assignment process is, however, equitable and fair. Officers are rarely allowed to "homestead" in one location forever, except for highly specialized assignments, such as the 75th Ranger Regiment, the 160th Special Operations Aviation Regiment, and the White House Communications Agency, which require continuity above all else.

Personal Interviews

Officers often ask, "Is it beneficial for me to have a face-to-face interview with my career manager?" The answer is yes. Personal interviews, whether at conferences, training events, or during HRC field trips, are important elements not only in the assignment process but also in developing a mentorship between the officer and the CM.

During the interview, the CM can get to know the officer much better than by reviewing his CMIF, talking on the phone, or sending emails back and forth. He can assess the officer's character and professionalism. CMs can also visibly observe the officer's conduct, manner of speech, delivery, and potential. These factors can be critical when assignments are to specialized or unique positions, such as working with U.S. embassies or the White House Communications Agency.

Every officer should meet personally with his CM. It is important to ensure that the CM considers each officer as a person, not just a name on a piece of paper, when making assignment decisions.

CMs exercise great care when assigning officers. Personal concerns are taken seriously but never in lieu of Army requirements. However, every officer must take the lead in his overall career management plan, be it a 5-year plan or just for his next assignment. He should be proactive and stay on top of the changes being made within his MOS. He should stay informed about the changes being made within the transforming Army, be willing to move to the next career-enhancing position rather than to the next ideal location, and, above all, be ready and willing to move. **ALOG**

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Thai Coalition Engineer Unit Supports Operation Enduring Freedom

BY MAJOR ROBERT A. HARNEY

In March 2003, the Kingdom of Thailand successfully deployed a Coalition Engineer Unit (CEU) to Bagram Air Base, Afghanistan, to support Operation Enduring Freedom. Though only one of many nations to support the Global War on Terrorism, Thailand's CEU mission represented the country's first military deployment outside of Southeast Asia since the Korean War and the first coalition deployment with the United States since the Vietnam War. The deployment underscored Thailand's active commitment to global efforts aimed at enhancing stability, national development, and peace.

Groundwork

In December 2001, Thai Prime Minister Thaksin Shinawatra met with President George W. Bush and Secretary of State Colin L. Powell to express a willingness to contribute forces in support of Operation Enduring Freedom. In January 2002, the U.S. Government formally accepted the offer and authorized the U.S. Central Command (CENTCOM) to coordinate with the Thai Ministry of National Defense (MND).

After much deliberation, the Thai MND offered engineering support, and, on 25 July, CENTCOM issued a formal request for a company-sized engineer unit. On 13 September, the Thai Government accepted.

The Thai CEU's mission was to deploy to Bagram Air Base "to repair the runway and taxiways and provide general horizontal and vertical construction capabilities with organic personnel and equipment." If required, they also were to deploy to Kandahar Airfield to repair the runway. The CEU would serve under the operational control of the commander of Coalition Joint Task Force (CJTF) 180 for the duration of their 180-day deployment.

Deployment Concept of Operations

Thailand falls within the U.S. Pacific Command's (PACOM's) area of responsibility but, for this unique deployment, PACOM would assume a supporting combatant commander role under CENTCOM. As such, PACOM would oversee the CEU's predeployment preparations and strategic movement to and from CENTCOM's area of responsibility.

The concept of operations called for the Thai CEU to conduct strategic sea and air deployments to an intermediate staging base at Qatar, which is in CENTCOM's area of responsibility. Once in Qatar, U.S. planners would arrange intratheater air transport of the soldiers and their equipment to Bagram.

Based on careful mission analysis, command guidance, and Thai requests for U.S. assistance, the PACOM staff drew up a list of five critical tasks—

- Support Thai CEU preparations for deployment, initial sustainment, and redeployment in coordination with the Joint U.S. Military Advisory Group Thailand (JUSMAGTHAI) and CENTCOM.
- Coordinate strategic lift of personnel and equipment for the deployment.
- Facilitate funding support according to an acquisition and cross-servicing agreement (ACSA), guidance from the Department of Defense and the Department of State, and Thai fiscal capabilities. [An ACSA is a binding agreement between the U.S. Government and another country (in this case, Thailand) that provides for the exchange of logistics support, supplies, and services to the other country's military forces in return for reciprocal support to U.S. military forces.]
- Assist the Thai MND in procuring cold-weather and nuclear-biological-chemical (NBC) equipment.
- Incorporate the PACOM-sponsored Coalition Theater Logistics Advanced Concept Technology Demonstration (CTL ACTD) into the deployment and redeployment process.

Deployment Planning and Coordination

JUSMAGTHAI provided direct assistance to the MND and was the primary lead during the deployment. The PACOM lead action officer, along with an interstaff work group, assisted JUSMAGTHAI with all Thai requests for action.

The interstaff work group initially included action officers from the Staff Judge Advocate, the U.S. Transportation Command (TRANSCOM) Liaison Office, and the PACOM J–3 and J–4. The J–3 representative was responsible for the concept of operations and for compiling a force flow list. The action officer from J–4 was responsible for supply and services, strategic mobility, security assistance, logistics automation, international logistics, and ACSA compliance. Later, as support requirements increased to include foreign transportation support, equipment

Thai CEU supercargoes board the Shimokita for the voyage to Qatar.

procurement, and funding, the work group expanded to include the PACOM foreign policy advisor, comptroller, and coalition force representatives and Thailand country directors from the office of the J–5.

In addition to coordinating the activities of the PACOM interstaff work group, action officers worked closely with the CENTCOM Coalition Coordination Cell's Logistics Operations Branch and the Joint Staff J–4 and J–5. A representative of the U.S. Embassy in Bangkok and the Japanese Self-Defense Force's liaison to PACOM also assisted in the coordination process.

Logistics Challenges

Seven elements were critical to the successful deployment of the Thai CEU to Afghanistan.

Sealift. Initial Thai MND assessments called for the Royal Thai Navy (RTN) to transport CEU equipment on a 1950s-vintage LST (landing ship, tank). However, it was discovered that the LST and crew lacked the blue-water certification required for the 17-day journey from Thailand to Qatar. As a result, the JUSMAGTHAI chief and the U.S. ambassador to Thailand asked PACOM and OSD for help in obtaining other lift support. The PACOM commander concurred and several courses of action were explored, including Military Sealift Command or Military Traffic Management Command (MTMC) contract liner service, U.S. airlift, and Japanese Maritime Self-Defense Force (JMSDF) sealift. [MTMC recently was renamed the Military Surface Deployment and Distribution Command.]

JMSDF sealift support, which consisted of an LST with a Spruance-class destroyer escort, was selected to transport the CEU equipment and 29 supercargoes (officers in charge of the cargo) from Sattahip, Thailand, to Um Said, Qatar. The decision to use Japanese sealift was based on several factors. First, the Thai Government had indicated that they would accept coalition partner deployment support. Second, the Japanese Government previously had offered support to Operation Enduring Freedom and, on 19 November, approved a CENTCOM request for a "one-time maritime transport of the Thai CEU from Thailand to Qatar." Finally, the JMSDF agreed to finance the mission at no cost to either Thailand or the United States.

In late December, the Thai and Japanese Governments began direct coordination, including JMSDF site surveys of the ports of Sattahip and Um Said. The mission was conducted as planned, with no major problems reported. The JMSDF enthusiastically planned, resourced, and executed the sealift mission.

Strategic airlift. The Thai MND decided to use organic Royal Thai Air Force (RTAF) C–130 aircraft to deploy the main body of the CEU and its accompanying equipment. The flight plan called for a nonstop flight to Bagram and included the possible use of emergency landing sites in India and Pakistan that had been coordinated in advance. The aircraft returned to Thailand the same day after refueling at Bagram Air Base. Mechanics and a small quantity of repair parts also deployed with the aircraft.

The RTAF obtained country and overflight clearances from Afghanistan, India, and Pakistan. The JUSMAGTHAI Air Force advisor and two Pacific Air Forces (PACAF) exchange officers worked with their RTAF, CENTCOM, and CJTF 180 counterparts to obtain the data necessary for a safe flight. Two PACAF exchange officers also flew with the RTAF C–130s to provide assistance throughout the mission.

Cold-weather gear and NBC equipment. The Thai MND requested U.S. support in obtaining cold-weather and NBC equipment. The JUSMAGTHAI mission analysis concluded that the Thais had protective masks and needed only battledress overgarments. The initial plan called for a foreign military sales (FMS) transaction with fiscal year 2002 supplemental funding reimbursement to the appropriate FMS trust. However, time constraints negated the FMS process. Instead, personnel in the PACOM J–4 Security Assistance International Logistics Branch arranged for ACSA equipment purchases through U.S. Army Pacific (USARPAC). Cold-weather equipment was shipped to Thailand from Alaska and the battledress overgarments from Hawaii.

CTL ACTD integration. CTL ACTD is a suite of logistics automation and decision support tools cosponsored by PACOM and Australia. It gives a coali-

Crew members load equipment onto the LST Shimokita.

tion task force commander the ability to share releasable logistics information with coalition partners across the full spectrum of military operations. The system also affords the commander in-transit visibility if the coalition partner deploys using TRANSCOM-controlled assets. The CTL ACTD tools, which are currently in the second of three military utility assessments, will be integrated into a future version of the Global Combat Support System (GCSS). A complete description of CTL ACTD is available on the World Wide Web at www.coalitiontheaterlogistics.org.

After receiving a formal request for Thai forces, the J–4 began using CTL ACTD for the deployment as an operational test of its capabilities. The PACOM J–4 Logistics Automation Branch, in coordination with the PACOM J–3 Future Operations Division, devised a plan for using CTL ACTD tools to develop the force flow lists based on deploying soldier and equipment information furnished by the Thai MND. The completed force flow lists then were sent to CENTCOM Coalition Coordination Cell planners, who used them to schedule intratheater airlift, demonstrating that the PACOM real-world operational test of CTL ACTD capabilities was a success.

Port operations. Operations at the ports of Sattahip and Um Said went smoothly. In December 2002, JMSDF representatives conducted site surveys of both ports, which helped ensure successful operations. The Thai MND assumed all cargo-handling responsibilities at Sattahip, and CENTCOM tasked MTMC with port operations at Um Said.

The JMSDF LST arrived at Um Said as scheduled on 1 March 2003, but it could not move into port because other ships had priority offloading. Once the JMDSF ship was in port, offloading was completed in a day without incident. JUSMAGTHAI quartering party representatives assisted with coordination.

Intratheater lift support. In Qatar, CENTCOM assumed control of the Thai CEU's deployment from PACOM. U.S. Army Forces, CENTCOM Qatar, was tasked with providing life support and ground transportation from the port to Al Udeid Air Base; U.S. Air Forces, CENTCOM, with air planning and joint inventory support; and CJTF 180 with reception, staging, onward movement, and integration (RSO&I) operations in Bagram. JUSMAGTHAI quartering party representatives continued to provide assistance when needed.

Air operations at Bagram were delayed from the original movement planning window of 4 to 15 March because of aircraft scheduling challenges, bad weather, and special load-planning requirements. All Thai personnel and equipment arrived at Bagram Air Base on 21 March.

Life support. A Thai MND contingent, accompanied by JUSMAGTHAI representatives, had conducted a predeployment site survey of Qatar and Bagram in September 2002, 9 months after the Prime Minister of Thailand offered to contribute forces to support Operation Enduring Freedom. The site survey addressed critical logistics support issues, so both the Thai delegation and CJTF 180 leaders had a good understanding of the mission support mechanisms in place.

Most Thai CEU life support provided by CJTF 180 was handled according to the negotiated ACSA. Critical life support issues included—

• ***Subsistence.*** The negotiated ACSA gave the Thai Government responsibility for the cost of subsistence. The Thai MND also deployed a cook to assist with CJTF 180 consolidated dining facility operations.

• ***Tentage.*** Thai CEU soldiers would be housed at Bagram Air Base in newly constructed tier III tents (military-issue tents with plywood floors and walls, wooden frames, electrical outlets and lights, and kerosene heaters).

• ***Bulk fuels.*** The Thai CEU would operate its equipment using JP8 fuel because there was a shortage of diesel fuel at Bagram. The Thai CEU also would bring additional filters for their diesel vehicles because converting to JP8 from diesel fuel requires new fuel filters.

• ***Maintenance.*** The Thai delegation would receive repair parts and maintenance support through the on-ground U.S. engineer battalion. The Thai CEU would bring a 30-day prescribed load list (PLL) for organic maintenance operations.

• ***Health support.*** By law, U.S. medics can provide combat health support to coalition partners only in emergencies and situations that are life threatening. Therefore, the CEU had to deploy with its own aid station and levels I and II combat health support. (Level I care is rendered at the unit level, such as self-aid, buddy aid, and combat lifesaver aid. Level II care is physician-directed resuscitation and stabilization.) The Thai MND deployed with two doctors and four nurses.

• ***Redeployment.*** Redeployment planning began as soon as strategic lift support was finalized. CENTCOM formally requested JMSDF support for the redeployment, which requires Japanese Government approval. The alternative redeployment support would be Military Sealift Command contracted liner service.

Lessons Learned

Thai CEU coalition partner support of U.S.-led operations set numerous precedents within PACOM and the Department of Defense. Planning and executing the deployment offered a number of important lessons.

Never underestimate the value of effective staff planning and interaction. The Thai CEU mission demonstrated the importance of coordination between the supporting combatant command and the supported combatant commands. The PACOM interstaff work group labored through many complex issues to develop appropriate courses of action. It is important also that staff elements and agencies rock-drill the process initially so all players understand their roles and constraints.

Understand coalition country and U.S. cultural differences. Cultural differences may affect coordination and military decisionmaking efforts, and bureaucratic processes and misinterpretations may affect established timelines. Throughout the planning process, action officers must be flexible and anticipate problems that could be caused by cultural differences. Coalition country liaison officers also can help the coordination process run more smoothly.

Conduct a predeployment site survey with appropriate personnel from the mission unit early in the planning phase. Include a "decisionmaker"—someone with authority to make agreements with the supporting task force commander. Develop and follow an extensive predeployment site survey checklist to ensure life support arrangements are addressed. If appropriate, define the arrangements in a memorandum of agreement.

Make sure U.S. military advisors have a hands-on role from "cradle to grave." JUSMAGTHAI advisors provided invaluable assistance from the mission's inception. PACAF advisors also played a vital role in military-to-military air coordination, and they trained RTAF pilots and planners on international flight requirements and procedures.

A vibratory roller is tied down inside the ship.

Ensure proper weighing and load-planning of equipment before it departs home station. Determine the experience level of security assistance personnel and, if possible, capitalize on in-house knowledge. Request load-planning support if needed.

Use the acquisition and cross-servicing agreement to the fullest extent possible. The Thai-U.S. ACSA was effective during the CEU deployment. Using ACSAs when dealing with countries willing to deploy troops with the United States in a coalition operation will help expedite responsive and cost-effective mutual support.

Know and comply with visa, country clearance, and individual weapons policies. It is important to note that diplomatic ties vary among coalition partners. Some host nation coalition partners forbid the carrying of firearms within their countries. U.S. military and diplomatic representatives must work closely to assist coalition countries in obtaining proper and timely country clearances and visas through the host nation.

Take advantage of the value that advanced concept technology demonstrations can add to a real-world operation. The operational test of the CTL ACTD during the CEU deployment validated its concept and tools. Its use also reduced the man-hours associated with "hand-jamming" deployment data into legacy systems.

After months of detailed planning and coordination, the Thai CEU successfully completed its precedent-setting deployment to Afghanistan and assumed its mission. Thanks to the dauntless efforts of all involved, the Thai CEU soldiers deployed with combined U.S. and Japanese lift assistance, much-needed cold-weather gear and battledress overgarments, and the funding needed to cover deployment, redeployment, and specific sustainment costs. **ALOG**

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Web-Enabled Repair and Return

BY CORRINA PANDURI

Using commercial off-the-shelf (COTS) equipment in military systems is a mixed blessing. Although COTS equipment offers the warfighter cutting edge, technologically advanced equipment, managing it offers unique challenges for logisticians.

Since COTS items are not always controlled within the Army Standard Supply System, a need exists for a management tool designed specifically for COTS equipment. When fielding COTS equipment, product managers are charged with going the extra mile to provide total life-cycle support for their programs. This is the case for the Product Manager for Defense Wide Transmission Systems (PM DWTS).

PM DWTS leads the upgrade of the Digital European Backbone, a communications network that provides secure voice and data transmissions to U.S. commanders in Europe. It is completing this upgrade through an initiative called the Defense Information Systems Network-Europe (DISN–E) program. The upgraded system provides high-speed digital microwave radios, asynchronous transfer mode bandwidth management, and a new network management system.

The COTS equipment supporting the DISN–E program is readily available on the open market and is usually supported by original equipment manufacturer (OEM) warranties or contractor logistics support. However, spare COTS items are not always a part of the standard Army database, so logisticians must be creative in order to manage them successfully.

To meet this challenge, PM DWTS implemented a World Wide Web-based procedure for repairing and returning DISN–E items to the contractor from field sites using a return material authorization (RMA) database Web site. Information stored in the PM DWTS RMA database is similar to that found in the Army Standard Supply System: part numbers, stock on hand, stock due out, and repair and procurement costs. However, the RMA database also tracks and records turnaround time, reasons for failure, locations of failures, and performance trends. Here's how the database Web site works.

The PM DWTS inventory manager enters the RMA status into the database Web site for tracking, evaluation, and analysis. PM DWTS logisticians use the data to analyze trends and develop budget estimates for equipment procurement and maintenance.

When an equipment failure occurs at a site, the unserviceable item is sent to the nearest forward supply point to be exchanged for a serviceable item. The unserviceable item then is sent to the area maintenance and supply facility (AMSF), and the PM DWTS inventory manager is notified automatically by email that an RMA has been requested. The inventory manager replies with an RMA number obtained from the appropriate OEM, and the AMSF ships the unserviceable item directly to the manufacturer. The manufacturer repairs or replaces the item and ships it back to the AMSF for return to stock. This expeditious process has increased operational availability and keeps the cost of spare parts stocks to a minimum.

The PM DWTS RMA Web site, which is encrypted and protected by a firewall, also enhances logistics support services such as—

- ***Item accountability.*** Current online inventories reflect items on hand and due in from repair or procurement.
- ***Trend analysis.*** PM DWTS logisticians can analyze and forward failed item data to system engineers so they can determine why and where the failures are taking place.
- ***Requirements determination.*** PM DWTS logisticians can accurately determine the types and quantities of items to procure.
- ***Budget forecasting.*** Data generated by the RMA database can be used to determine future operation and maintenance, Army (OMA), costs for sustainment and to provide dollar figures to the OMA commands from historical data on actual failures.
- ***Configuration management.*** Direct links to the OEMs' Web sites are accessible on the RMA Web site. This ensures that the PM has access to product change notifications of currently fielded items. Information gathered on new versions assists in developing system-wide upgrades.
- ***Customer service.*** Information on the status of spares in repair is available to all customers by telephone or email.

Although still under development, the RMA Web site has already proven that it offers accurate asset visibility and reduced turnaround time from the contractor to the field. By detecting future trends, PM DWTS logisticians can increase or decrease stock levels of particular items and ensure that the right items are sent to the right place at the right time. Logisticians can track repaired items through the Web sites of carriers delivering those items. Online inventory accounting also provides visibility of items at the forward supply point or the AMSF.

According to Lieutenant Colonel Michael Kwak, the PM DWTS, the bottom line is enhanced customer service, less red tape, and total life-cycle support of equipment. "This is an important management tool that assists in tasks related to the life-cycle sustainment of DISN–E equipment," said Kwak. "Previously, there was no automated tracking of the repair and return process, and field customers had to contact several different OEMs to obtain an RMA. Now they have one point of contact to go to."

For more information on developing a repair and return database similar to the PM DWTS system, call (732) 532–8265 or DSN 992–8265 or send an email to Corrina.Panduri@ mail1.monmouth.army.mil. **ALOG**

Corrina Panduri is a logistician in the Office of the Program Manager, Defense Communications and Army Transmission Systems, under the Program Executive Office, Enterprise Information Systems, at Fort Monmouth, New Jersey. She has a bachelor's degree in English from Monmouth University and a master's degree in logistics management from the Florida Institute of Technology.

Logistics Risk in the Stryker Brigade Combat Team

BY LIEUTENANT COLONEL RICK W. TAYLOR

Decisive land power is, historically, an essential requirement for attaining any lasting success in major conflicts or contingency operations. While the Army provides full-spectrum, land-power dominance, it often does so at the expense of deployability. Light forces are easily deployable but lack lethality, tactical mobility, and protection. Heavy forces provide substantial lethality, tactical mobility, and protection but require extensive strategic lift, longer deployment time, and logistics support.

The Stryker Brigade Combat Team (SBCT) fulfills the Army's requirement for a medium-weight, combined arms force. It provides the near-term, land-power solution that bridges the gap between strategic responsiveness and tactical capability. However, for the SBCT to meet its 96-hour deployability requirement, the force structure of the brigade support battalion (BSB) was constrained artificially to a predetermined number of personnel, vehicles, and equipment. The BSB structure is austere and lacks sufficient organic capability, both in personnel and systems, to provide adequate combat service support to the SBCT in all but the most limited operations. As a result, the SBCT's ability to conduct uninterrupted offensive operations in either a small-scale contingency against a capable combined arms opponent or a major theater war as part of a larger force is at risk.

Stryker Brigade Concept

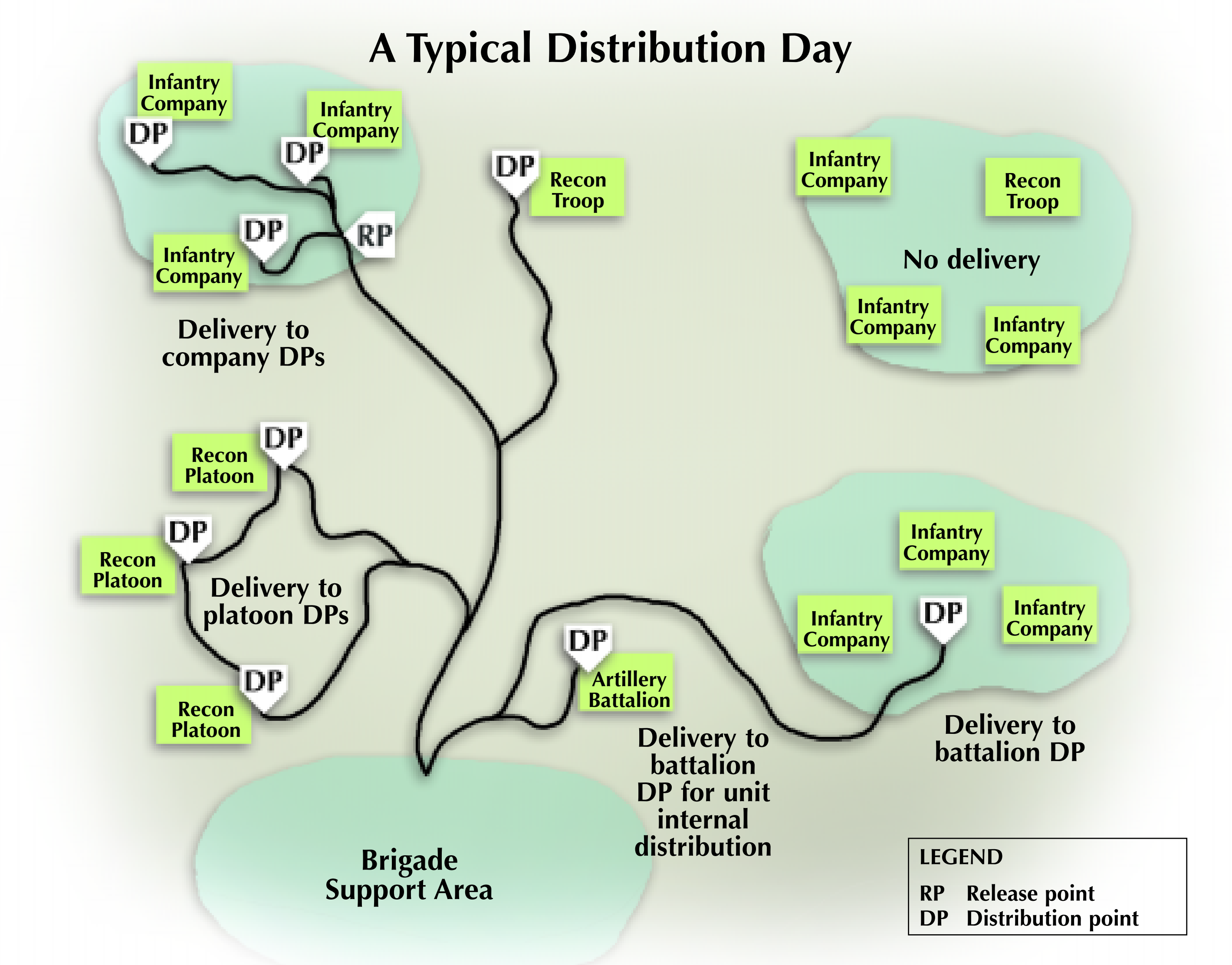
The SBCT is a full-spectrum, combined arms force with an offensive orientation, but it also can conduct defensive and stability and support operations. The SBCT is intended primarily for use in small-scale contingency operations in complex and urban terrains against low- and mid-range threats that may have both conventional and asymmetric capabilities. It requires augmentation (particularly with attack helicopters and artillery) to participate in major operations. Its design balances lethality, mobility, and survivability with strategic responsiveness, streamlined sustainability, and a reduced in-theater footprint.

The brigade can sustain itself for up to 72 hours. Its capabilities are derived from its excellent operational and tactical mobility, enhanced situational understanding, integration of combined arms down to the company level, and significant dismounted infantry strength for close combat on urban and other complex terrains.

Organizationally, the SBCT is primarily a mounted infantry force. It comprises three combined arms infantry battalions and a reconnaissance, surveillance, and target acquisition (RSTA) squadron that are supported by anti-armor, artillery, engineer, military intelligence, and signal elements. Its brigade headquarters and headquarters company provides command and control, and its BSB provides all maneuver sustainment. A unique organizational design feature is the use of the Stryker interim armored vehicle (IAV) as the common platform chassis not only for the infantry carriers but also for the mobile gun system, mortar, RSTA scout, anti-armor, engineer mobility, command and control, and nuclear-biological-chemical reconnaissance vehicles.

The BSB consists of a headquarters and distribution company, a forward maintenance company, and a brigade support medical company. It is designed to perform distribution-based, centralized combat service support (CSS) as prescribed in emerging Stryker Force doctrine. Its distribution capability is very limited. The BSB's effectiveness depends on incorporating the latest CSS-enabling technology, enhanced CSS situational understanding, and exploitation of all available resources through joint, multinational, host nation, or contract sources.

The headquarters and distribution company provides bulk petroleum and ammunition support and all brigade distribution. The fuel support section and transportation platoon provide distribution capabilities. The Defense Logistics Agency (DLA) furnishes bulk fuel, water, and food. Fuel support ideally comes from within the area of operations whenever possible; prepositioning of large quantities of fuel is not a desirable option. The fuel support section is equipped with 14 heavy, expanded mobility, tactical truck (HEMTT) tankers equipped with HEMTT Tanker Aviation Refueling Systems for retail operations and a load-handling system modular fuel farm consisting of 14 fuel tankracks on 14 palletized load system (PLS) trailers. Each HEMTT tanker and PLS tankrack carries 2,500 gallons; at a 90-precent operational readiness



rate, the fuel section can hold 63,000 gallons.

Using organic materials-handling equipment, the headquarters and distribution company ammunition transfer point can handle up to 138 tons of ammunition per day and has the capacity to store 14 tons. Ammunition loads must be mission- or combat-configured because the ammunition transfer point does not have the capability to build or reconfigure loads.

Transportation assets are managed centrally and controlled by BSB support operations. The transportation platoon has 14 HEMTT load-handling systems (LHSs) and 30 personnel. It provides distribution lift for supply classes I (subsistence), II (clothing and individual equipment), IIIP (packaged petroleum), IV (construction and barrier materials), V (ammunition), VI (personal items), some VII (major end items), and bottled water. Each HEMTT–LHS cargo delivery system is composed of a HEMTT–LHS truck and a PLS trailer. Each can deliver up to 11 tons or 900 cubic feet of cargo. The complete system can deliver up to 22 tons or 1,800 cubic feet of cargo. Total lift, at 90-percent operational readiness, is 277 tons.

Because the BSB's personnel and equipment are limited, a CSS company augments the BSB's transportation, supply, and maintenance capabilities and adds a field-feeding capability. It deploys into the area of operations following the brigade's initial operations and closure. The CSS company represents the minimum solution, assuming technical enablers are available and in place.

SBCT Concept of Support

SBCT sustainment operations are based on a responsive, distribution-based, centrally managed, execution-focused concept of support that must be integrated fully with the brigade's scheme of maneuver. Distribution-based logistics involves anticipatory ordering of supplies, coupled with rapid, continuous forward movement through the supply chain. The brigade initially deploys with 3 days' worth of supplies and can sustain itself (except for bulk fuel and water) for up to 72 hours in a 50-kilometer by 50-kilometer battlespace. Fuel and water in the area of operations must be provided by external support.

Rapid force projection dictates an austere SBCT CSS structure that is unable to provide the same level of support as that provided to conventional brigades. Because of this austere structure, CSS throughput is necessary to increase the responsiveness of support and sustainability. Throughput of strategic- and mission-configured loads in a seamless distribution pipeline reduces forward stock levels in the brigade support area (BSA). CSS situational understanding and speed of delivery eliminate the need for massing supplies forward. This distribution-based doctrine encompasses three factors: force agility, increased velocity, and situational understanding.

Agile military organizations have a relatively small footprint, so the maneuver commanders are not encumbered with large stockpiles of supplies or large numbers of CSS personnel on the ground. The key to agility is having only those CSS assets that are truly needed in the area of operations—no more and no less.

Increased velocity is a necessary condition of a distribution-based logistics system and makes the reduction of CSS personnel, equipment, and supplies possible. Increased velocity has several principles: maximum use of throughput, minimal load-handling through the use of configured loads and containerization, and scheduled but flexible delivery.

To be agile, CSS organizations must have advanced, seamless information technology that will provide them a complete understanding of the friendly, enemy, and logistics situations. Situational understanding requires several elements, including a common operating picture, integrated data programs, and a seamless information network.

The BSB provides distribution-based CSS to the SBCT on an area-support basis, down to the company, troop, or battery level. Anticipatory logistics allows resupply only when needed based on actual or projected requirements. Distribution is accomplished through the use of unit-configured loads, which minimizes handling.

The protection and security of moving elements in a hostile area is a major concern for the SBCT. Although the SBCT's expected area of operations is 50 kilometers by 50 kilometers, SBCT forces will occupy only a portion of that space. Therefore, most of the routes and areas in which CSS operations are likely to occur will not be secured with SBCT combat forces and will be vulnerable to enemy attack. Using combat forces to protect routine movements will reduce their effectiveness in carrying out their intended mission. As a result, the BSB normally must provide its own security for base operations and movement.

A variety of methods and tactics are required to ensure that CSS support is provided nearly simultaneously to forces that are spread over a large area. Decentralized operations and the vast array of potential circumstances and adversaries do not permit the routine allotment of combat forces to protect CSS assets, so it is imperative that CSS units and vehicles are able to mitigate the security risk by securing themselves, their area of operations, and their movements.

Convoy security training must become a routine training event and a well-rehearsed skill of BSB soldiers. CSS vehicle platforms, especially vehicle distribution systems, are equipped with weapon systems that can double as both vehicle-mounted and perimeter-security weapons. A sufficient mix of weapons, such as the MK19 automatic grenade launcher, and point weapon systems, such as the M240 machinegun and M249 squad automatic weapon, will help ensure that CSS units and vehicles have the capability to protect themselves.

Identifying Logistics Risk

The organizational structure and operational design of the SBCT assume logistics risk, and therefore operational risk, from three interrelated areas during maneuver sustainment: austere design, force protection during distribution operations, and unanticipated consumption.

Austere design. The BSB design fails to include sufficient personnel, vehicles, and materials-handling equipment to handle probable consumption, especially of bulk petroleum and ammunition. Current BSB capabilities are based on a bare-minimum supply requirement in a low-threat, best-case environment.

The Stryker vehicle system travels 5.7 miles per gallon of fuel. Its consumption planning factors are based on stability and support operations or on low-intensity, small-scale contingencies. The expectation is that the brigade will move mostly by road, with limited off-road or cross-country operations. Maximum road usage provides the best fuel efficiency. However, dynamic off-road, cross-country operations at the National Training Center at Fort Irwin, California, during Joint Training Exercise Millennium Challenge 2002 resulted in performance that was degraded by as much as 45 to 60 percent of planned factors. Because the SBCT's operational requirements were based on optimistic on-road fuel usage rates, the fuel support section cannot provide for increased fuel consumption in more dynamic operations. Additional fuel support will have to be provided by echelons-above-brigade assets. The CSS company, which is designed to augment the BSB, adds no additional fuel capability.

Ammunition consumption is predicated on the nature of the operation. It is impossible to predict ammunition consumption with any sense of certainty.

Yet, the SBCT's current limited capabilities for handling and distributing ammunition are based on anticipated stability and support operations or low-intensity, small-scale contingencies. The CSS company adds another six HEMTT–LHS systems, principally for moving ammunition. This increase in transportation capacity is understood to be the minimum additional capability the brigade will need immediately on entry into the area of operations.

Force protection. The second area of operational risk inherent in the SBCT structure is force protection of distribution operations. During development of the SBCT's organizational and operational concept, after-action comments from wargaming analysis concluded that—

• Commanders must consider force protection in a totally different manner than ever before now that the changing operational environment has radically increased the zone of vulnerability of maneuver sustainment units and systems. Maneuver sustainment units must be supported with adequate assets to protect against air, missile, and conventional or unconventional threats. Ideally, sustainment commands will be resourced or provided with a designated level of protection for their activities during selected times on the nonlinear battlefield. Force protection is a critical component of the operational scheme of maneuver.

• The Stryker Brigade is especially vulnerable to long lines of communication, unoccupied battlespace, and bypassed enemy forces. Unoccupied battlespace is probably the single most significant force protection issue for a distribution-based force of very limited means. Any use of maneuver elements to provide security for CSS elements will come at the expense of mission accomplishment. "Nesting" distribution pushes with maneuver and reconnaissance elements may be viable, but it is a partial solution that cannot be relied on as a general principle.

• The BSB has no systems redundancy; indeed, it cannot sustain itself with organic assets past the first 72 hours in a benign environment. The BSB has no excess capability to conduct security; manning for force protection duties must come from within the BSB's capability to provide daily sustainment. Assigning two operators to each item of equipment or vehicle does not provide for redundancy or force protection unless the brigade conducts operations only 12 hours a day, which is not anticipated. For 24-hour operations, there is no capability for "riding shotgun."

• Because of the nature of its light armor systems, the brigade is quite vulnerable to direct and indirect enemy fires. This risk can be mitigated through better situational understanding (avoiding surprise encounters and identifying enemy unit locations), coupled with proactive counterfire before direct engagement by brigade maneuver elements. To do this in combat operations against any credible opponent, the SBCT must be augmented with attack aviation and artillery assets to destroy enemy direct and indirect fire systems before they can fire on and damage elements of the brigade. Such augmentation necessarily increases the consumption of fuel and ammunition. Even though risk to the brigade as a whole can be mitigated through different operational techniques and increased fires, the security of lines of communication and protection of limited distribution personnel, vehicles, and equipment are still at risk.

Unanticipated consumption. Unforeseen increased consumption is the third area of risk inherent in the operational design and organizational structure of the BSB. Lessons learned from extensive wargaming indicate that a force equipped with medium-weight light armored vehicles is exceptionally vulnerable to enemy indirect fires. The medium-weight force requires its infantry to dismount in complex terrain to prevent ambush and provide protection for the IAVs. Significant reconnaissance to identify and locate enemy indirect fire systems—followed by proactive counterfire to silence them—is required as a protective measure.

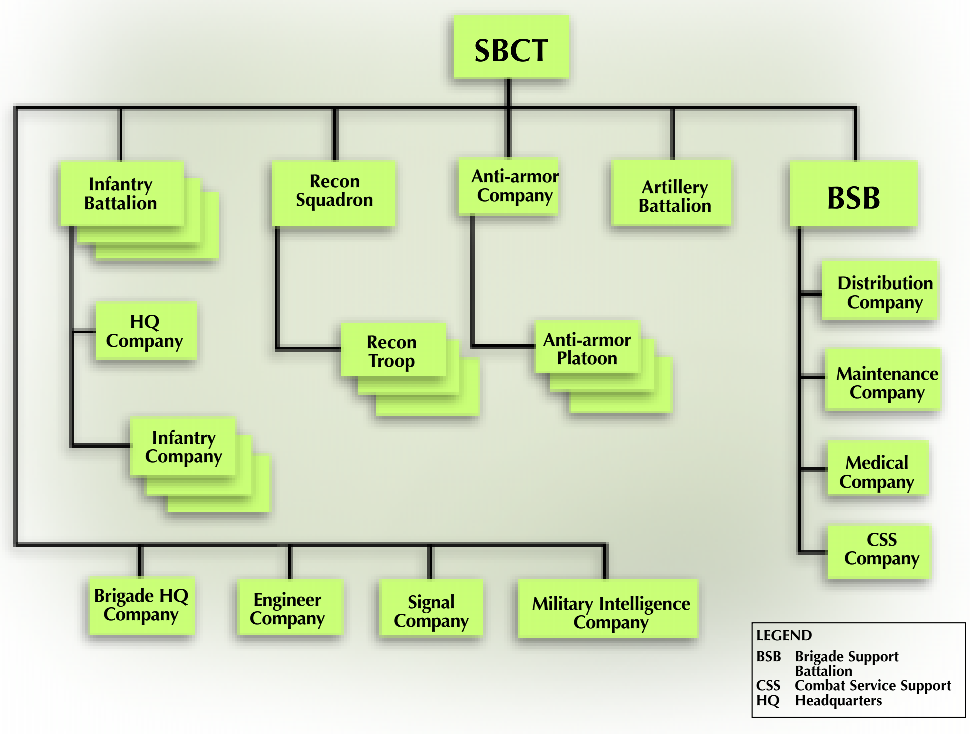
Assessing the SBCT's Risk

Capability shortfalls. In *On Myths, Wishful Thinking, and Reality*, J. K. Hawley observes that blitzkrieg would have died stillborn if the German General Staff had refused to authorize the increase in force structure required to support the new panzer divisions because of the extensive logistics tail necessary to support mechanization. (Blitzkrieg is the German word for "lightning war," an approach that allowed the German Army to use deception, combined arms, and deep battle engagement to take both Poland and France by complete surprise during World War II.)

Hawley notes that the unique organizational and doctrinal changes incorporated in the new panzer divisions created modern combined arms and maneuver warfare and resulted in the '"whole being more than the sum of its parts." He concludes that, when creating new force structures, holding personnel numbers at some fixed level in the new organization is the wrong approach. Rather, the questions that should be asked are: "What level of relative combat effectiveness is provided by the new force structure?" and "Is it worth any necessary increase in manning?"

When determining the necessary structure for the interim SBCT organization, applying arbitrary constraints in order to achieve an unachievable 96-hour deployability requirement misses the point of operational effectiveness. The end effect is to put the brigade on the ground at risk, at least until follow-on,

Stryker Brigade Combat Team Organization



modular, ad hoc elements are brought in to make up capability shortfalls, which is not ideal.

BSB organization. In the current structure of the BSB, a great potential exists for the SBCT to fail logistically because of a lack of sufficient organic sustainment capability and the absence of any dedicated force protection for distribution operations. Agility, CSS velocity, and situational understanding are all valid requirements for improving future sustainment operations. However, constraining the operational capability of the SBCT through the fielding of a BSB that is too small only increases the risk of failure, in spite of doctrinal and practical improvements in CSS distribution.

Consumption factors. Light armored forces do not fight the same way heavy forces do, which can lead to an unanticipated increase in consumption of both fuel and ammunition. Since SBCTs must be augmented with artillery and aviation, attack helicopter fuel and artillery ammunition consumption increases 11 to 15 percent.

Force protection. SBCTs face two types of force-protection risk. First, they are vulnerable to catastrophic losses from an opposing force's direct and indirect fires because of their light armor. This vulnerability requires aviation and artillery augmentation to conduct proactive counterfires to eliminate the threat before direct engagement.

The second force-protection risk stems from the way SBCTs fight. SBCTs fight differently from heavy brigades. Because they are only lightly armored, they refuse direct engagements and bypass larger enemy forces. SBCTs also operate in an extended, noncontiguous battlespace (50 kilometers by 50 kilometers, expandable to 100 kilometers by 100 kilometers). These two factors greatly increase the potential for ambush of distribution pushes or interdiction of extended lines of communication, with a corresponding loss of valuable CSS systems and critical logistics personnel.

The potential for asymmetric operations must not be overlooked. The SBCT is vulnerable to any infantry force willing to commit itself to severing the SBCT's lines of communication.

Should the Stryker brigade come up against a hardened force of good infantry, the SBCT's current operational concept must be completely revisited. Small teams of resourceful but lightly equipped infantry are capable of ambushing and destroying key sustainment systems, time after time. They do not need extensive technology, heavy logistics, or high-level control. They do not need combined arms, airpower, or artillery. What they do need, and can find in abundance in the world's arms and commercial communications markets, is light anti-armor weapons and handheld communications equipment. Facing an enemy armed with this equipment and a little tactical creativeness, the brigade will not have enough combat power to secure the operational maneuver space in which an SBCT is expected to operate. The Army has proven this to itself repeatedly during training rotations at the Joint Readiness Training Center at Fort Polk, Louisiana.

Mitigation of Logistics Risk

The current structure of the BSB is inadequate. The Stryker Brigade could fail logistically because of insufficient organic sustainment capability, a shortage of critical personnel, and no dedicated force protection for distribution operations.

The CSS company, although designed to increase existing BSB capabilities and provide others, is an awkward solution. It is essential that the CSS company deploy concurrently with the brigade, albeit at the tail end of the flow, so it can begin augmenting sustainment immediately on arrival. Indeed, current force design discussion indicates that a CSS company will be formally incorporated into the BSB, not held out of the organization at some higher level. Although this solution may be better than some other options, it is not ideal. Why have a separate company, made up of disparate platoons and sections, that, on deployment, belong to other companies? If nothing else, this proves awkward in training and garrison operations. Although the CSS company may be a valid approach for augmenting capabilities that do not have to be introduced into the theater immediately, such as field feeding, echelons-above-brigade maintenance, and transportation, the BSB requires additional organic assets as a safeguard against failure.

The BSB also must have some integral combat arms capability to provide site and convoy security during distribution operations. The BSB, lean as it is, must protect the limited numbers of CSS systems that are critical in feeding, fueling, and arming the maneuver force.

Strengthening the SBCT

To reduce the potential for failure inherent in the Stryker Brigade's current organizational design and operational environment, I suggest two significant structural changes—

- Redesign the BSB by permanently incorporating the CSS company's transportation section (six HEMTT–LHSs and 13 personnel) and supply support sections (17 personnel), adding another team of six HEMTT fuel tankers to the fuel support section. The current BSB structure is too lean for sustained, redundant operations. Any losses of critical systems, such as the loss of one or more of the five forklifts or a HEMTT fuel convoy en route to the RSTA, would crush the brigade's ability to sustain its operational tempo.
- Add an infantry company to the BSB, or directly under brigade control, to provide dedicated security for extended distribution operations. Even if collocated in one of the infantry battalion's operational areas, the BSB and the BSA require dedicated force protection, primarily for distribution operations but also for local security of the BSA. Any expectation that the maneuver commander will willingly assign one of his nine maneuver companies or three RSTA scout companies to tactical combat force and convoy protection is doomed to disappointment. Currently, the brigade commander lacks sufficient depth in his maneuver array. Ideally, a commander needs 12 to 16 subordinate maneuver elements, 2 levels down, to maximize maneuver flexibility. The SBCT gives the brigade commander nine such elements. Even with unparalleled situational awareness, it is unlikely that he will commit one of those nine companies to distribution force protection. Using one of the scout companies of the RSTA squadron is completely out of the question because the entire organizational and operational concept of the brigade is based on the dominance gained over the enemy by superior intelligence obtained from the RSTA squadron.

Implementing CSS reach is a valid approach to minimizing unnecessary forward presence on the battlefield and reducing the quantity of supplies staged forward. However, reach should be accomplished above the brigade level. CSS situational understanding, total asset visibility, programmed configured loads, and throughput distribution to bypass middlemen and eliminate needless handling are all wonderful concepts for streamlining operations and improving efficiency. Nevertheless, at the "sharp end of the spear," logisticians, like warfighters, need a robust level of capability and redundancy. The new distribution-based CSS doctrine can work perfectly yet fail to be sufficient in the SBCT's environment, which is characterized by an extended, noncontiguous, unsecured battlespace. Consumption rates will likely exceed the capacities of the BSB, even when it is augmented.

The ultimate conclusion is that the structure of the SBCT is not optimized for success; it trades off optimistic assumptions about the area of operations. As currently designed, the SBCT is at too much risk of logistics failure. Accepting the need for additional organic sustainment capability with some redundancy in the BSB can mitigate that risk. The brigade needs a tenth maneuver company to provide dedicated distribution security. Otherwise, one of the infantry battalions could lose up to a third of its capability in order to provide security in a noncontiguous environment. In light of the additional security and sustainment capability they will furnish, additional personnel and vehicles are not a significant addition to the deployment dynamic. **ALOG**

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The Role of Civilians During the First Gulf War

BY CRAIG A. SIMONDS

Operation Desert Storm foreshadowed today's reliance on civilian logisticians on the battlefield.

For the United States, Operation Desert Storm was a showcase for the technical wizardry of modern weapon systems. Although much has been said and written about the soldiers who manned these critical systems, less attention has been paid to the civilians who played a major role in delivering, provisioning, and maintaining them. This is unfortunate because those civilians were the beginning of a trend: the increasing role of civilians in providing logistics on the battlefield.

During Operations Desert Shield and Desert Storm, thousands of logisticians were in the Persian Gulf, at every level of military command. Over 1,600 were civilians, each one proficient in the logistics field he supported. More than 1,000 civilians from the Depot System Command set up major depot operations, while other Army Materiel Command (AMC) civilians purchased, transported, and maintained personal supplies, combat materiel, and spare parts; set up water purification and distribution systems; and provided technical assistance on the operation of weapons and equipment. [Reorganizations of AMC since 1991 have eliminated some of the subordinate commands mentioned in this article.]

Why were civilians in a combat area? Their presence was a response to the Army's doctrine of that time—AirLand Battle—which called for high-intensity, high-speed combat; the logistics effort had to keep pace. The logistics support in this concept was intimately connected to the battle plan, with logistics factored in as an integral component of combat power.

How Has Warfare Changed?

Operation Desert Storm demonstrated that the logistics battle was far more complex than the tactical battle, requiring a better understanding of the whole battlefield. Army civilians now play a major role in providing this type of understanding in a combat situation. Logistics in the ground war involves more than having enough materiel; it entails having the right item at the right time and then delivering it or moving it to the right place. These trends in warfare, logistics, and the need for civilians to provide support have only accelerated since Desert Storm.

To say that a division fights with tactics is a dramatic understatement of reality. A division's ability to fight is based on its ability to sustain and replenish itself. An active and versatile division with dynamic tactics has a high rate of consumption. To aid the forward march of logistics in Desert Storm, civilians constituted a complex network of support systems that provided direct logistics assistance to divisions, brigades, battalions, and companies.

A battlefield is no longer confined to well-defined lines laid out on a grid that indicate forward lines of troops or rear operations. The battlefield has both width and depth, and lines of operation can become fluid, frequently making it difficult for the force to connect with its base support for needed resources. Because the size of the battlefield changes as combat progresses, time and distance factors must be considered when planning support operations.

How Were Civilians Used?

To address the fluid battlefield situation during Desert Storm, commanders took a calculated risk and established supply bases far forward in the main battle area during defensive operations before they initiated the opening attack. Personnel at these forward bases included select civilian logisticians, known as logistics assistance representatives (LARs), who provided technical expertise in sustaining force readiness. LARs are emergency-essential civilians who support the Army in maintaining equipment. About 250 LARs served with Army units in Saudi Arabia, Turkey, and Israel during Desert Storm.

The Communications-Electronics Command first established intelligence and electronic warfare special repair activities (SRAs) to provide depot-level repair for military intelligence units and expedite movement of critical spare and repair parts into the theater. The SRAs sent equipment that could not be repaired in country back to the United States. SRA contact field teams visited units at the front so equipment would not have to be sent to the rear support area for repair. Civilian LARs and contractors were deployed along with military personnel to accomplish this mission.

When an AH–64 Apache helicopter fired the first shot in the air war, the Aviation Systems Command's theater aviation maintenance point (TAMP) was ready to provide any support that Army aviators needed. The TAMP's missions included helping units with port offloading operations, performing limited depot-level aircraft repair, providing depot-level maintenance support for sensitive electronics, cleaning and repairing helicopter engines eroded by sand, and operating a national inventory control point for aviation parts. The Aviation Systems Command was able to use an existing civilian field team to quickly bring technicians from Germany and establish the TAMP. When it became apparent that the theater would require additional aviation logistics support, many technicians were brought directly from the United States.

The Depot System Command had civilians in Southwest Asia to help set up consolidated receiving-point operations as soon as equipment began arriving in country. At the receiving points, they performed maintenance and supply support services for ground vehicles. The M1A1 tank rollover program, which was run by civilians from Anniston Army Depot, Alabama, was a major effort that allowed older M1 Abrams tanks to be swapped out of units for the newer model with heavy armor, upgraded internal systems, and desert camouflage paint.

The Patriot missile was probably the best documented success of the war for its effectiveness against Iraq's Scud missile. Civilian LARs from the Missile Command were on the ground in Southwest Asia well ahead of combat support and combat service support units. They provided both hands-on and technical maintenance to support the Patriot and other missile systems that are not traditionally backed up with large stockpiles of spare parts.

The Tank-Automotive Command established heavy equipment transporter support teams to provide on-the-spot maintenance assistance and expedite repair of combat equipment at forward supply bases. These teams were composed of civilians and Army support group soldiers.

A group of civilian employees from the Armament, Munitions, and Chemical Command ran a protective mask repair facility, where soldiers could have their gas masks checked, fitted, and repaired if required. That service gave a great measure of confidence to the soldiers when chemical attack was considered imminent.

Health and comfort for soldiers in the field was a major focus for Troop Support Command civilians in Southwest Asia. Fielding programs for reverse-osmosis water purification units and trailer-mounted laundry units were accelerated to ensure that living conditions were acceptable and hygiene needs were met for front-line troops. Troop Support Command civilians also were instrumental in proposing innovative ways to use standard electrical distribution systems to provide safe, expedient power to forward supply bases.

How Far Forward?

Since Desert Storm, the expanded role of civilians in logistics has presented the Army with this question: How far forward does the Army require its civilian employees to go in a combat theater to provide adequate support? The Army has no general standard stating how far forward civilian employees can be deployed. One option is not to use civilian members in any area where, because of combat action by U.S. forces, they will be subject to direct fire from enemy forces. Another is to institute a command policy that generally permits civilians to operate no farther forward than a particular unit boundary, such as the brigade rear boundary. The appropriate commander in the theater must make this decision.

Enemy forces may regard civilians who take part in hostilities as combatants, which would subject them to attack or injury. Although not clearly defined in international law and treaties, "taking part in hostilities" usually includes civilians who engage in actual fighting. Since civilians now augment the Army in areas where technical expertise is not available or is in short supply within the military unit, they, in effect, become substitutes for military personnel who would be combatants. As such, civilians are at risk of direct attack, injury incidental to attack, or capture. Therefore, if circumstances dictate, the theater commander may authorize issue of sidearms to civilians for self-defense.

The fact that the Army's equipment worked, and worked well, during Operation Desert Storm is a testament to the philosophy that a civilian force can support the Army within an identified combat area. However, it will continue to be a challenge for military and civilian leaders to define just how far forward civilians can go during wartime. Whatever is decided, war is no longer left to the military tacticians to win alone; civilian logisticians now have a major role in deciding that outcome. **ALOG**

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An Army Learns on Its Stomach

BY LIEUTENANT COLONEL JAMES P. HERSON, JR.

A fair number of today's soldiers arrive at induction centers with only a basic knowledge of military traditions and of the Army's rich battle heritage. Many commanders feel that it is important for recruits to improve their historical knowledge so they can put the importance of their service into context while they learn Army values. Basic training and advanced individual training begin the process of becoming soldiers and introduce novice soldiers to their new profession of arms. However, units receiving these new soldiers can do more to flesh out their historical awareness and warrior identity. The 7th Transportation Group (Composite) has instituted a new method of imbuing soldiers with regimental pride and an understanding of their newly chosen profession at the home of the Army's Transportation Corps at Fort Eustis, Virginia. Group leaders have increased historical awareness and enhanced soldier quality of life—an important consideration in facilitating retention—by designing the decor of their regimental dining facility (RDFAC) around the history of the Transportation Corps.

Quality food service continues to be an important element in keeping morale high. Many people recall what "old school" Army mess halls were like. Figures much like the *Beetle Bailey* cartoon character, "Cookie," slinging hash and bawling out lazy privates on KP (kitchen police), have been replaced with modern food service technicians, state-of-the-art equipment, and accomplished chefs.

When construction funding was approved to build a new dining facility (DFAC) for the soldiers of the 7th Transportation Group, a window of opportunity opened for establishing a one-of-a-kind interior decor. Using Army and regimental history as a vehicle for in-house immersion learning, the chain of command sought to tell the soldiers' story and the Transportation Corps' history to a new generation. The atmosphere is designed to help soldiers internalize Army values and connect the sacrifices of their service forebears with their day-to-day duties and training.

Setting the Stage

Representatives of the Food Management Assistance Team at the Army Center of Excellence-Subsistence (ACES) at Fort Lee, Virginia, visited Fort Eustis to view its DFAC, receive briefings on the mission and activities of the 7th Group, and receive the command's vision for a unique Transportation Corps-centric DFAC. After touring the austere and limited infrastructure of the existing DFAC, the team visited the 3d Port (home of the 7th Transportation Group's composite fleet of Army watercraft) to see the galleys that the group's hard-working cooks man while the vessels are underway.

Whenever a vessel departs for sustained operations outside of local waters, at least two cooks are needed to provide the required level of food service for the often 120- to 179-day deployment. The distribution model used to fill unit vacancies for military occupational specialty 92G, food service specialist, does not fully resource this requirement. This often means that the group's consolidated DFAC has fewer 92Gs on hand than are needed to feed the soldiers remaining in garrison while providing cooks for field feeding and supporting Army Training and Doctrine Command and Reserve component commitments. Running a group-level, consolidated DFAC is essential to making the best use of the limited number of cooks; it also allows

Each area's decor is related to a specific time. Note that the timeline along the wall, the photos and artifacts below it, and the etching in the booth divider are all related to the Korean War.

for more efficient ration storage and KP support to meet the diverse food service needs of the group.

Fortunately, the ACES team was so impressed with the group's vision of the proposed regimental mess style DFAC approach that they agreed to increase the interior design budget for the new building. They also recognized the high personnel tempo experienced by Army mariners and cooks in the 7th Group and the command's desire to give them a great place to come back to following a long deployment. The fresh approach to the RDFAC's interior and the accent on historical decor appealed to the ACES team.

Wanting more than simply a fast food-type atmosphere in the DFAC, which is all the "bare-bones" funding would have allowed, the unit leaders appreciated ACES support in funding a facility that demonstrates the importance of the Army and the history of the Nation. The command's main objective was to achieve a first-class restaurant atmosphere that was richly decorated with military memorabilia and artifacts, all thematically linked to Transportation Corps and Army history.

Facility Layout

The 7th Transportation Group Deputy Commander and the group's food service adviser began working on facility design and functional layout and assessing the various contractor's plans of how to best meet the decor desires of the command. They received assistance from many organizations, including the Fort Eustis historian, the Army Transportation Museum, the Directorate of Logistics, and the Directorate of Public Works. The group's leaders worked with contractors to craft the facility's decor into a vibrant, interesting style that would both educate and stimulate soldier and civilian diners.

The work progressed throughout the fall of 2001, and the facility had its grand opening in early January 2002. It was apparent from soldier comment cards and dining facility council meetings that the improved facility was an immediate success. The enhanced decor and improved food quality had made a dramatic statement to the group's soldiers about the command's commitment to raise their quality of life.

The 7th Transportation Group Regimental Dining Facility is a 22,000-square-foot building with the capacity to feed approximately 1,400 troops per meal period—almost a fivefold increase over its predecessor. Entrances on both sides of the building open into a common food serving area. This area has two salad bars, two main course lines, and two short-order lines. The main entrance also has a take-out section that features a popular "grab-n-go" menu. Beverage and condiment serving areas line both serving areas. After selecting their entrees, diners leaving the serving lines pass by the baked potato and taco bars on their way to the dessert area. From the dessert area, a diner can move to either of two dining rooms to eat.

The dining rooms are located in two large wings that are separated by the serving line exit and dessert bars. Each wing consists of a dining area that is divided into two dining rooms. One of the dining rooms can be closed off by a heavy partition for special events or unit functions. Each dining room has beverage refill areas and toasters to ease serving line congestion and minimize return diner traffic to the main serving area.

Regimental Decor

Tile colors in the kitchen areas and floor are Transportation Corps red and yellow. A deep marine blue also is seen throughout the facility, reflecting the unique maritime heritage of the 7th Transportation Group.

Traditional tables and booths and raised, bar-style tables and countertops are available for dining. The sturdy furniture was custom made with troops in mind. The Transportation Corps brick-red fabric on the chairs and benches resists staining, fire damage, and wear. The combination of easily cleaned chrome legs and struts and maple-colored wood laminate complements the interior color scheme. The furniture and fixtures are highly functional, esthetically pleasing, and built for ease in cleaning and maintaining. The booths have black bases that are designed to help hide combat boot scuffmarks and resist damage by busy diners. Each chair back has a handy eyelet, reminiscent of a ship's porthole, making it easy for a diner to grasp and reposition the chair.

All plates, bowls, and flatware have the group patch superimposed over bands of Transportation Corps red and yellow along the rim. The sturdy plastic maritime blue dinner trays reflect the group's unique mission, and the group patch adorns every shatterproof glass.

From the Civil War to the Iraqi War

The thematic approach of using the colors and traditions of the Transportation Corps would not be complete without including the contributions of the Transportation Corp's predecessor, the Quartermaster Corps. The RDFAC's cooks and the unit supply personnel are Quartermasters, so a significant amount of artwork and artifacts reflects the importance of the Quartermaster Corps in sustaining our Nation's army in both peace and war.

A Quartermaster blue timeline, beginning with the Civil War, borders the ceiling along the walls in both dining wings. When the timeline reaches 1942, the color changes from blue to brick red to reflect the birth of the Transportation Corps. The timeline notes major events in the Nation's military history and specifically in the logistics branches, including battles, new equipment fieldings, branch-specific watersheds, and actions of key figures.

Built-in wall artifact cases can be viewed from both sides. Displays are changed periodically to maintain freshness and interest. Two of the cases are set aside for current soldier achievements such as soldier of the quarter, cook of the quarter, and noncommissioned officer of the year. The two-sided pictures of the recipients and copies of their awards help the command recognize exceptional soldiers, reinforcing the idea that rewarding excellence in soldiering is an Army tradition. Pictures and artifacts of recent operations and exercises fill an adjacent case, demonstrating ongoing group contributions to combatant commanders worldwide.

Three-dimensional displays are featured along the walls in several areas of the RDFAC to break up the two-dimensional array of photos and posters. Helmets, canteens, bugles, and even wagon wheels are displayed on shelves and in niches throughout the building. Several large wall-mounted display cases containing authentic period uniforms with vignettes are particularly popular with diners. These uniforms range from the Civil War to Operation Desert Storm. A complete diving suit from the group's engineer dive company and a Middle Eastern sailing vessel known as a dhow (frequently seen by 7th Group mariners during U.S. Central Command deployments) give that portion of the RDFAC a more contemporary flavor.

Each of the four dining rooms is broken down into major periods, which are prominently named above the timeline. They are the—

- Civil War.
- Spanish-American War.
- World War I.
- World War II.
- Korean War.
- Vietnam War.
- Operations Desert Shield and Storm.
- Recent contingency operations.

Space is available along two long exit hallways for new unit displays and history. Special displays and menus are used for ethnic observances to highlight the many diverse groups that constitute our Nation and who have served in the defense of the United States. Temporary exhibits featuring Buffalo Soldiers, Asian-American soldiers of the 442d Regimental Combat Team, and Medal of Honor winners pique the diners' interest.

Immediately after entering the RDFAC, diners pass through either a soldiers of excellence display area or a Women's Army Corps (WAC) hall, an area set aside to recognize the contributions of early female soldiers in the U.S. Army.

Diners can choose from a variety of seating options.

Since the RDFAC's grand opening, unsolicited feedback from diners has been uniformly positive. Efforts of the Marine Corps and Air Force to copy this approach prove the viability and impact of using history to enhance service pride and promote military values. The RDFAC has become a magnet for all kinds of visitors. VIPs, foreign officials, Members of Congress, and others have commented positively on the exceptional food quality, broad menu selection, and unique decor.

Regimental history is not simply a pallid shadow of the unit's past or something for harassed soldiers to hastily memorize for the promotion board. Instead, it is a rich and vibrant resource for building the combat power of the command. The use of our Army's heritage as a means to instill soldierly virtue is not a novel idea. However, embracing it as the central theme for a unit dining facility is an Army first. **ALOG**

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Hydrostatic Testing and Purging of Fuel Tanker Equipment in USAREUR

BY PAUL A. BELL

Preparing hundreds of pieces of fuel tank equipment for deployment by road, rail, barge, and ship from Europe to Southwest Asia for Operation Iraqi Freedom was a significant logistics challenge and an intense learning experience for U.S. Army Europe (USAREUR). The equipment included 5-ton tractors with M967 and M969 5,000-gallon semitrailers; M978 2,500-gallon heavy, expanded mobility tactical trucks; 1,200-gallon tank and pump units; and 600-gallon fuel pods mounted on trailers.

The European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR) has controlled the transport of dangerous goods within European Union countries since 1999. Since the ADR applies only to commercial transport, U.S. military vehicles are exempt from complying with ADR fuel tanker structural standards and system integrity certification requirements.

The German Government enforces ADR requirements on both commercial and German Army fuel tanker vehicles. Since it would be impossible for tactical equipment to comply with commercial standards and still be able to function in a tactical or combat environment, Germany developed the Gefahrgutverordnung Strasse und Eisenbahn (GGVSE) (the Regulation for Dangerous Goods, Road and Rail), which is based on the ADR and applies to German military vehicles. The Status of Forces Agreement between the United States and Germany requires U.S. forces in Germany to comply with the GGVSE.

Meeting GGVSE Standards

The GGVSE requires military fuel tanker vehicles and equipment to be hydrostatically tested and certified every 3 years in order to carry fuel on European road and rail systems. The USAREUR and Seventh Army G–4 Maintenance Division has been working with the German Ministry of Defense and the U.S. Army Tank-automotive and Armaments Command (TACOM) to finalize plans for hydrostatically testing and certifying USAREUR fuel tanker vehicles and equipment to meet GGVSE requirements.

Initially, TACOM and German engineers established a bilingual technical engineering package (TEP). Completed in 2002, the TEP identified several engineering differences between U.S. and ADR standards. Using the approved TEP, TACOM began developing prototype compliance kits, or "Euro" compliance kits, for M967- and M969-series 5,000-gallon fuel semitrailers and M978-series 2,500-gallon fuel trucks. Once the plans for testing and certifying the tankers are complete, USAREUR will acquire Euro kits and establish a program to install them and hydrostatically test each tanker for fuel leaks every 3 years as required by the GGVSE.

TACOM program managers do not consider application of the Euro kits to require a modification work order for two reasons. First, application of the kits is limited to USAREUR vehicles, not the Army-wide fleet. Second, the Euro kit does not significantly change the structure of the M967, M969, and M978 fuel tankers. Without a modification work order, USAREUR is obliged to use operations and maintenance, Army (OMA), funds to purchase and install the Euro kits, which cost about $1,675 each and take approximately 40 man-hours to install per fuel tanker. After the Euro kit is installed, the fuel storage tank and related plumbing and components are hydrostatically tested to certify the integrity of the complete system.

Depending on the facility performing the hydrostatic test, purging (removing fumes and residual fuel from the tanker to make it nonhazardous) may be

This hydrostatic test apparatus is used to test Army tankers at Industriewerke Saar GmbH.

required as part of the testing. Currently, two facilities in Germany can perform hydrostatic testing of fuel tankers: Maintenance Activity Mannheim (MAM), General Support Center-Europe, 21st Theater Support Command, and Industriewerke Saar GmbH, a German firm located near Ramstein. The method used by MAM requires purging of the tanks; Industriewerke Saar does not. It is not known at this time if both facilities will be needed to install Euro kits in 222 M967s and M969s and 335 M978s and hydrostatically test them.

TACOM will add a note to applicable fuel tanker technical manuals informing major Army commands worldwide that the Euro compliance kit is an authorized variation only for units located in Germany. Validation of prototype compliance kits and vehicle testing began in the second quarter of fiscal year 2003.

Deployment Lessons Learned

When the 1st Armored Division and the 1st Infantry Division (Mechanized) deployed to Southwest Asia, the International Maritime Dangerous Goods Agreement required both divisions to have their fuel tankers hydrostatically tested before they could deploy their full fuel tanker vehicles from Germany via oceangoing transport. The USAREUR G–4 obtained a waiver to this testing requirement, which was valid through calendar year 2003, from the U.S. Department of Transportation (DOT). The DOT waiver allowed USAREUR units to transport bulk fuel tankers three-quarters full without a current hydrostatic testing certificate, which afforded the transporters greater flexibility in transport load planning. The governments of Belgium, Germany, Italy, and The Netherlands approved the DOT waiver.

V Corps transportation specialists chose to purge most of their deploying bulk fuel tankers in order to maximize ship load-planning flexibility. Ship captains generally insist on carrying hazardous cargo on the weather deck, rather than in the hold below deck. Purging the fuel tankers allowed them to be stowed as inert (nonhazardous) cargo either on the weather deck or below deck.

In USAREUR, MAM was the primary resource for purging and hydrostatically testing bulk fuel tankers. The V Corps' decision to purge most of their fuel tankers created an unscheduled surge requirement for MAM. To meet deployment timelines, MAM began operating 24 hours a day, 7 days a week. Between the beginning of January and the middle of April 2003, MAM purged 611 pieces of fuel-carrying equipment and performed hydrostatic testing on 68 M969 trailers and 50 M978 trucks in support of deployments.

As a result of V Corps' decision to purge most of their fuel tanker equipment, deploying 1st Infantry Division units loaded spare fuel filters and other associated parts in the cabs of their fuel tankers. Storing and shipping these spare parts with the tankers would have given unit maintenance mechanics the ability to easily remove residual fluid left in the fuel tankers after the purging process and install new fuel filters at the seaport of debarkation after the vehicles were unloaded from the ship. However, when the fuel tankers were processed at a European seaport of embarkation, the Military Traffic Management Command (MTMC) required the filters and associated parts to be removed from the cabs of the fuel tankers and placed in a separate shipping container. [MTMC recently was renamed the Military Surface Deployment and Distribution Command.] Unfortunately, the shipping container with the filters and parts did not arrive at the port of debarkation in Iskendrun, Turkey, with the fuel tankers. It took a week and a half to locate replacement filters and arrange for their transportation. This problem was eliminated in subsequent deployments through closer and more timely coordination between the USAREUR G–4 and MTMC.

Although USAREUR was able to obtain a waiver from the German Government to deploy fuel tankers without a current hydrostatic certificate, this exemption will not continue indefinitely. USAREUR units are required to comply with the Status of Forces Agreement, changing European transport requirements, and the GGVSE. V Corps units can help themselves to be more in control of their future by developing a local purging capability. Doctrinally, purging fuel tanks is a unit maintenance responsibility.

Army-wide, personnel involved in transportation, hazardous materials, and maintenance should look again at their fuel tanker deployment procedures. As transportation standards evolve to include safe, environmentally sound procedures, the military will have to be prepared to complete missions while meeting these new standards. Army units that plan to deploy with fuel-carrying vehicles need to include purging and hydrostatic testing in their deployment training and planning. **ALOG**

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Every Soldier a Rifleman

by Major David Scott Mann

Although killing the enemy is not their primary mission, combat service support soldiers now face many of the same challenges encountered by their combat arms brethren.

The world watched as a visibly shaken Private First Class Patrick Miller told his Iraqi captors, "I'm here to fix broke stuff . . . I'm told to shoot only if shot at . . . I don't want to kill nobody." Miller was undergoing harsh and illegal interrogation last March after he and the other soldiers in a 507th Maintenance Company convoy lost their way and wandered into a devastating ambush by Iraqi armor and crew-served weapons. When the smoke cleared, nine soldiers from Fort Bliss, Texas, were dead and five were captured.

According to war historian S.L.A. Marshall, only 4 out of 10 World War II veterans fired their weapons at the enemy. In his book, *On Killing: The Psychological Costs of Learning to Kill in War and Society*, Dave Grossman, a retired lieutenant colonel who is a leading authority on the science of killing in combat, states that failing to fire is a universal problem among combat soldiers. He goes on to observe that human beings have an extreme aversion to killing that can only be overcome by tough, realistic training that conditions soldiers to kill instinctively in combat. This kind of training is provided to the combat arms community. However, I do not believe that enough time or emphasis is devoted to training combat service support (CSS) units and personnel for combat.

As the experience of the 507th Maintenance Company demonstrates, the nature of the modern battlefield puts support soldiers much closer to combat action than ever before. Yet, their training continues to be oriented toward providing logistics support, both in peace and war. Department of Defense transformation efforts and the new operational challenges of the Global War on Terrorism demand that CSS units take a fresh look at the balance between training for combat and providing support**.** The enemy will not distinguish between combat arms and CSS soldiers. In fact, the enemy may be more likely to target CSS soldiers. To be able to provide logistics support, CSS soldiers also must be trained to kill in combat.

A good starting point for the CSS community may be to adopt the Marine Corps foundational metaphor, "Every Marine a rifleman." I recently had the opportunity to employ this concept as the commander of a Special Forces support company, and I would like to share what I learned from the experience.

Warfare Has Changed

The Global War on Terrorism is unlike any war the United States has fought before. According to President George W. Bush, "Our enemy is international terrorists and rogue regimes" who are bent on inflicting damage to our country on an apocalyptic scale.

Two 7th Special Forces Group mechanics practice the art and science of close combat.

Adding to this new threat is potential access to weapons of mass destruction by these adversaries. Out of necessity, the United States is beginning to change the way it prosecutes war.

Traditional warfare is based on Clausewitzian attrition and maneuver on a linear battlefield. ("Clausewitzian attrition" refers to victory achieved through destruction of the enemy's assets by superior firepower coming from the outside to the inside, a concept offered by Karl Von Clausewitz, the 19th-century German military theorist and author of *On War.)* The United States no longer faces the Cold War-era Soviet Army, but rather an elusive and lethal enemy that does not adhere to the laws of war. International terrorists clearly understand the U.S. military's might. They know they cannot defeat the United States in a head-on conventional battle, so they employ asymmetric warfare against soft targets. They are an elusive foe that will not stand and fight; yet, they are capable of horrendous atrocities against the U.S. homeland and, as the 507th Maintenance Company's experience illustrates, against the "logistics tail" of the U.S. military.

In the Global War on Terrorism, the battlefield is often blurred. In the past, the contiguous style of warfare defined the combat zone as extending from the rear battle area forward. CSS units faced combat in this environment, but the linear nature of the battlefield allowed leaders to mitigate risk and exposure of CSS personnel and equipment. Where CSS personnel once were exposed to indirect fire and aerial bombing, they now face the asymmetric tactics of a hostile paramilitary force and irregulars posing as friendly civilians. This means that CSS soldiers are much closer to the brutality of close interpersonal violence, dubbed the "wind of hate" by Dave Grossman. In essence, they face a double challenge. In order to perform their primary support mission, CSS soldiers now have to deal with many of the same challenges that combat arms soldiers face, including overcoming the psychological hardships of killing the enemy in combat.

The Tip of the Spear

CSS soldiers are closer to the fight now for several reasons. Recent linear conflicts such as Operation Iraqi Freedom have revealed the never-before-seen speed of U.S. maneuver forces. U.S. combat forces often elected to bypass Iraqi pockets of resistance in order to sustain the tempo of attack. Maintaining this tempo required logistics units to provide support to combat forces by moving through unsecured and fluid areas of operations. While CSS units faced similar logistics challenges in the past, the much greater speed of today's U.S. conventional land forces makes it tougher for support units to keep pace.

Possibly more ominous are the new threats in noncontiguous warfare. As seen in Operation Enduring Freedom, often there is no forward line of own troops in asymmetric warfare. Instead, support forces collocate with combat forces in countries such as Afghanistan, Colombia, and the Philippines. If these base camps are attacked, the support forces share the same danger and the same responsibility for base defense as their combat arms brethren.

Combat units often conduct operations outside of their base camps in nonlinear configurations. This means that support units must move through unsecured areas to bring needed support to combat units pressing the fight against the enemy. This new operational environment demands a higher level of combat performance from our CSS personnel than ever before. Do they have the skills they need to succeed and survive in asymmetric war? Considering the content of most collective CSS training programs, they probably do not.

The CSS Leader's Paradox

While serving as a Quartermaster platoon leader and executive officer, I often was frustrated with the limited individual and collective combat skills training available to personnel in my unit. The biggest challenge was finding the time to solicit senior leader support for training while still providing external support to customer units. While my peers in the Infantry community were empowered, encouraged, and resourced to conduct tough and realistic combat training at the individual and collective levels, my unit did not have much time for combat training because of the frequent demands on it to provide real-world support. Balancing external support requirements with internal combat training needs is the eternal paradox of the CSS leader. How can the Army overcome this challenge and prepare its CSS warriors for the new asymmetric threats that await them?

The key to overcoming this paradox is leadership. Changing or improving the way CSS operations are conducted begins with transforming the way CSS leaders address the new challenges of the noncontiguous battlefield and the asymmetric threats that accompany them. Only leaders can provide the emphasis and resources—mainly time—to permit the necessary individual and collective training of soldiers to kill in combat. Only leaders can balance daily logistics demands with the need to conduct training. Only leaders can discern and prioritize the tactical training that is relevant to the unit's logistics mission.

A couple of days on the qualification range and in the nuclear-biological-chemical "gas chamber" are not enough. The annual "Cortinian Convoy Ambush" (a fictional scenario used at the Joint Readiness Training

Center at Fort Polk, Louisiana, involving the mythical Republic of Cortina) is not enough.

Transformational Leadership

The U.S. Southern Command area of responsibility is an austere and often dangerous place. Special Forces detachments operate in very remote areas and face unpredictable asymmetric threats. Our Special Forces support company provided much of their support. Our unit was made up of cooks, mechanics, and quartermasters with many of the same military occupational specialties found in traditional CSS units. However, the area of operations and the threats the company faced were far from traditional.

As a Special Forces support company commander, I was empowered by my battalion commander to lead the support soldiers in my company in an unorthodox, possibly transformational environment. His words to me were, "I know these guys are support soldiers, but they are working in some tough places, and they need to be able to take care of themselves. I need you to get them ready, . . . but I don't want any support missions dropped. I'll help you with that." He followed up by helping to balance the support and training requirements of the unit, and he ran interference when necessary to allow the unit to train for a real asymmetric threat.

Train As You Fight

Staying focused on the collective CSS mission—providing support—is critical. However, balancing defense requirements with service and support and movement operations in noncontiguous areas of operations is also critical.

I solicited advice from experienced Special Forces soldiers to help me understand what was needed to prepare CSS soldiers to kill in combat. They suggested training programs that foster the aggressive behavior and warrior mentality that are necessary for killing in combat. I began by sending 20 junior noncommissioned officers (NCOs) for hand-to-hand combat training at the same close combat institute that Special Forces soldiers attend.

The results were phenomenal. Cooks and mechanics showed a level of proficiency that was on par with their Special Forces counterparts. They began to display a sense of pride and a swagger that usually are seen only in the combat arms community.

The training was inexpensive, so we soon had enough trained instructors to run our own program. We held company unarmed combat training twice a week during physical training hours, and it was quite a "smoke session." It was a great physical training regimen, and the soldiers loved the experience.

Next, we built on this individual training foundation with events that addressed organic combat weapons skills. We set up a live-fire combat assault lane that required the soldiers to negotiate a grueling obstacle course and engage targets as they moved through the course. Because most of the weapons training CSS soldiers receive is on flat, known-distance ranges with few individual fire and maneuver opportunities, many of our soldiers could not hit a target less than 15 meters away because of erratic breathing and other aspects of mild fatigue. After the combat assault lane training, the soldiers were much more proficient at engaging targets while moving.

The soldiers then attended advanced marksmanship training for pistols and crew-served weapons. Most CSS support junior officers and NCOs receive only limited pistol training, and, when they do qualify, they are not required to pull the pistol from their holsters to engage targets; they fire from the "ready" position.

A support soldier learns basic communications techniques and procedures that will enhance the survivability of his unit on the asymmetric battlefield.

This falls far short of how a pistol is employed in combat. After a few hours of training, most of the CSS soldiers engaged targets with incredible proficiency.

We also incorporated "simunitions" into our training. Paintball-like marker rounds were fired from M16 assault rifles or M9 pistols with subcaliber bolts. Marker ammunition is available through nonstandard ammunition allocation procedures. This training offers an unsurpassed degree of realism and is much more effective than the Multiple Integrated Laser Engagement System. The sharp sting of the marker ammunition dramatically enhances the participants' operant conditioning, which helps them avoid potentially lethal mistakes. The red and blue marker rounds also make it easy to determine friendly and enemy "kills" and fratricide "casualties." Simunition training that is conducted while in convoy formations helps soldiers become proficient at dealing with the extreme difficulties of responding to an ambush while mounted.

Bringing It All Together

After the soldiers' individual readiness skills had improved, a collective training event introduced the soldiers to combat requirements they likely would face while performing their logistics support missions. Introducing stress and fatigue into the scenarios gave the soldiers an opportunity to experience many of the physiological responses common on the battlefield.

Soldiers in a Special Forces support company often are collocated with the units they support in remote firebases in Central and South America. To prepare for such a scenario, the soldiers in our company built a firebase, including trench works and a base defense plan, from the ground up. The unit then set up shop and conducted support operations from the base. To improve their ability to employ fires in support of unit operations, the junior NCOs and officers in the company planned and employed fires ranging from organic mortars and artillery to and close air support.

Special Forces units "attacked" and probed the perimeter throughout the exercise. The soldiers in the support company had to conduct support activities and then stop working long enough to repel an attack using small arms, crew-served weapons, close air support. The culmination of the event was a live-fire exercise that ended with a hand-to-hand fight in the middle of the perimeter.

After the smoke cleared, the soldiers gathered on the bunker for an after-action review. Many of them were in greasy coveralls; others were half dressed because the final event occurred while they were getting a few hours of sleep after coming off their shifts. The cooks smelled of Army chow and gunpowder, a strange combination. But all of them had one thing in common. They had the look of *warriors*. They had been transformed, and they knew it. They understood that they were capable of fighting and winning, even while they provided support to a Special Forces unit.

One of the challenges of such a collective training event is finding a location to set up a support base camp that allows live fire from within the perimeter. We learned that setting up a "piece" of the base camp was sufficient to meet our training objectives. Special Forces units probed and assessed our perimeter before the live fire, which was invaluable. Their expertise in reconnaissance challenged us and kept us on our toes. At the end of the exercise, they provided excellent feedback on the strengths and weaknesses of our defense system.

"Okay, it sounds like great fun, but what were the results?" "How many support missions did you drop in order to run around playing Ranger?" These were but a few of the questions from skeptical peers and leaders. The reality is that we dropped no support missions in the entire 17-month period of my command. In fact, our company increased its support missions by at least 20 percent. We provided support to three Special Forces companies in at least seven countries simultaneously. Unit morale improved noticeably as the soldiers performed their daily missions at home and abroad. We also maintained an equipment readiness rate that was always well over 90 percent. How? Leadership. My battalion commander understood the threat that the men in the support company faced when they deployed into theater with his Green Berets. He emphasized combat readiness to his support soldiers, and their response was outstanding.

The support company soldiers subsequently accompanied Special Forces teams throughout the U.S. Southern Command, including Colombia, and received only accolades from Special Forces leaders on how technically and tactically proficient they were in the most trying and often hostile circumstances. Every soldier in the company had become a rifleman. **ALOG**

Major David Scott Mann is a company commander in the 7th Special Forces Group (Airborne) at Fort Bragg, North Carolina. He has a bachelor's degree in political science from the University of Central Arkansas and a master's degree in military operational art and science from the Air Command and Staff College. He is also a recent graduate of the Joint Targeting School at Dam Neck, Virginia.

ALOG NEWS

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and will help ensure the best support for combatant commanders and troops.

Consolidation of authority under one process owner should—

- Eliminate existing seams between current distribution processes.
- Standardize the policies, vision, and performance goals in DOD's supply chain.
- Develop interoperable information technology solutions and enhance total asset visibility to distribution customers.
- Institutionalize sustainment planning in contingency processes.
- Streamline distribution accountability under a single combatant commander (by providing one accountable person for the other commanders to contact for their distribution needs).

According to Air Force General John W. Handy, USTRANSCOM Commander, a transformation of the Defense distribution system will strengthen the Nation's warfighting capabilities and save money. "Looking at the commercial market, everyone realizes that managing suppliers and the entire supply chain is big business. But the DOD supply chain, with a multitude of ways to get to a theater of operations, is still a very complicated network, a spider web of activity. Ownership of this process will provide clarity to both the distribution and sustainment systems," said Handy.

NEW NAME FOR MTMC REFLECTS WARFIGHTER SUPPORT ROLE

The Military Traffic Management Command has a new name—the Military Surface Deployment and Distribution Command (SDDC).

SDDC officials believe the new name better reflects the command's critical role in deploying the force and its emphasis on end-to-end distribution operations in support of warfighters.

"It's more than just a name change," said Major General Ann E. Dunwoody, Commanding General of SDDC. "Over time, we have literally outgrown our name. Our new name change to the Surface Deployment and Distribution Command better represents our number one priority and renewed focus—to support the warfighter through deployment, sustainment, and redeployment."

The name change, which was effective on 1 January, follows closely the U.S. Transportation Command's (USTRANSCOM's) designation as the Department of Defense Joint Distribution Process Owner (see story that begins on page 1). SDDC will be a key enabler of a new and improved joint distribution system envisioned by USTRANSCOM.

"Traffic management will continue to be a key component of what we do, but it is only one of the tools in our arsenal," said Dunwoody. "Our value to the warfighter resides in our ability to deliver capability and sustainment on time and ensure that we can provide timely, accurate in-transit visibility and total asset visibility of all surface equipment and supplies at all times."

As a part of its expanded role, SDDC handles all surface movement requirements. "We work with Military Sealift Command to determine whether our existing ocean liner contracts meet the requirement or whether Military Sealift Command needs to charter or activate a vessel," observed Dunwoody. "All that background activity in reaching the best solution set would be transparent to the customer who now has one entity to hold accountable."

As a part of its expanding role, SDDC will provide a single face to the field for all surface movement requirements. "Rather than have customers send requirements to two USTRANSCOM component commands for surface lift, we worked hand-in-hand with our great partners at the Military Sealift Command to streamline the process and funnel all the requirements through SDDC," said Dunwoody. Multicomponent and multifunctional groups that fully integrate Reserve component units into [SDDC] active-duty units are being developed with the support of Lieutenant General James R. Helmly, Chief, Army Reserve, she said.

STRYKERS HEAD FOR FIRST OPERATIONAL ASSIGNMENT

Last November, the Stryker combat vehicles assigned to the Army's first Stryker Brigade Combat Team (SBCT), the 3d Brigade, 2d Infantry Division, at Fort Lewis, Washington, headed for their first operational assignment—Operation Iraqi Freedom.

The 833d Transportation Battalion, Military Traffic Management Command (recently renamed the Military Surface Deployment and Distribution

Command), and the Army Reserve's 1192d Transportation Terminal Brigade began loading the Strykers on 9 October at the port of Tacoma, Washington. The equipment was loaded on board two Military Sealift Command vessels, the *USNS Sisler* and the *USNS Shughart*, both large, medium-speed, roll-on-roll-off vessels. In mid-October, the vessels departed for a port in the U.S.Central Command area of responsibility. SBCT soldiers followed in November by air.

The move is the biggest involving Fort Lewis troops since 1966 and the biggest movement of military cargoes at the port of Tacoma since Operation Desert Shield in 1990. The cargo moved included more than 1,300 vehicles that occupied approximately 400,000 square feet of cargo space. Approximately 300 of the vehicles were Strykers.

"This is an historic move," said Lieutenant Colonel Darren Zimmer, SBCT commander. "This is the first use of the Stryker vehicles in an active combat environment. My unit is honored to have such a significant role in support of both a changing Army and Operation Iraqi Freedom."

AMC CREATES THREE NEW ORGANIZATIONS

A 9 October ceremony marked the stand-up of the Army Research, Development and Engineering Command (RDECOM) (Provisional), the Chemical Materials Agency (Provisional), and the Guardian Brigade, all at Aberdeen Proving Ground, Maryland. The ceremony also signaled the stand-down of the Army Soldier and Biological Chemical Command (SBCCOM).

"We are celebrating the transformation of three organizations designed to keep our Army relevant," said General Paul J. Kern, Commander of the Army Materiel Command (AMC).

RDECOM is a major subordinate command of AMC. Its primary mission is to develop and field technologies to sustain the Army as the premier land force in the world. RDECOM assumes control of the research, development, and engineering centers of other AMC major subordinate commands, the Army Materiel Systems Analysis Activity, the Army Research Laboratory, the Army Edgewood Chemical Biological Center, and the Systems of System Integration. In addition, the Natick Soldier Center at the Army Soldier Systems Center in Natick, Massachusetts, now operates as an element of RDECOM.

The Chemical Materials Agency (CMA) is responsible for the demilitarization and storage functions formerly performed by SBCCOM and the Chemical Demilitarization Program. CMA was established as part of a reorganization directed by Secretary of the Army Thomas E. White that gave the Assistant Secretary of the Army for Acquisition, Logistics, and Technology overall responsibility for chemical demilitarization for the Army.

"The goal of this agency is to put itself out of business," Kern said, referring to the destruction of the aging chemical stockpile underway at eight U.S. stockpile sites.

The Guardian Brigade is a full-spectrum, deployable, operational-level command created to manage the Army's chemical, biological, radiological, nuclear, and high-yield explosive response assets. The new organization incorporates the missions and functions of the former Technical Escort Unit, which responded to Department of Defense and other Federal agency requests for immediate identification and mitigation of chemical and biological warfare material for 60 years.

"The creation of these three new organizations is part of the transformation of the Army," said Kern. "If all of our transformation initiatives come together as smoothly as [these three], the Army's future will be very bright."

NEW MORTUARY FACILITY OPENS AT DOVER

The Charles C. Carson Center for Mortuary Affairs opened at Dover Air Force Base, Delaware, in October, replacing a 48-year-old facility. It is the only Department of Defense mortuary in the continental United States. The 70,000-square-foot, state-of-the-art facility cost $30 million to construct.

The new facility includes features designed to help employees relieve the stress of their difficult jobs, such as a reflecting pool in the foyer and a break area with computer labs. New computers at the facility tie into the Services Casualty System to obtain data on service members.

The Dover mortuary prepares the remains of fallen U.S. service members, Government officials, and their families stationed in Europe and Southwest Asia.

NATO RESPONSE FORCE ESTABLISHED

A ceremony held in Brunssum, The Netherlands, on 15 October marked the official stand-up of the new North Atlantic Treaty Organization (NATO) Response Force (NRF).

The NRF is a joint-service force that will be capable of deploying outside of NATO's traditional area of operations within 5 days and sustaining itself for 30 days while combating international terrorism and other threats to security and stability.

British General Sir Jack Deverell, Commander of Allied Forces North, will oversee the first two NRF rotations. According to Deverell, the establishment of the NRF marks "a major step forward in creating the expeditionary capability [that is] essential in countering the globalization of new threats to peace and security."

The NRF is expected to attain full operational capability in the fall of 2006 with approximately 21,000 air, land, and sea troops.

An Army sergeant from Detachment 1, 757th Transportation Battalion (Railway), and an Iraqi rail worker adjust a rail at the Port of Umm Qasr, Iraq. The battalion is an Army Reserve unit headquartered in Milwaukee, Wisconsin. The detachment originally was deployed as an advance party for the full battalion. However, the rest of the battalion was not deployed, and the detachment was attached to a British unit, the 17th Port and Maritime Regiment. The two units fixed locomotives and repaired railroad tracks between the old and new ports at Umm Qasr, moved the first humanitarian aid shipment in Iraq, and restored operations on the main rail line from Umm Qasr to Basra.

HUMAN RESOURCES COMMAND NAMED

The merger of the Total Army Personnel Command (PERSCOM) and the Army Reserve Personnel Command (AR–PERSCOM) announced in the July–August issue of *Army Logistician* became official in October with the establishment of the Army Human Resources Command.

The command's Web page at https://www.hrc.army.mil has links to active Army and Army Reserve promotion and school information lists, the My2xCitizen portal, Army Knowledge Online, the Assignment Satisfaction Key, and the Official Military Personnel File page.

ARMY TESTS PUMP TO MAKE WATER FROM EXHAUST

Soldiers soon may be able to recover drinking water from their vehicles' exhaust. The Army is testing a system that will recover the water that is present in fuel by combining oxygen and hydrogen in vehicle exhaust to produce water.

The water recovery system consists of regenerative heat exchangers, evaporative coolers, filters, and pumps. To produce water, the vehicle exhaust passes through the heat exchangers and coolers that cool it to the condensation point. A purification process then makes the water drinkable. The system will produce about 1 gallon of water for every 2 gallons of fuel consumed by the vehicle. It will take about an hour to produce a gallon of water.

The system is designed to be set up on each side of the vehicle, with the condensation taking place on one side and the water treatment on the other. A sensor inside the vehicle will indicate when the water purification filters need replacing. The filters are expected to produce 150 gallons of water before they need replacing.

The system will cost approximately $25,000 per vehicle. The first units likely to have the system on their vehicles are those that need to stay self-sufficient, such as Special Forces units. A prototype of the system is being built for the Future Combat Systems.

Yuma Proving Ground in Arizona will be field-testing the system this year.

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