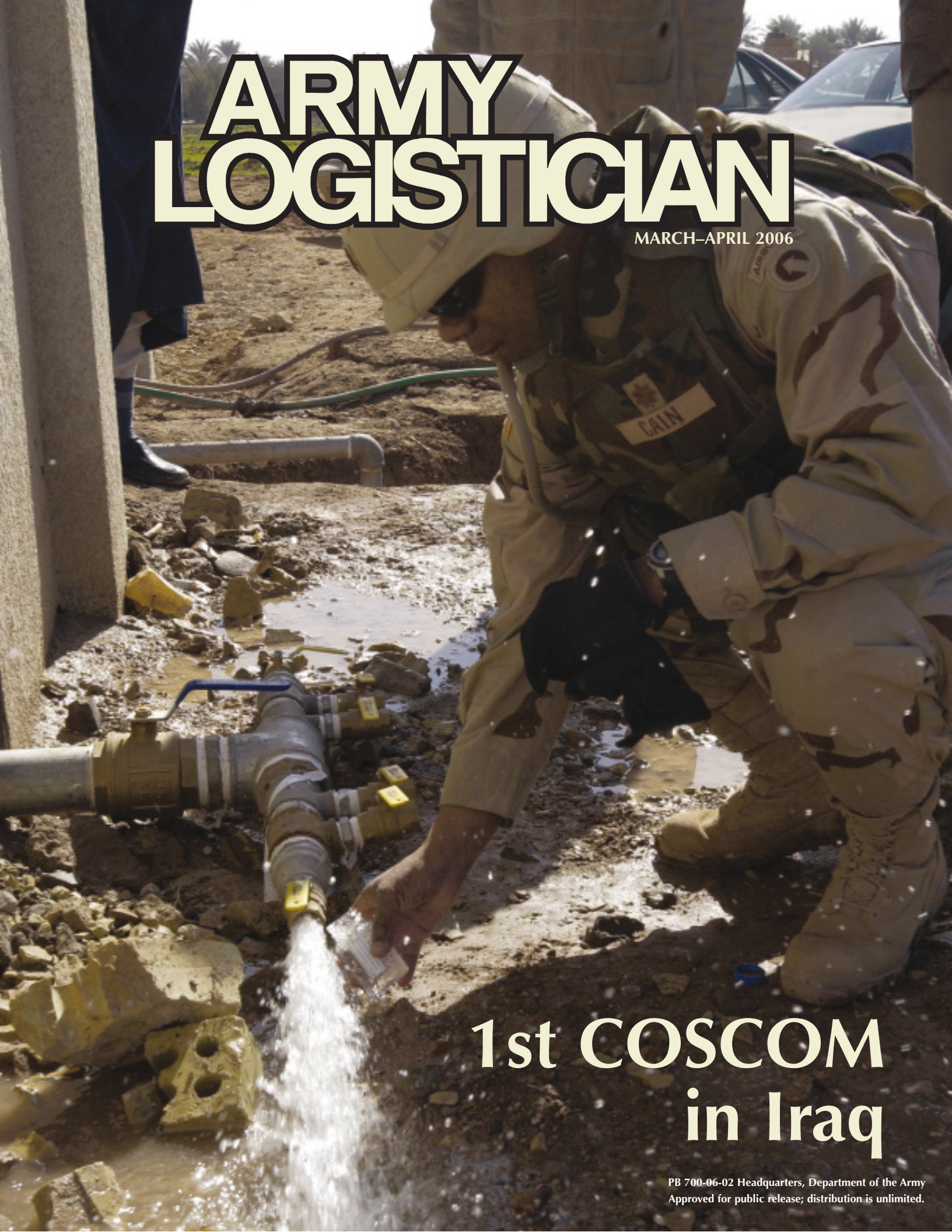

# ARMY LOGISTICIAN

MARCH–APRIL 2006

## 1st COSCOM in Iraq

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**Cover:** The 1st Corps Support Command (COSCOM) from Fort Bragg, North Carolina, provided logistics support for the Multinational Corps-Iraq during Operation Iraqi Freedom (OIF) 04–06. On the cover, a 1st COSCOM Soldier takes a sample from a water pump that provides water for a small village near Logistics Support Area Anaconda in Iraq. The sample will be used to determine if the water is safe enough to drink or if the Army will have to purify it before it can be consumed. Articles about the 1st COSCOM's experiences and lessons learned in OIF 04–06 can be found on pages 3, 9, and 12.



This medium is approved for the official dissemination of material designed to keep individuals within the Army knowledgeable of current and emerging developments within their areas of expertise for the purpose of enhancing their professional development.

By Order of the Secretary of the Army:

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General, United States Army
Chief of Staff

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REPLY TO
ATTENTION OF:

December 5, 2005

Dear *Army Logistician* Readers:

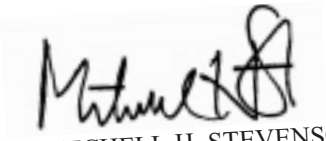
When I assumed command of the US Army Combined Arms Support Command and Fort Lee last October, I was delighted to accept the collateral duty as Chairman of the Board of Directors for *Army Logistician*. I am a past *Army Logistician* author, so I welcome the opportunity to support and promote this excellent publication.

Today's logisticians must be prepared, more than ever before, to support both traditional and nontraditional logistics and sustainment operations at home and on the battlefield. However, their responsibility does not end there. Logisticians must stay abreast of what is happening in Army and joint logistics and share information and insights about logistics training and innovative and agile operational accomplishments. *Army Logistician* provides an excellent forum for doing just that.

Logisticians who are willing to share their experiences and knowledge with others are the primary source of the articles that appear in *Army Logistician*. If you are a Soldier, an Army or Defense civilian, or a contractor with a story to tell or information that would be of interest to fellow logisticians, you can depend on the staff of *Army Logistician* to help you turn your story or information into a quality article.

If you would like to comment on an article you read in the magazine, write to *Army Logistician*'s editor. I guarantee that you will receive a personal reply. When appropriate, your letter will be published in the magazine's "Log Notes" section for the benefit of other readers. Don't be just a reader—be a participant!

Additional information, as well as copies of back issues of *Army Logistician,* are available on the Web at www.almc.army.mil/alog.



MITCHELL H. STEVENSON
Major General, US Army
Commanding

# Transitioning to Support the Future Force

BY LIEUTENANT GENERAL ANN E. DUNWOODY

Before my assignment as the Deputy Chief of Staff, G–4, Department of the Army, I was the Commander of the Army Combined Arms Support Command (CASCOM) and Fort Lee, Virginia. Although I have turned over the CASCOM reins to Major General Mitchell H. Stevenson, I would like to reflect on a few of the more significant accomplishments that the Soldiers and civilians of CASCOM achieved during my tenure. Clearly, without their superb dedication and service, we could not win the fight.

During my time as commander, CASCOM changed considerably. Yet, despite the challenges posed by transformation, the modular force, joint interdependency, and preparing for the potential impacts of the Base Realignment and Closure (BRAC) Commission's recommendations—to name but a few—the CASCOM team continued to support our Nation at war. Our Army moved forward swiftly during this period, and the logistics community kept pace.

Early in 2005, we reorganized the CASCOM headquarters to better serve our customers, align us more closely with the Army Training and Doctrine Command (TRADOC), and move toward a multifunctionally focused organization. The reorganization strengthened our logistics focus and supported better command and control across the doctrine, organizations, training, materiel, leadership and education, personnel, and facilities spectrum. The reorganization was a success and was approved by the Department of the Army in June 2005. More important, it postured CASCOM for the upcoming challenges of BRAC.

BRAC is inextricably linked to the transformation effort. Our Secretary of Defense called the 2005 BRAC process an opportunity "to reset our force." We are not only resetting our forces but also posturing them for the future. The Department of Defense is moving to transform the Armed Forces and enhance our ability to fight as a joint force. The Army's evolution into a standardized, modular, brigade-centric force structure, coupled with the Army Force Generation model, will enable the Army to swiftly engage and prevail against adversaries. The recommendations made by the BRAC Commission and approved by the President aligned military organizations, infrastructure, and institutions to better support this modern force. Many of the recommendations centered on the realignment of forces to support the new Modular Army and to synchronize and maximize resources. The Centers of Excellence are one example of that.

With the President's recommendation and the approval of Congress, the logistics community will establish a Logistics Center of Excellence at Fort Lee. What does this really mean? As one of the new TRADOC Centers of Excellence, CASCOM will be better able to synchronize its training and combat developments by consolidating and optimizing resources and capabilities. CASCOM also will consolidate and align its organization to focus on supporting current and emerging requirements for multifunctional logisticians. It will evolve into a support structure that is more capable, efficient, and flexible than ever before.

The Army is focusing its efforts on creating a more agile, lethal, and deployable force. Logisticians across the Army have contributed greatly to the development of many new organizations. CASCOM is supporting this effort through the transformation of all logistics units in the Army. This required the documentation of 36 new modular designs. The new theater sustainment command and sustainment brigade, which will provide the combatant commander with a more flexible and scaleable organization to support the warfight, are critical to the success of the future modular forces and are just two examples of the great things CASCOM accomplished. This was remarkable work and fully in sync with the Joint Capable Modular Force Concept of Support, a concept that leverages joint and strategic partners in the national sustainment base and in a deployed theater of operations.

In an ever-changing world, it is difficult to remain current and relevant. As a result, training developers and instructors need to continue updating courses and programs. The CASCOM team worked closely with sister TRADOC centers and schools to lay the framework for the Noncommissioned Officer Education System Transformation. One success was the development of a multifunctional, integrated Logistics Warrior Exercise to be conducted at Fort A.P. Hill, Virginia. Another example of supporting the Soldiers was CASCOM's development of the Sustainment Portal, which quickly became an integral tool for the logistician in the field.

At the Army Logistics Management College at Fort Lee, we integrated Battle Command Sustainment Support System (BCS3) training and a Distribution Management Exercise into the Combined Logistics Captains Career Course (CLC3). We also refocused the Combat Service Support Precommand Course to increase its relevance in the contemporary operating environment and developed the Logistics Modernization Program Fundamentals and Applications Courses. The development and advancement of new programs and courses represent the CASCOM team's support to the warfighter and Soldier in the field. We need to continue to focus on providing quality, relevant training that will give our Soldiers the skills and knowledge they need to win the fight.

The wars in Iraq and Afghanistan have proven to be difficult and challenging. We have lost Soldiers—sons and daughters who bravely put their lives on the line for our country. Our hearts are saddened by their ultimate sacrifice. As we continue to support our Army, we must be conscious that every Soldier is important and every Soldier needs our professionalism and support. From providing Center for Army Lessons Learned Teams, to developing training support packages, to developing a fix to a system to provide more capability, CASCOM continues to support our Nation at war. I thank all the military and civilian members of the CASCOM team for their support of a world-class Army. Support Starts Here!

*LIEUTENANT GENERAL ANN E. DUNWOODY IS THE DEPUTY CHIEF OF STAFF, G–4, DEPARTMENT OF THE ARMY. SHE SERVED AS COMMANDER, ARMY COMBINED ARMS SUPPORT COMMAND AND FORT LEE, FROM SEPTEMBER 2004 TO OCTOBER 2005.*

# Sustaining the Momentum: The 1st Corps Support Command in Iraq

BY BRIGADIER GENERAL YVES J. FONTAINE AND MAJOR DONALD K. WOLS

Maintaining, equipping, arming, and feeding the forces supported by the 1st Corps Support Command (COSCOM) (Airborne) during Operation Iraqi Freedom (OIF) 3 was an immense job. The COSCOM's mission required detailed plans, careful preparations, enormous amounts of materiel, and the combined talents of thousands of Soldiers, contractors, and Department of Defense civilians. It required that COSCOM personnel realize their full potential obtained through years of training. The success of the 1st COSCOM in accomplishing its mission is proof that, when coupled with focus, personal discipline, ingenuity, and flexibility, our Soldiers have the right tools to fight and win any kind of war, in any place, at any time.

This article describes how logistics support for OIF 3 (which was renamed OIF 04–06) was orchestrated, from the 1st COSCOM's mission and organization to the its conduct of operations broken out by its lines of operation. It includes an assessment of the COSCOM's performance and essential observations. The overarching intent is to enhance logistics support on future combat fronts by providing useful observations based on the 1st COSCOM's experiences during its OIF 04–06 tenure.

## 1st COSCOM Mission and Organization

The 1st COSCOM's mission was twofold: to provide logistics to the Multinational Corps-Iraq (MNC–I) in order to maintain the corps' momentum and to partner with Iraqi logistics forces to develop the Iraqi Army logistics system. To accomplish these missions, the 1st COSCOM was composed of five corps support groups (CSGs), one area support group (ASG), one brigade-sized corps distribution command (CDC), and two brigade combat teams (BCTs), for a total of nine brigade-sized units. The COSCOM consisted of 40 percent Active Army Soldiers, 34 percent Army National Guard Soldiers, 25 percent Army Reserve Soldiers, and, eventually, 1 percent Iraqi National Guard Soldiers. COSCOM personnel totaled close to 18,500 Soldiers at any given time, and up to 25,000 during surge periods, and were based in five geographic logistics hubs. Approximately 9,000 civilian contractors augmented the COSCOM logistics structure in the supply, services, and maintenance fields; they were part of an Iraq-wide civilian logistics support force of more than 30,000 personnel.

The CSGs conducted sustainment operations to support MNC–I. Three CSGs also partnered with three Iraqi motorized transportation regiments. The ASG ran the garrison activities at one of the largest support bases. The two BCTs provided base security and escort-and-security support for over 150 combat logistics patrols (CLPs) per day; these patrols put nearly 2,500 vehicles on the road daily. Altogether, over 4,600 Soldiers were traveling on the roads of Iraq every day in more than 300 gun truck missions.

The 1st COSCOM had quality subordinate leaders across the board and clear objectives before it deployed from its home base at Fort Bragg, North Carolina. Leaders at all levels ensured that subordinates understood how their missions impacted the XVIII Airborne Corps commander's intent before they deployed. All conducted convoy live-fire exercises, rock drills, professional development sessions, Standard Army Management Information Systems (STAMIS) gunnery exercises, and other deployment execution training events to ensure they were ready to accomplish their missions. The COSCOM's culminating event before deployment was the XVIII Airborne Corps mission rehearsal exercise. It involved every subordinate support group commander, including the Army National Guard and Army Reserve commanders. The COSCOM's Battle Command Training Program senior mentors also attended and provided valuable insights throughout our preparations.

To maintain focus on all of the missions the COSCOM received each day and ensure synchronization of combat service support (CSS) in the Iraqi theater, COSCOM leaders prioritized all actions by lines of operation. The lines of operation kept the command focused on the areas that were significant to ensuring its success in providing logistics to MNC–I. A key leader was assigned responsibility for each specific line of operation to ensure effective coordination with adjacent staff, major subordinate commands, and higher headquarters. The COSCOM performed weekly analyses throughout the deployment. The lines of

operation were: provide CSS, protect the force, and train Iraqi security forces (ISF).

## Provide CSS

On an average day, the 1st COSCOM delivered 1.3 million gallons of fuel, produced and issued over 3 million gallons of water, processed hundreds of requests for repair parts, moved 110,000 cases of bottled water and 200,000 meals, and provided materiel management for over 30,000 pieces of equipment—all while keeping its own fleets at or above Army standards. To do this, the COSCOM partnered with the Army Materiel Command (AMC) to leverage the Logistics Civil Augmentation Program (LOGCAP) as part of the logistics support team. Over 20,000 civilian LOGCAP contractors in Iraq certainly enhanced support to the military force. They allowed the COSCOM to increase surge capabilities when necessary and freed military forces to serve in other capacities, such as military training and assistance missions. LOGCAP also provided continuity while forces rotated through deployment cycles.

The COSCOM's leaders quickly realized that the scope of the logistics effort in the complex battlespace demanded that the COSCOM decentralize the execution of support while maintaining a centralized repository agency to capture and synchronize logistics requirements and ensure that COSCOM personnel met the commander's intent. This command and control system was based in the CDC, which was collocated with the COSCOM headquarters. The CDC synchronized logistics support for the entire corps and maintained visibility of all logistics operations and assets throughout Iraq through the 1st COSCOM Fusion Cell. (See related article on page 12).

The 1st COSCOM Fusion Cell synchronized requirements with distribution capabilities and then tracked commodities to their final destinations. The cell consisted of class I (subsistence), II (clothing and individual equipment), III (petroleum, oils, and lubricants), IV (construction and barrier materials), and V (ammunition) commodity managers, the Movement Control Battalion's Operations (S–3) Section, and a brigade tactical command post that linked convoy escorts to the CLPs moving the commodities.

The support started with the daily receipt of the major subordinate commands' logistics status reports. These produced support requirements, which were translated into distribution requirements by the commodity managers. The distribution requirements were integrated into the MNC–I movement control program, which locked CLPs into a 48-hour movement schedule. The movement control program was approved through MNC–I fragmentary orders each day. The Fusion Cell's Highway Traffic Division tracked the CLPs to their final destinations through the Movement Tracking System (MTS), Battle Command Sustainment Support System (BCS3), Deployment Asset Visibility System (DAVS), and Blue Force Tracker (BFT). The CDC also placed liaison officers and distribution management teams in each major unit throughout the theater to ensure the daily synchronization of commodity distribution.

## Protect the Force

Concurrently with setting up the CSS structure for successful operations, the 1st COSCOM established efficient and effective standards and conditions to protect its forces, both on and off the forward operating bases (FOBs). The COSCOM understood the two main threats to its Soldiers to be indirect fires into secure bases and the improvised explosive device (IED) variants encountered on the roads.

Within secure bases, technology and techniques were used to negate or mitigate threat effects. Basic FOB force protection actions included emplacing sandbags and concrete barriers around all nonhardened structures, such as living areas, post exchanges, dining facilities, entry-control points, and work areas. The COSCOM posted guards, procured and emplaced the most recent surveillance and explosive detection technologies, and established security procedures for personnel working at the entrances to all high-occupancy areas.

The premier force protection effort was the establishment of a Logistics Support Area Joint Defense Operations Center (JDOC). The JDOC synchronized the force protection activities of the Air Force and other operational aviation and security elements, tenant base defense and external security elements, the base emergency response system, and a joint intelligence center. It was commanded by the commander of the Army BCT at the LSA, had an Air Force deputy commander, and was jointly manned. The JDOC was outfitted with the most up-to-date technology for predicting, detecting, surveying, and responding to attacks or other emergency situations. The COSCOM also used a base-wide alarm system and communications infrastructure to alert all personnel in the event of an attack.

For forces leaving secure FOBs, the most common and dangerous threat—the IED—was countered by an aggressive up-armoring program, which was resourced through AMC's Field Support Brigade-Iraq (AFSB–I), and by continual assessments and modifications of the tactics, techniques, and procedures (TTPs) used by escort units. One of the major techniques used to ensure security was to vary the escort-to-CLP composition to account for increased or decreased threat possibilities.

By enforcing force protection standards and procedures both on and off the FOBs, the COSCOM

experienced a marked improvement in Soldier morale. The command also ensured that its Soldiers had everything they required to execute their missions safely while living and working on FOBs. Housing, recreation, food, mail, and communications were all available within the confines of a secure area. Soldiers were able to call, email, and write their families regularly, which was a tremendous advantage. As a result, their morale remained high and their health and welfare strong.

## Train ISF

One of the keys to a successful logistics operation for any army is the ability to independently move supplies from where they are stored to where they are needed in an efficient and reliable manner. With this in mind, it was critical to ensure that the Iraqi Army became proficient in warehousing and transportation operations. It was equally important for us to design a training program for the Iraqi soldiers and track their progress carefully. Three CSGs of the 1st COSCOM partnered with three Iraqi motorized transportation regiments, the Iraqi National Supply Depot, and two regional base support units.

The COSCOM devised a training program according to the basic Army Training and Evaluation Plan (ARTEP) standards. Training began with developing and assessing a mission-essential task list (METL) and identifying supporting missions and tasks. After this was achieved, the command began individual and leader training and then proceeded to collective unit training. The standard crawl-walk-run method was used to build Iraqi confidence and graduate soldiers and units that could support operations for Iraqi Army divisions. The standards were clear and well documented, so they could easily be picked up and improved by any U.S. Army unit during its rotation cycle in theater. During the COSCOM's year, it saw the three Iraqi motorized transportation regiments become capable of independently supporting their divisions.

## Assessment Summary

An assessment of the 1st COSCOM's operations reveals two major points. First, the command successfully provided logistics for MNC–I to maintain its momentum. Second, it successfully partnered with Iraqi logistics forces and helped them become proficient at providing logistics support to their army. Three motorized transportation regiments are now operating independently, and the regional base support units and the National Supply Depot have started to provide support to Iraqi forces in their areas.

The command's success can be attributed to dedicated Soldiers and civilian contractors who took pride in providing superior support. The Soldiers were magnificent; they did a great job. The Army's leadership continued to support us with the funding and resources needed to undertake numerous initiatives, from vehicle add-on-armor upgrades, to the continued use of DAVS, to base defense.

**The 1st COSCOM provided a wide range of support from November 2004 through November 2005—**
**• Serviced an average of 25 locations throughout Iraq.**
**• Completed over 44,000 convoys since December 2004 transfer of authority, which equates to over 750,000 trucks performing convoy operations.**
**• Moved more than 350,000 Soldiers.**
**• Completed over 3,000 up-armor installations.**
**• Drove almost 29 million miles, equivalent to driving to the moon and back over 60 times!**
**• Transported over 8 million tons of equipment and goods.**
**• Transported over 442 million gallons of fuel.**
**• Served over 73 million meals.**
**• Maintained a readiness rate of better than 87 percent.**
**• Trained nearly 2,500 Iraqi transporters.**

The 1st COSCOM, like other major support commands, also found opportunities to enhance the lives of the Iraqi people living around us. It provided oversight to reconstruction efforts that were extremely productive. These efforts included construction of over 24 water filtration systems, which provide clean water to over 20,000 Iraqi citizens; distribution of humanitarian aid packages, containing such items as clothing, school supplies, hygiene items, and toys, to over 18,000 Iraqis; and funding for the construction of three new health clinics, 16 new or renovated schools, and 65 kilometers of road projects throughout our area of responsibility.

## Essential Observations

What follows are some specific observations resulting from the 1st COSCOM's experience in Iraq that could help guide other units. Some are new techniques, and some are simply a validation of old techniques that still work. Some the command did from the start, and others were learned on the go. The bottom line is that the Army's equipment, training philosophy, and programs are on target and prepare leaders and Soldiers to fight and win wars. The Army has all the skills it needs to be successful, as long as those skills are constantly exercised in tough and realistic venues.

## Distribution Management

***Gain battlefield in-transit visibility (ITV)***. Knowing where key commodities are as they transit a complex battlefield is a combat multiplier. Attaining such knowledge requires a closed-loop supply chain management process that links strategic-level systems and enablers to the tactical-level warfighter. It takes a synchronized and resourced ITV system, as well as Soldiers and movement control teams (MCTs) that are trained on proper use of the systems, to make ITV happen 24 hours a day, 7 days a week. MCTs are the center of gravity in executing the distribution plan. Ensure that they are equipped and trained to provide visibility and movements command and control.

***Establish a fusion cell***. The need to gain a logistics common operating picture resulted in the creation of a fusion cell. This cell integrated commodity managers, a BCT tactical assessment cell, and a transportation integration cell (the S–3 section of a movement control battalion). All were committed to synchronizing requirements with distribution assets.

***Use BCS3 as the baseline system***. CSS units are expected to have total asset visibility within the distribution network. However, many stovepipe systems do not provide all of the required information or processes. The 1st COSCOM used BCS3 as its baseline system. It then embedded an automated transportation movement request (TMR) system and tied it to MTS and DAVS to gain real-time visibility of CLP movements. The COSCOM used radio frequency identification tags and a fixed-site interrogator system to gain visibility of the contents of a shipment, MTS to track the truck carrying that shipment, and DAVS to query the items the truck and CLP were carrying. All these actions were visible on BCS3.

## CSS Readiness

***Readiness is anticipation and responsiveness***. Logistics systems are designed to give the user the ability to anticipate force requirements so he can place capabilities where the requirements arise. The 1st COSCOM had great success at the COSCOM level by dipping two levels down and capturing data provided at the BCT level; it provided support based on the data. It also was evident that tracking pure fleets did not allow the command to be responsive to emerging requirements on the asymmetrical battlefield.

***Class IX is key***. Allow no class IX (repair parts) to sit for more than 24 hours. With 20 distribution hubs stretched across Iraq (both air and ground hubs), a movement baseline is needed to keep commodities flowing. This is especially true of class IX, which is a key ingredient to maintaining combat readiness. In coordination with the U.S. Central Command (CENTCOM) J–4, the CENTCOM Deployment Distribution Operations Center, the U.S. Transportation Command, and others, the 1st COSCOM spanned the vast area of operations by opening additional airfields across Iraq closer to the FOBs they supported. The Air Mobility Command flew class IX parts directly from the continental United States, which decreased customer wait time and the number of CLPs traveling through hot zones.

***Periodically recheck supply support activity (SSA) stocks.*** Because the 1st COSCOM found constant shortages in high-demand parts, it established SSA authorized stockage list review boards and added the appropriate line items to improve fleet readiness. It was essential that it maintained the right parts based on use and historical data. For example, because of the impact that shortages of tracks had on fleet readiness during the summer of 2004, the command identified and pre-positioned tracks for M1 Abrams tanks, M2/3 Bradley fighting vehicles, and M88 recovery vehicles in anticipation of surge requirements in the summer of 2005.

***Team with AMC***. Early on, the COSCOM established a close partnership with AMC's AFSB–I, thereby linking AMC resources with the single logistics commander's support requirements. This close relationship was critical in synchronizing new equipment fielding, off-the-shelf technology, and support from program managers, LOGCAP, and logistics assistance representatives (LARs) and offices (LAOs).

## Training ISF

***Soldiers are the same***. By establishing partnerships with equivalent Iraqi units (a U.S. company partnered with an Iraqi company, a U.S. battalion commander partnered with an Iraqi battalion commander, and so forth), the 1st COSCOM ensured that it could enhance similarities in the profession of arms. Success in training the ISF was a result of giving each U.S. commander the "authority" at his level to provide training, define what support missions the Iraqi unit was capable of executing, and validate the Iraqi unit's readiness level. Iraqi soldiers are professional and want to succeed. The COSCOM imparted the Army's Warrior Ethos to them, and they adopted it.

***U.S. training doctrine works***. The 1st COSCOM used simplified U.S. training processes and methodology (such as METL-based and crawl-walk-run training) to account for differences in equipment. It also established a dedicated ISF support cell at the sustainment brigade and higher levels to bring multifaceted capabilities to the training and to exercise command and control over the Iraqis' progress. This worked in training the Iraqi motorized transportation regiments. The COSCOM trained them to be Iraqi forces, not U.S. forces.

## Force Protection

***Up-armor vehicles***. Protecting Soldiers and convoys across dangerous terrain is the responsibility of every commander. The 1st COSCOM decided that all military vehicles leaving Kuwait or an FOB would be armored. The command steadily improved on this standard by increasing its armor level. All vehicles operating outside of FOBs, including contractor vehicles, must be armored.

***Know the bill that must be paid for force protection***. In an insurgency, a force protection price is paid to maintain unimpeded support. On average, the 1st COSCOM committed 15 percent of its force to base force-protection operations (such as towers, entry-control points, local national escorts, and high-value target protection) and nearly 25 percent of our force to CLP security missions. These percentages varied according to the size of the base and unit, because smaller bases and units had fewer forces from which to draw and therefore extracted a higher cost.

***Maintain a committed force protection cell***. A force protection cell, under the G–3, maintained a "warfighter" focus and concentrated its attention on base defense and CLP operations. This element is one of the more critical "directed telescopes" available to the commander. The cell collected, analyzed, established, and disseminated TTPs and guidance and provided force protection quality assurance and quality control. It constantly analyzed escalation-of-force incidents and IED attack trends and published critical force protection information in command force protection advisories and fragmentary orders.

***Assign a BCT to provide CLP escort security***. To provide security to the large number of support vehicles traveling Iraqi roads, the 1st COSCOM needed a dedicated force protection unit. MNC–I provided the command with a BCT to support this mission. The BCT brought capable command and control and communications assets to manage the 150 CLPs the COSCOM escorted on an average day.

***Establish and manage the gun truck ratio***. The 1st COSCOM established gun truck-to-CLP ratios so that convoys had enough gun trucks to meet the threat, and it capped the total number of vehicles in each CLP. The ratio was based on the ranges of weapon systems and the size of the element that could be commanded and controlled over typical vehicle separation distances. The command modified the ratio depending on the threat. The COSCOM force protection cell constantly reviewed the threat and made adjustments accordingly.

***Maintain a reserve***. The 1st COSCOM maintained and equipped a force it could "flex" to provide additional force protection to CLPs. This allowed the command to support unexpected or surge operations.

## Command and Control

***Emphasize situational awareness***. A commander must maintain situational awareness at all times. His staff must be focused on providing him with critical information by following the commander's critical information requirements (CCIRs). The commander must empower his staff to provide information as it is received rather than lock them into providing information only through time-constrained briefings. Commanders should help their staffs by continuously emphasizing their CCIRs.

***Define CCIRs***. A commander must be personally involved in defining the essential information that he wants to be made aware of at all times. These CCIRs must be reviewed and updated as the situation changes and all subordinate commanders and staff aware of what the commander wants to be told immediately (his "wake-up criteria").

***Designate liaison officers (LNOs)***. A commander must pick his "best and brightest" to represent him at critical nodes and ensure that they understand his intent. The 1st COSCOM's LNO to MNC–I was a handpicked major who was articulate, intelligent, capable of independent thinking, and, most of all, trusted. If the commander is not hurt a little by losing the immediate presence of the individual selected to be his LNO, he many not have selected the right person. The LNO must have time to correspond directly with the commander and his staff so he can begin working on issues immediately.

***Use "directed telescopes."*** The 1st COSCOM used key individuals and appropriate staff sections as directed telescopes. These subject-matter experts can personally observe and "drill down" into critical procedures in order to report the commander's intent and reaffirm adherence to guidance and standards. During the COSCOM's rotation, they included the inspector general, CSS cells, safety staff, and a force protection cell.

***Institute a command information program***. A commander has to use every tool available to get his message out to secure unity of effort, maintain discipline, and tell the command's story. The 1st COSCOM used the public affairs office, family readiness groups, and the media that connect the Soldier to home. A commanders' personal presence strengthens this communications efforts.

## Leadership

***Maintain a command presence***. "Lead with your eyeballs, not a computer screen." A commander must survey the scene of the action. He should visit units to instill confidence and check adherence to standards. His personal presence allows him to be at the central point at the right time to influence the battlefield.

Half of the 1st COSCOM commander's time was spent away from his headquarters with Soldiers at FOBs. The commander's presence at an event conveys the importance of that event to his warriors.

***Set and sell standards***. The commander and command sergeant major have to establish standards early and get subordinate commanders and command sergeants major to buy into them. Standards are simple and easy to understand ("sound bites") and should be addressed at every meeting with Soldiers and leaders. The 1st COSCOM had the "Blackjack Rules," which defined in easy-to-understand terms what was critical for the command to execute. The Blackjack Rules (see below) gave simple standards that each Soldier could follow. Remember, the "basics" work.

***Concentrate on team building***. The 1st COSCOM built its team early on and included all leaders in its training and gatherings before, during, and after deployment. This included the National Guard and Reserve leaders. The first time the team meets should not be on the battlefield. All commanders in the COSCOM understood the nature of their units under the modular concept and provided the resources to resolve any potential issues. Given the number of companies that rotated in and out, the commander must understand the nature of the units that will be part of his organization. Any issues that units have before they are attached to his command will become his issues, so he should help solve them early on.

***Define a vision and instill a message***. From the beginning, a commander must tell subordinates what is important to him. At every opportunity, he must reemphasize his vision and remain consistent. From the outset, the 1st COSCOM's leaders stated that there goals were to maintain the momentum of the corps and to protect the force. The leaders talked about these goals at every opportunity and promulgated the Warrior Ethos throughout the command.

In discussing the success of the 1st COSCOM in OIF 04–06, it is important to acknowledge the personal sacrifices of each Soldier who served. It also is necessary to recognize the families of these Soldiers, who were at home waiting for their loved ones to return. They, and the American people at large, are the Army's backbone in difficult times. Without their support, our Soldiers would not have been able to do the great things they did every day. **ALOG**

**1. Live the Army Warrior Ethos. Place mission first, never accept defeat, never quit, never leave a fallen comrade.**
**2. Treat all with respect and dignity.**
**3. Provide proactive and aggressive support to all.**
**4. Always be prepared for an attack. You have the inherent right to use self-defense.**
**5. Maintain physical fitness. Conduct physical training once a day.**
**6. Maintain your equipment. Perform preventive maintenance checks and services once a day.**
**7. Look like trained, disciplined professionals at all times.**
**8. Implement health and welfare inspection and safety stand-down once a month.**
**9. Know General Order No. 1 (Issued 12 February 2005)**
**10. Know and implement commander's critical information requirements.**

***The Blackjack Rules defined in simple terms the critical standards governing the 1st COSCOM's mission.***

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# 1st COSCOM Total Asset Visibility in Iraq

BY COLONEL MARK W. AKIN

Total asset visibility (TAV) in Iraq is within reach. The current TAV structure focuses on tagging individual pieces of cargo and telling the user the last known location of a piece of cargo. However, the system does not tell the user where that cargo is right now, who has it and where it is going, or who signs for it once it is received. An effective TAV and its component in-transit visibility (ITV) system must be able to answer all of those questions.

With the assistance of the Office of the Deputy Chief of Staff, G–4, Department of the Army, the 1st Corps Support Command (COSCOM) was able to address many of these TAV/ITV issues by integrating the Deployment Asset Visibility System (DAVS) into its TAV/ITV architecture. The integration of DAVS (a commercial off-the-shelf technology) into a TAV/ITV architecture is not a new idea; the effort to do so began more than 2 years ago and has been advocated by three consecutive COSCOM commanders supporting Operation Iraqi Freedom (OIF). Although DAVS addresses many of the TAV shortfalls encountered by the 1st COSCOM, it may not be the Army's final solution for achieving TAV within a theater. What is important to note now is the TAV functionality that DAVS brought to the 1st COSCOM and how it was used in support of OIF 04–06.

## What Is the Current TAV Process for OIF?

Currently, cargo coming from depots in the continental United States (CONUS) is tagged with a military shipping label (MSL) at the depot and aggregated for shipment by routing identifier code (RIC). A RIC designates the location of the supply support activity (SSA) that will service the cargo when it arrives. When the cargo is placed on RIC pure pallets [pallets going only to one RIC], it receives a radio frequency identification (RFID) tag that identifies all items down to the national stock number level (level 6 detail). When the cargo is shipped, it is tracked by its transportation control number (TCN) and RFID tag.

If the cargo moves by air, the Air Force's Global Air Transportation Execution System (GATES) tells the user what TCNs and RFID tags are on every aircraft. When the aircraft lands in Kuwait or Iraq, a fixed-site RFID interrogator reads the tag on the cargo. If the cargo goes to the theater distribution center (TDC) in Kuwait, it is aggregated with other loads destined for the same RIC and put on a truck for onward movement to the unit. Once the cargo arrives at the unit's supporting SSA, it is read by the SSA's fixed-site interrogator and repalletized into unit LOGPAC (logistics package) pushes or picked up by the unit at the SSA.

## What Are the Shortfalls in TAV?

The current TAV process sounds simple, but it can result in loss of visibility of cargo en route to the warfighter. There are several reasons for this loss.

***Lack of standards for tagging and labeling cargo.*** While CONUS depots generally do a good job of labeling and tagging all shipments, SSAs at the tactical level do not. Training tactical SSAs and enforcing standards play a large role in maintaining TAV.

***Lack of common visibility in tracking cargo movements.*** TAV must include a system to make all movements in the corps battlespace visible to the movement control teams (MCTs) at the division and corps levels. That currently is not the case in Iraq. The COSCOM tracks movements using the Movement Tracking System (MTS), which feeds the Battle Command Sustainment Support System (BCS3). That system currently operates on the Unclassified but Sensitive Internet Protocol Router Network (NIPRNet). Divisions in the XVIII Airborne Corps track movements using the Blue Force Tracker system, which operates on the Secure Internet Protocol Router Network (SIPRNet). The result is that no one ever has a true picture of what is moving on the battlefield.

***Lack of connectivity between critical ITV systems.*** At present, the automated architecture at transportation hubs moving cargo into Iraq consists of—

- Fixed-site interrogators, which feed ITV data to the U.S. Army Europe ITV server to update information on the flow of shipments.
- The Transportation Coordinators' Automated Information for Movement System II and TAV/ITV Processing Station (TC–AIMS II/TIPS), which is used to create RFID tags.
- BCS3, which provides a capability for tracking convoys.

The void in the system is the lack of connectivity needed to—

- Produce and send a cargo manifest to the BCS3 server so that it can be linked to an ITV device for tracking.
- Send a manifest to a gaining activity using a Transportation Control and Movement Document (TCMD).
- Create and read a "trip ticket" that MCTs can use to identify convoys. MCTs identify convoys by reading a 2D barcode containing convoy information to pinpoint the convoy's last known location or track status en route. [A "2D" barcode uses a grid of square cells of information rather than a bar of information. The latter is a "1D" barcode.]

***Lack of ITV flexibility to change cargo carriers while en route.*** The ITV system must be able to adjust to

changing conditions on the battlefield by redirecting convoys or modifying their schedules. An example would be a convoy that comes across an improvised explosive device. A module is needed within BCS3 that would allow MCTs to transmit instantly to all stations and convoys where the delay has occurred. This would let all units on the route know that a convoy is delayed, permit follow-on convoys to be rerouted, and allow MCTs to manage convoy routes.

## What Is Needed?

TAV is more than just knowing where cargo is while it is moving. It also must be a complete system that allows all SSAs and transshipment points to use complementary hardware and software that feed the logistics common operating picture (LCOP) with "last tactical mile" visibility—that is, visibility until the cargo is signed for by the receiving unit. What is needed is a system that can aggregate all the RFID tags that arrive at a shipping point (such as the TDC or an SSA), match them with a mode of transport (a specific truck or convoy), track them all the way to the end point, and provide accountability on who receipted the cargo when it arrived. And all of this should be achieved using the current logistics command and control systems wherever possible.

**Task: Gain total asset visibility, to include in-transit visibility, for all cargo moving in Iraq.**
**Implementation plan: Move from current to interim to end-state distribution by summer 2006.**

**Current TAV (to February 2006)**
**CONUS burns MSLs and RFID tags for direct shipments.**
**RFID tags are read by fixed-site readers throughout Iraq.**
**Cargo is tracked individually and aggregated into convoys (Iraq only).**
**Multiple systems are in use (such as Global Transportation Network and GATES).**
**No tracking is available down to unit level.**
**SSA/MCT locations have minimal ability to burn tags.**

**Interim TAV Plan (February to June 2006)**
**DAVS aggregates all cargo into convoy element (Iraq and Kuwait).**
**SARSS upgrade fielding gives all SSAs burn capability.**
**Theater subsistence (class I) and bulk fuel (class IIIB) are tagged at borders.**
**DAVS gives visibility through BCS3 down to units.**
**DAVS and BCS3 are integrated to include passenger manifest, aircraft, inventory.**

**End State TAV Plan (June 2006 and onward)**
**Theater LOGPAC pushes go directly to either FOBs (units) or general support hub (for onward throughput to FOBs).**
**DAVS links cargo to convoy at every transportation point.**
**TAV is from CONUS to customer through BCS3.**
**Cargo is tracked until signed by consignee.**
**DAVS is integrated fully with BCS3 and SARSS.**

**Goal: TAV from materiel release order at depot to receipt at unit.**

***The 1st COSCOM goal this year is to achieve TAV from the materiel release order (MRO) at the depot to receipt of the cargo at the unit. This plan ties the TAV timeline in theater to the timeline for establishing direct delivery from the theater level to individual forward operating bases (FOBs).***

## What Can Be Done?

***Make BSCS3 the common baseline system for tactical ITV.*** For OIF 04–06, the 1st COSCOM pursued a tactical ITV solution using BCS3 as a precursor baseline LCOP system to the next generation of automated logistics systems. The COSCOM incorporated existing, fielded tools to provide tactical data and strategic information, the current logistics posture, and status of critical items en route to the theater and to anticipate unit needs before they reached critical levels.

***Use a system like DAVS (or a similar functionality in the Army's final solution) to track cargo as it moves, and use BCS3 to view movements.*** The 1st COSCOM worked toward a total TAV solution by using the Army RFID tag system and coupling it with DAVS. The COSCOM chose to use DAVS since it already performed most of the functions needed to achieve the command's TAV goals. While many other systems are in use, COSCOM personnel could find none that incorporated all of the functionality needed in one, easy-to-use package.

For OIF 04–06, the COSCOM fielded 18 DAVS systems to use in aggregating cargo in convoy units and allow the commodity managers in the COSCOM Corps Distribution Command "fusion cell" to track cargo as it moves. (For information on the fusion cell, see article on page 12.) Currently, cargo is aggregated using DAVS at the first point within the corps battlespace. Ideally, the aggregation should be done at each step along the way, beginning at the CONUS depot, and modified at each transshipment point. In particular, more comprehensive results could be achieved by deploying more DAVS systems to the theater.

Even with limited DAVS fielding, the COSCOM today is manifesting and maintaining visibility of over 70 percent of its combat logistics patrols (including both cargo and personnel). This is an unprecedented level of situational awareness, gained by using DAVS and BCS3 as an ITV system *and* as a command, control, and communications system. With the fielding of the Standard Army Retail Supply System (SARSS) upgrade that enables SSAs to write RFID tags and the ability of DAVS to aggregate those tags in convoy units, the Fusion Cell has been able to gain ITV from CONUS depot to foxhole.

***Establish standards and enforce RFID tag training.*** If in-theater SSAs are going to tag cargo with the same efficiency as depots, they must be trained and they must ensure that

tagging of all shipments is part of the SSA mission statement and performance criteria. The standards for labeling and putting RFID tags on shipped equipment must be the same at all depots and SSAs throughout CONUS and in the theater.

***Field RFID tag burning (read and write) capability across all SSAs.*** The link between TAV and ITV is the MSL and the RFID tag. The Army currently is fielding an upgrade to SARSS across the corps that will allow all the SSAs in Iraq to write data to RF tags. Their tags will be similar to the tags arriving on cargo from CONUS depots.

***Use the types of functionality displayed in DAVS (or a future successor) to further refine corps and theater TAV processes.*** The TAV functionalities incorporated into the 1st COSCOM TAV/ITV architecture through DAVS have great merit. These same functionalities need to reside in the final Army solution for gaining TAV from the national provider to the warfighter. They include the ability to—

- Create a convoy manifest in one of four ways: by collecting data from RFID tags as convoys pass or as a Soldier walks down the convoy line; by scanning MSL or TCN barcodes and adding the data to the manifest; by manually entering MSLs or TCNs; or by scanning the common access cards of personnel and using the data to produce a convoy manifest of cargo and personnel.
- Transmit the collected convoy-manifest message (using an Iridium or other satellite-based modem) to the DAVS Server and Message Router (DSMR). This will facilitate query options and pinpoint an item's last known location or en route status. Creating a free-text message similar to a standard email will allow the user to enter attachments to furnish an automated TCMD to the gaining activity.
- Send a transportation movement request from a remote MCT to the COSCOM, and send the approved trip ticket back to the MCT over a DAVS link. MCTs will be able to read a trip ticket that a DAVS-type system or BCS3 has created, and convoys and cargo will be marshaled by reading a 2D barcode containing convoy information. The MCT will transmit the data to BCS3 and ITV servers and create a free-text message that provides the movement control battalion with a positive inbound clearance (PIC) for validating and tracking convoys. This will be an easy, common-sense use of DAVS as a command, control, and communications tool by an MCT in a less mature theater where NIPRNet communications links are unavailable.
- Create an inventory manifest for container, commodity, rail, or port storage facilities. This will be done by having DAVS (or a similar system) interrogate RFID tags, MSLs, and 1D-barcode pallet IDs and transmit the resulting data to the DSMR. The DSMR will automatically create an inventory listing viewable on the DAVS Web site, DAVSWeb, and linked to the Defense Acquisition University's TRANSLOG International Web site, or it will send an inventory manifest message with spreadsheet attachment to any desired email address. The MCTs of the 1st COSCOM routinely scan all storage facilities in Iraq every 12 hours, providing excellent visibility of any potentially stalled or backlogged cargo at any location at any time. This level of situational awareness is unprecedented.
- Create an aircraft cargo and passenger manifest through which DAVS can interrogate all RFID- or MSL-marked pallets; scan military identification cards; and transmit data to the DSMR. The DSMR will automatically create an aircraft manifest listing available on DAVSWEB and linked to the TRANSLOG Web page, or it will send an aircraft manifest message with a spreadsheet attachment to any desired email address. Where this feature presently exists, the 1st COSCOM chose to concentrate its limited DAVS systems on the convoy-manifesting mission. Given additional DAVS equipment (48 systems for Iraq and Kuwait), capabilities could be expanded.
- Deploy a DAVS or similar system to a remote (non-NIPRNet) location and display BCS3 functionality using the low-bandwidth (Iridium satellite) link. Developers of DAVS or the final Army solution need to complete a GATES interface to replicate critical functionality at the austere site. This would be highly desired and would make DAVS (or a similar system) a true BCS3 remote equipment set.
- Use a DAVS handheld interrogator to send a convoy or inventory manifest over MTS. Contractors from ConnectedWireless and Comtech have conducted studies on integrating DAVS with MTS. This is quite achievable and would allow manifesting to take place at any MTS-equipped location.

Significant gains have been made in TAV in the 1st COSCOM's area of responsibility in Iraq over the past year by combining the standing Army RFID system with BCS3, MTS, and the off-the-shelf technology of DAVS. Although DAVS may not be the final Army TAV solution, it has brought the needed TAV functionality to the warfighter now. The utility of this combination has been proven beyond a doubt during combat operations in the Iraqi theater. More complete integration of DAVS (or the future Army solution) with BCS3, to include personnel manifesting and multiple destinations for convoy and aircraft manifests, will only enhance TAV. **ALOG**

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# Distribution Management in the 1st COSCOM

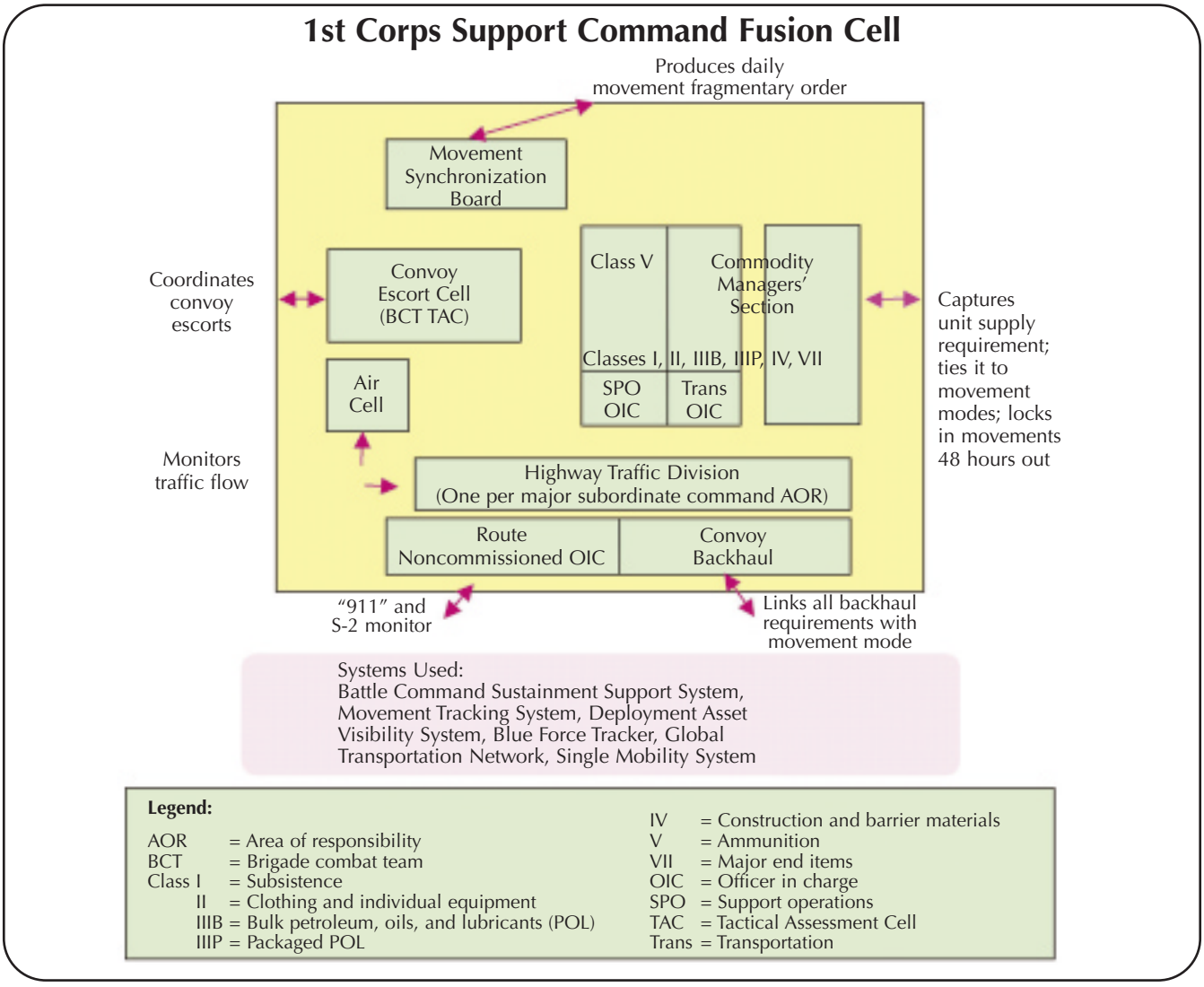
BY COLONEL MARK W. AKIN

The newly created 1st Corps Support Command Fusion Cell managed all classes of supply on the Iraqi battlefield.

Acquiring and maintaining visibility of the flow of commodities throughout a Texas-sized battlespace is a daunting task. However, while deployed to support Operation Iraqi Freedom (OIF), the 1st Corps Support Command (COSCOM) created an Iraq-wide ground and air traffic control station called a "fusion cell" that successfully managed this mammoth task. This article discusses the factors leading to the establishment of the 1st COSCOM Fusion Cell, the processes and enablers that fed it, and, finally, its accomplishments in support of OIF 04–06.

## Background

In August 2003, the commanding general of 1st COSCOM directed that the 2d Corps Materiel Management Center (CMMC) be converted to a corps distribution command (CDC). This transformation centralized all logistics oversight for the XVIII Airborne Corps under one O6 commander who would be responsive to the warfighter. It merged CMMC materiel management functions and the 330th Transportation Battalion movement control operations under one brigade command structure. It also established various




***The 1st COSCOM Fusion Cell included commodity managers and a BCT Tactical Assessment Cell.***

distribution management teams to provide additional materiel management oversight to separate brigade combat teams (BCTs) and corps support groups (CSGs). The CDC's mission was to perform "time-definite" materiel and distribution management of all classes of supply (less class VIII [medical materiel], classified maps, and communications security) and manage maintenance for all assigned and attached XVIII Airborne Corps units.

The 1st COSCOM's overarching objective during its deployment was to sustain the momentum of Multinational Corps-Iraq (MNC–I) combat operations. To do this, the command's logisticians first had to gain accurate and consistent visibility of MNC–I needs, requisition the required commodities, link them to a distribution asset (ground convoy or air transport), synchronize their movement, and track them to their final destination. This sounds like a simple concept, but the actual process is complicated and involves many distribution enablers, Soldiers, and systems that are geared toward supporting the warfighter.

## Achieving Total Asset Visibility

Gaining and maintaining total asset visibility (TAV) on the battlefield requires resourcing and training. TAV also requires a closed-looped supply chain management process that links systems and enablers from the strategic level to the tactical warfighter. It requires a common support system, such as the Battle Command Sustainment Support System (BCS3), which relies on multiple feeder subsystems to gain Logistics Common Operating Picture (LCOP) visibility. Among the subsystems feeding into BCS3 are radio frequency identification (RFID) tags and fixed-site interrogators, which give commodity visibility; the Movement Tracking System (MTS), which tracks the trucks carrying commodities as they move; and the Deployment Asset Visibility System (DAVS), which queries trucks, indicates what they carry, and even identifies the drivers and passengers of the trucks as they move.

A closed-loop supply system allows logisticians to change the destination of en route commodities and disseminate updated intelligence spot reports as events occur. Designing a fusion cell for combat operations was the first step in making the "simple" TAV concept a reality.

## Fusion Cell Processes and Enablers

During preparations for OIF 04–06, the CDC experimented with different types of organizational structures to enhance distribution management at the corps level, finally settling on the 1st COSCOM Fusion Cell.

The 1st COSCOM Fusion Cell consisted of —

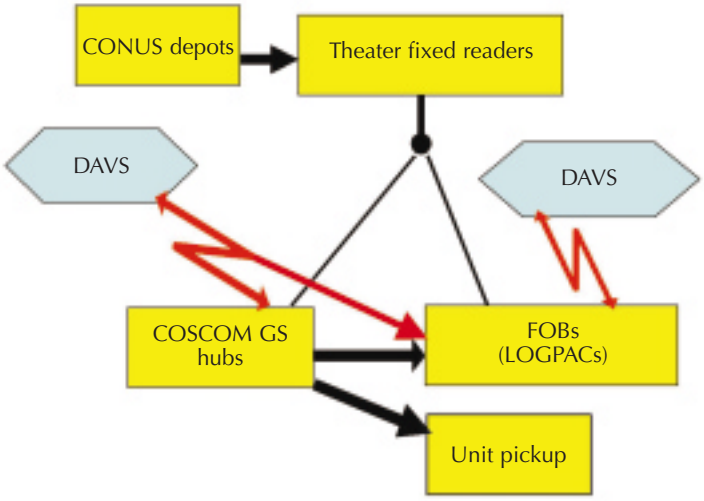
- The CMMC commodity managers of classes I (subsistence), II (clothing and individual equipment), IIIB (bulk petroleum, oils, and lubricants [POL]), IIIP (packaged POL), IV (construction and barrier materials), V (ammunition), and VII (major end items). These managers were charged with tracking and controlling the replenishment of listed stocks at the general support (GS) and direct support (DS) levels across the MNC–I area of operations.
- The 330th Transportation Battalion's Highway Traffic Division, which was charged with controlling the flow of ground and air distribution assets across Iraq. It was directly linked to the 24 movement control teams operating in Iraq and was, in essence, the eyes and ears of the 1st COSCOM Fusion Cell in the daily execution of distribution operations.
- An embedded BCT Tactical Assessment Cell (TAC). In asymmetric warfare, convoys are combat logistics patrols, and, as such, they require careful planning, execution, and leadership. All logistics units require a force-protection element. For a COSCOM (or, in the future modular Army, a deployable command post), a separate but assigned BCT is essential to provide command and control for convoy escorts. Placing a BCT TAC into the 1st COSCOM Fusion Cell permitted the cell to coordinate convoy force protection with the 330th Transportation Battalion's Transportation Integration Cell, which was charged with synchronizing the movement of convoys around the clock. Each convoy consisted of approximately 20 vehicles and included equipment such as stake-and-platform trailers with 20- or 40-foot containers, refrigerated vans, and heavy equipment transporters. Based on the threat level, three to five combat gun trucks were assigned to escort each convoy.
- Key leaders (lieutenant colonels and majors) from both the CDC's Support Operations Section and 330th Transportation Battalion to oversee daily distribution management operations.

Two groups of personnel worked 12-hour shifts in the fusion cell throughout OIF 04–06—approximately 60 personnel on the day shift and 50 on the night shift. The cell was situated under the same roof and less than 50 feet from the 1st COSCOM Joint Tactical Operations Center. The chart on page 14 shows the general layout of the 1st COSCOM Fusion Cell.

During OIF 04–06, the commodity managers received daily brigade-level logistics status reports, munitions reports, POL requests, and high-priority call-ins for selected stocks. They filled the warfighters' requirements by releasing items from stocks in Iraq or Kuwait or by requisitioning them from the appropriate national provider and wholesale systems.

## Total Asset Visibility

- ❑ CONUS burns MSLs /RFID tags for direct shipments
- ❑ RFID tags read by fixed-site readers in Iraq
- ❑ SARSS upgrade fielding gives SSAs RFID tag read/write capability
- ❑ DAVS reads RFID tags, aggregates all cargo into convoy elements, and feeds BCS3
- ❑ DAVS provides ITV through BCS3 while ground and air cargo is en route
- ❑ Fusion Cell tracks cargo movement through BCS3




**Legend:**

| | | | |
|---|---|---|---|
| BCS3 | = Battle Command Sustainment Support System | ITV | = In-transit visibility |
| CONUS | = Continental United States | LOGPACs | = Logistics packages |
| COSCOM | = Corps support command | MSLs | = Military shipping labels |
| DAVS | = Deployment Asset Visibility System | RFID | = Radio frequency identification |
| FOBs | = Forward operating bases | SARSS | = Standard Army Retail Supply System |
| GS | = General support | SSAs | = Supply support activities |

### Movements Synchronization Board

At 1130 each day, a Movements Synchronization Board, co-chaired by the senior CDC Support Operations Officer in charge and the Chief of the Transportation Integration Cell, was convened in the 1st COSCOM Fusion Cell. Participants were able to "lock in" all combat logistics patrols and air movements across Iraq 48 hours in advance of convoy movement and to plan, as far as 96 hours out, commodity movement details down to the individual truck or plane that would be used. Specifically, the commodity managers verified their requirements with the transportation and movement control officers from the 330th Transportation Battalion and with the liaison officers representing each of the CSGs and primary major subordinate commands (MSCs) in the MNC–I.

The Movements Synchronization Board process was captured in an Excel spreadsheet called the Movements Control Program, which was used to synchronize the distribution of commodities. The next iteration of this program should migrate to BCS3 as soon as the command and control guard (used to scan documents before releasing them in multilevel security environments) is approved and in place. This will simplify the process and drastically decrease the man-hours required to keep the theater-level movement program current.

During the Movements Synchronization Board meetings, representatives from 1st COSCOM's 56th BCT aligned gun truck escorts to ground convoys. Not later than 1800 each day, the Movements Control Program became a sanctioned corps-level fragmentary order that locked in movements by theater- or COSCOM-level convoys or CH–47 Chinook helicopter or C–23 Sherpa air transports. When a convoy start time had to be adjusted within the 48-hour window, colonel-to-colonel coordination and approval kept combat service support (CSS) units from being jerked around as they prepared ground convoys for travel on improvised explosive device (IED)-filled highways.

The entire distribution management process was extremely fluid. Continuous movement updates were driven by actions on the battlefield. The noncommissioned officers and enlisted Soldiers of the Highway Traffic Division tracked the daily convoys and flights across Iraq, including those coming into and leaving MNC–I's area of operations.

The automation systems and enablers used by the fusion cell were essential to daily operations. From the beginning, CSS providers were expected to have full visibility of the distribution network. Many stovepipe systems do not provide the information or processes needed. BCS3 was used as the baseline system to

monitor transportation movement requests using MTS and DAVS. DAVS was used to gain real-time visibility of assets moving across the battlefield. Other key systems, such as the Blue Force Tracker and the Single Mobility System, helped provide situational awareness of battlefield impacts.

In its quest for TAV, 1st COSCOM used the Army RFID tag system, coupled with the DAVS (see the chart on page 14.) This was possible because a limited number of DAVS (18 units) had been fielded in Iraq. Today, even with limited fielding, 1st COSCOM is manifesting and has visibility of over 70 percent of its combat logistics patrols (cargo and personnel). This is an unprecedented level of situational awareness using DAVS/BCS3 as an asset visibility and command, control, and communications system. While DAVS may not be the final solution to TAV problems in the theater, it is the only one currently available, so it is being used to do the job in Iraq today.

## Fusion Cell Accomplishments

The functions performed by the 1st COSCOM Fusion Cell were essential to synchronizing and distributing the supplies OIF 04–06 warfighters required. The Fusion Cell—

- Generated daily fragmentary orders, driven by the MNC–I Movements Control Program, that locked all COSCOM and theater convoys and air transports into a 48-hour schedule.
- Synchronized the efficient use of combat logistics patrols under a single command and control element (the 56th BCT).
- Synchronized the efficient use of all COSCOM and theater transportation assets, both those coming into Iraq and those backhauling assets out. During its OIF 04–06 tenure, 1st COSCOM averaged 98-percent use of all backhaul assets, 24 hours a day, 7 days a week.
- Facilitated the expansion of nine Iraqi airfields through which critical repair parts, medical supplies, and passengers were moved, which lessened the number of convoys required to travel on IED-laden Iraqi highways.
- Synchronized MSC force protection, route security, and medical evacuation as ground convoys crossed MSC boundaries.
- Provided up-to-date intelligence on battlefield events and concerns to the convoys before they departed their start points.
- Gave the 1st COSCOM commander the capability to redirect convoys to safe havens or divert to other forward operating bases when enemy attacks or IED encounters shut down the chosen route.

Throughout its OIF 04–06 tenure, the 1st COSCOM Fusion Cell kept MNC–I supplies flowing and maintained readiness, thereby sustaining the momentum of combat operations. The fusion cell routinely synchronized and tracked over 200 convoys a day. As of September 2005, more than 43,245 convoys (734,753 trucks) had "rolled" since the December 2004 transition of authority to 1st COSCOM. During that same time, more than 116,312 pallets of supplies had been moved by air through 9 airfields in Iraq and 2 in Kuwait. The use of air transports meant that 29,078 ground convoys did not have to traverse dangerous Iraqi highways to deliver supplies.

## Looking Ahead

Logisticians supporting future fights must gain and maintain logistics visibility and play an active role in synchronizing the flow of commodities to the warfighter. As resources become scarcer, logisticians must look for innovative ways to be efficient without sacrificing effectiveness. Supporting Soldiers at the tip of the spear is the final determinant of success for CSS warriors.

Although the Army's CSS structure is changing with the establishment of sustainment brigades, deployable command posts, and restructured theater sustainment commands, many of the lessons learned by the 1st COSCOM Fusion Cell are still applicable. The support operations section of the sustainment brigade can use fusion cell-type processes to synchronize BCT distribution support. The deployable command post can establish a fusion cell to link strategic and operational pushes directly to the base support battalion of the BCT, thereby reducing double-handling of commodities at GS hubs. By using a fusion cell, the theater sustainment command can access and "see," through BCS3, the types of commodities its subordinate deployable command posts and sustainment brigades are using to support the warfighter.

The 1st COSCOM Fusion Cell provided the visibility needed to support the fight during OIF 04–06. Warfighters wanted the assurance that they would get what they needed when they needed it. The fusion cell provided that assurance. **ALOG**

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# The New Modular Movement Control Team

BY MAJOR JONATHAN G. CAMERON

**A modular organization will replace the five types of movement control teams now in the field. Each modular team will be able to perform all movement control functions.**

The Army movement control team (MCT) is changing. The current structure of five separate MCTs, each designed for a specialized mission, is being replaced with a "one size fits all" multifunctional, modular team. This initiative will provide the foundation for movement control in the modular Army.

The Army Transportation Corps (TC) has been modular at the battalion and group levels for years. This has allowed TC motor transport, terminal, and movement control battalions the flexibility to task-organize for specific missions and operations. Under the "modular concept," TC units will be even more modular and capable of task-organizing at the company, platoon, detachment, and team levels. It will be possible to detach identical units from their parent units and place ("plug and play") them in any environment.

MCTs have been deployed and used to conduct missions outside of their doctrinal scopes in the Balkans and in Operations Enduring Freedom and Iraqi Freedom. Two examples of this can be seen in the employment of MCTs by the 14th Transportation Battalion (Movement Control), which is based in Vicenza, Italy. The 497th MCT (Port) provided area movement control support in Iraq, and the 99th MCT (Area) worked at the air base in Aviano, Italy. Another example was the deployment of the 49th Transportation Battalion (Movement Control) to Operation Iraqi Freedom: The 133d MCT (Division Support) performed the role of a port MCT at Umm Qasr, Iraq.

These examples show that the transformation of the five types of MCTs—port, area, division support, cargo documentation, and movement regulating—into one modular team reflects the reality of today's operations. This concept will provide the Army with a standard pool of teams resourced to perform all movement control missions.

## Current Situation

Movement control is the planning, routing, scheduling, controlling, coordination, and in-transit visibility (ITV) of personnel, units, equipment, and supplies moving over multiple lines of communication. It involves synchronizing and integrating logistics efforts with other elements that span the spectrum of military operations. The MCT is the basic and most critical level in the movement control process. MCTs are the common point of contact for mode operators and users of transportation.

The five current MCT types are designed around specific nodes or functions—

- The port MCT has 18 personnel (4 officers, 1 warrant officer, and 13 enlisted Soldiers) and is positioned at air terminals or seaports within the theater to coordinate expeditious clearance of personnel and cargo.
- The area MCT has 13 personnel (1 officer, 1 warrant officer, and 11 enlisted Soldiers) and coordinates transportation support for movement requirements in a given geographical location.
- The division support MCT has seven personnel (one officer, one warrant officer, and five enlisted Soldiers). It is an element of a corps movement control battalion (MCB) that is attached to the division transportation office (DTO) to augment and support DTO operations.
- The movement regulating team (MRT) has 16 personnel (1 officer, 1 warrant officer, and 14 enlisted Soldiers) and operates in separate sections throughout the area of operations to observe, assess, and report on movement operations.
- The cargo documentation team has eight personnel (one officer, one warrant officer, and six enlisted Soldiers) and provides cargo documentation for the transshipment of cargo at water, air, motor, and rail terminals.

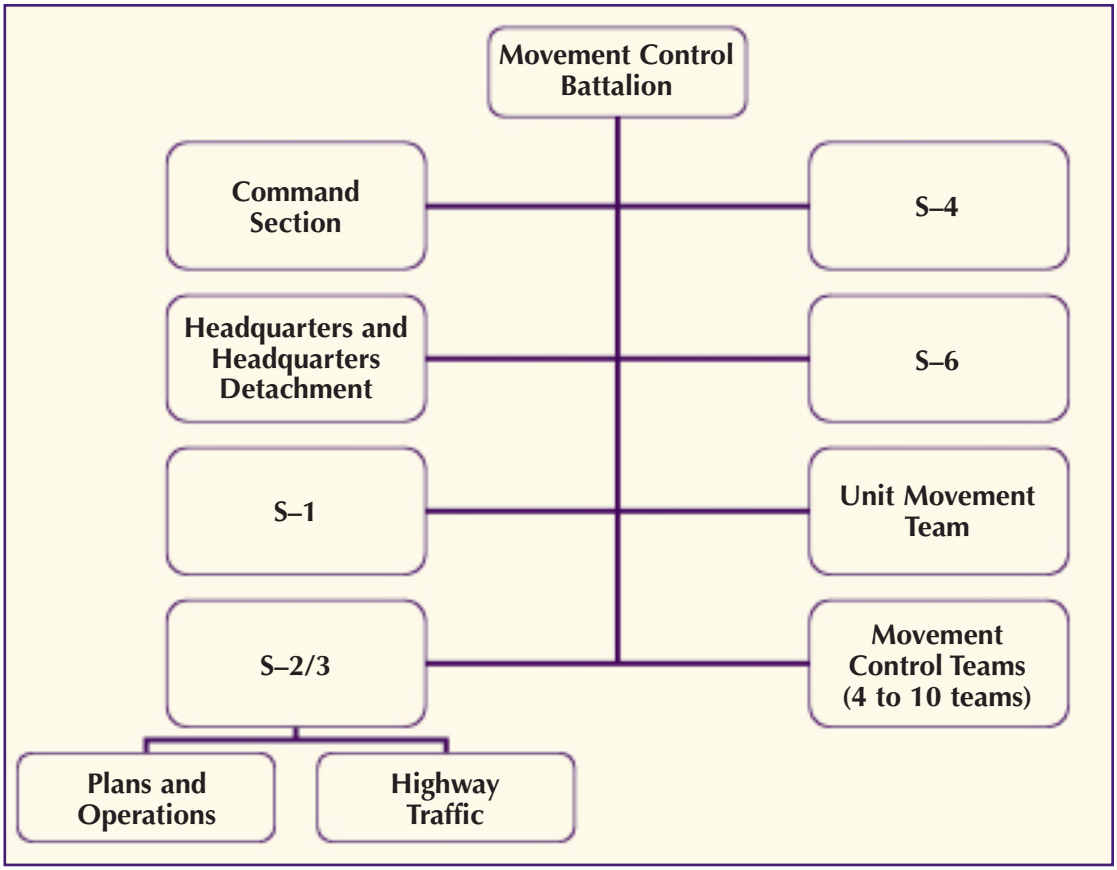
These structures were adequate for the static and linear battlefield of the Cold War. As the Army transforms and faces new foes operating in a nonlinear, noncontiguous environment, it is imperative that the MCT have the ability to accomplish multiple tasks from multiple locations.

The current design of specialized MCTs allows very little flexibility in today's high operating tempo environment. Over the past decade, and as a result of the ongoing Global War on Terrorism, the requirement for numerous movement control capabilities has increased. This requirement has put a strain on the Active and Reserve components, which, in many cases, had to place a team on the battlefield to perform missions for which it was not designed, trained, or equipped.

## Creating a Modular MCT

In September 2003, the Army's Chief of Transportation, Major General Brian I. Geehan, directed combat developers at the Army Combined Arms Support Command to standardize MCTs by merging the functions and capabilities of the current five specialized designs into a modular and multifunctional team that can perform all movement control functions at any node or in any geographical area. The result is the modular MCT (Standard Requirements Code 55506GA00).

The modular MCT is a 21-Soldier team (1 captain, 2 first lieutenants, and 18 enlisted personnel) created with the capability to perform every type of movement control mission. It is designed to provide maximum flexibility in its employment. Each team has a headquarters section and four identical subunits (or sections). The MCT can operate as a single team or separately at up to four different locations. For example, a single modular MCT can be deployed initially to provide movement control functions at an airfield while simultaneously providing cargo documentation. As the mission expands, the team can deploy a section onto the main supply routes (MSRs) to conduct MRT operations. As the operation matures, that same MCT can operate at a second airfield or seaport. The operational use of the MCT can be specifically tailored to the mission and operational environment. The standardization of MCTs increases the number of teams available for deployment, since each unit is modular in the truest sense of that term.




***A movement control battalion will have 4 to 10 movement control teams. Each team will have 21 Soldiers.***

## Modular MCT Missions

The modular MCT is designed to be able to provide movement control on a 24-hour basis. Movement control procedures will still follow the guidelines established in Field Manual 4–01.30, Movement Control. The MCT will be able to conduct the following missions—

- Validate transportation requirements and coordinate transportation support, highway clearance, and inbound clearance for moving units, personnel, and cargo.
- Coordinate transportation movements, diversions, reconsignments, and transfers of units, cargo, and personnel.
- Provide technical expertise to transportation users within its assigned area of responsibility.
- Provide ITV of unit equipment and sustainment cargo movements in an assigned battlespace.
- Observe, assess, and report on the progress of tactical and nontactical transportation movements along MSRs or alternate supply routes and through critical nodes.
- Adjust movement schedules as necessary to coordinate the movement of authorized traffic.
- Provide first-destination reporting points.
- Provide as many as four sections to separate locations, each providing a different aspect of movement control.
- Commit transportation assets.

## Personnel and Equipment

The modular MCT was designed with the doctrinal tenet of fluid and flexible movements in mind. This is evident in both the personnel and the equipment in the MCT. The personnel structure gives the correct mix of skill levels and leadership to provide movement

control at up to four separate locations and missions. The approved equipment list is also a critical part of attaining flexibility. For example, if mission, enemy, terrain, troops, time, and civilian considerations (METT–TC) factors dictate that the MCT needs to be split into four sections in different locations, each section can be properly equipped with the vehicles, communications equipment, Standard Army Management Information Systems, and generators it needs to operate independently.

The equipment mix for this new team is more robust than the current five designs. It includes up-armored high-mobility, multipurpose wheeled vehicles; the Transportation Coordinators' Automated Information for Movement System; and the Movement Tracking System. Soldiers and leaders from the field provided maximum input to the creation of this equipment list. For example, past and present movement controllers stated that two radios are required at each site to allow the MCT to monitor the MCB's network as well as the supported customers' network, so combat developers designed the equipment list with enough radios to meet this requirement.

The unit personnel and equipment lists will increase the effectiveness of each MCT. The design will allow the MCB commander to use a set of 4 to 10 teams to cover a variety of missions at 6 to 15 sites simultaneously and to change the team placement and mission as the situation changes day to day. The intent is to provide maximum capability and flexibility to the MCB commander and the warfighter by providing them with the right personnel and equipment to carry out the mission.

## Theater Distribution of MCTs

Modular MCTs will be assigned to the theater sustainment command (TSC) and attached to MCBs to decentralize execution of movement responsibilities on an area basis or at essential transportation nodes. They will be further attached (for operational control and tactical control) to sustainment brigades and brigade combat teams (BCTs). The MCTs are designed to be able to operate independently of MCBs if the size and scope of the mission requires them to do so.

The current planning allocation of MCTs in a theater of operations is one per aerial port of embarkation or debarkation, one per sea port of embarkation or debarkation, one per distribution hub, one per sustainment brigade, one per 100 miles of MSR, and two per sustainment brigade in the corps. The number of MCTs in the division and corps sustainment brigades is subject to change based on METT–TC. The current design also allows for one MCT per BCT headquarters, thus allowing one movement control section (one subunit) to be allocated to each BCT brigade support area, with the headquarters section operating with the division G–4 transportation officer. (This is subject to change in upcoming rules-of-allocation conferences.)

No changes are planned for the MCB headquarters. The MCB will continue to provide command, control, and technical guidance to 4 to 10 MCTs, provide asset visibility and maintain ITV of tactical and nontactical moves within its assigned geographical area (including unit moves and convoys,) assist in planning and executing plans and operations, apply and meet movement priorities provided by the TSC and sustainment brigade, and support end-to-end distribution. The MCB also will coordinate with host nation authorities for cargo transfer locations, road clearances, border clearances, escort support, and transportation support. The MCB will have as many subordinate MCTs as needed to operate in its area of operations, based on the number of customers, air terminals, rail terminals, seaports, and MSRs it must support. The MCB will provide logistics support to the MCTs under its command and control. MCTs operating away from their headquarters, however, will require logistics support from other units.

There are currently 121 resourced MCTs across the Active and Reserve components, totaling 1,639 TC Soldier positions. Currently, the Army is resourcing 110 of the new modular MCTs, which will create a total of 2,310 positions. This increase shows the importance of movement control to the modular Army. The conversion of MCTs will begin in fiscal year 2007 and be completed by the end of fiscal year 2009.

The redesign of the MCT is an important part of Army transformation. This multifunctional, modular unit will be better able to support the Army Chief of Staff's intent to create a modular "brigade-based" Army that is more responsive to the regional combatant commanders' needs, facilitates force packaging and rapid deployment, and operates as self-contained units on the nonlinear, noncontiguous battlefield. **ALOG**

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# Redefining the Role of the BSMC in Operation Iraqi Freedom

BY CAPTAIN RALPH T. NAZZARO

*A UH–60 Black Hawk MEDEVAC helicopter departs a medical company area to take casualties to the 31st Combat Support Hospital in Baghdad.*

Brigade support medical companies find themselves sidelined from their doctrinal roles. What new roles can they adopt to better support their BCTs?

"We're just vultures right now," replied the first sergeant from one of my sister medical companies when I asked him what his company was doing 4 months into its deployment to Baghdad in support of Operation Iraqi Freedom (OIF). "We're just sitting around waiting for something to happen." It was a sobering statement that reflects the way that many medical companies describe their current mission in Iraq.

A typical National Training Center or Joint Readiness Training Center rotation teaches that the brigade support medical company (BSMC) is the critical centerpiece of a brigade's medical support plan. It is the link between initial treatment at a level I battalion aid station and evacuation to surgical care at a level III combat support hospital (CSH). But in Baghdad, this first sergeant's medical company was task-organized to a brigade combat team (BCT) operating within the Green Zone (the heavily guarded area of central Baghdad where coalition officials live and work). With the local CSH only three blocks away, most casualties in his sector were evacuated there, leaving his company idle unless a mass casualty (MASCAL) incident occurred.

The high use of combat lifesavers and nonstandard platforms in Iraq is a huge success for the medical community, which has preached for years about the need for combat units to include these assets in their medical support plans. It also speaks well of the ability of combat units to adapt their standing operating

procedures for the noncontiguous battlefields of the Iraqi theater. However, these trends have left most divisional medical companies uncertain about their roles and missions in support of their BCTs while deployed to OIF.

### The BSMC Conundrum

The following missions are most often associated with BSMCs—

- Clearing battalion aid stations of casualties so that they can continue to maneuver with their supported units.
- Reinforcing task forces with additional ambulances and treatment teams in anticipation of, or in response to, a MASCAL.
- Establishing a medical treatment facility in the brigade support area (BSA).

These functions are the ones most exercised during a typical combat training center rotation, and it is common for medical company commanders to equate their ability to accomplish these missions with success on the battlefield. However, BSMCs, as level II treatment facilities, have three additional missions that are just as important to the success of the brigade but far harder to train outside of a deployment.

First, medical companies hold patients under limited nursing care. This provides a single brigade triage point for the limited operating table and bed space available at a CSH. It also keeps lower priority patients under nursing supervision rather then sending them to the CSH to lie on a litter in a triage area as they wait for an open operating table or bed.

Second, medical companies receive and distribute all class VIII (medical supplies) to the BCT. This often overlooked role becomes critical under the new BCT task organization because there is no longer a division medical supply office (DMSO) supervising division class VIII ordering and distribution. This leaves the new BSMC brigade medical supply office (BMSO) as the sole link between the corps medical logistics company supporting the theater and the end users in the BCT.

Third, medical companies provide ancillary medical services in the BCT. These services cover emergency dental care, medical laboratory support, and x-ray support. Under Army transformation, BSMCs also follow the Force XXI concept of having an organic preventive medicine section and a combat stress control team. Having these assets in the BSMC reduces the overhead on the supported task force, the medical evacuation system, and the supporting CSH. Drawing a blood sample at a forward operating base (FOB) and then sending only the sample, rather than the Soldier himself, to the CSH not only conserves unit strength but also reduces the number of Soldiers on ground convoys to the local CSH.

### BSMCs in Iraq

Although the Iraqi theater looks very different from one region to another, several common factors have marginalized BSMCs in some of their doctrinal support roles. One factor is the prevalence of air medical evacuation (MEDEVAC) in theater. Combat training center rotations and recent examples of high-intensity combat teach that air MEDEVAC generally takes place no farther forward than an ambulance exchange point (AXP), which will be anywhere from 5 to 15 kilometers or more behind the forward line of own troops. Even then, availability of air evacuation assets is often tightly controlled by the chain of command. This may be necessary in high-intensity combat to deconflict air corridors and not expose the location of friendly positions.

When air ambulances cannot reach the point of injury or it is not feasible to wait for MEDEVAC, patrols usually self-evacuate using available tactical vehicles as nonstandard evacuation platforms.

By comparison, air ambulances in OIF enjoy coalition air supremacy combined with a static, nonlinear battlefield on which CSHs are located in well-developed and strategically located FOBs. This means that air ambulances can be deployed close to the point of injury. The MEDEVAC approval process is a decentralized "911" system. The requesting unit needs only to make contact with the air ambulance company and establish security at the proposed landing zone. Once a casualty is in the air, it generally takes as much time to get him to a CSH as it does to get him to a level II facility. Unless all local CSH intensive care beds are filled or casualties are sustained on isolated supply routes, evacuation to a level II facility makes little tactical or medical sense.

When air ambulances cannot reach the point of injury or it is not feasible to wait for MEDEVAC, patrols usually self-evacuate using available tactical vehicles as nonstandard evacuation platforms. Again, the nonlinear nature of the OIF battlespace renders most level II facilities, which often are located deep in a central brigade "super FOB," extraneous. In dense urban terrain such as Baghdad, the FOB containing the local CSH may be as close as, or closer than, the nearest level II facility by ground. Even when it is not, the time required to pass through FOB force protection measures leaves many combat leaders thinking very hard about whether a level II aid station, which may be

located behind multiple entry control points, is the best place to evacuate a casualty.

For example, at the start of my brigade's deployment to OIF, the task force operating in the sector that experienced the heaviest casualties always ground-evacuated to a small corps logistics base instead of to the "super FOB" in which my level II facility was located. While this logistics base only had a small treatment squad for medical support, it was capable of immediate stabilization, provided a secure landing zone for air evacuation to the CSH, and required the patrol to cross only one entry control point. It was a smart plan by the task force that made the best use of time, terrain, and available assets to save the lives of many Soldiers. It also highlighted how completely out of position my level II facility was in relation to the current brigade fight. Because of the restrictions of terrain (or in this case, allocation of FOBs), my existing mission to provide medical support to the FOB, and the level of risk acceptable to the forward support brigade (FSB) chain of command, we could not reposition treatment assets to better support the fight the way we might "jump" a forward logistics element at the National Training Center.

Eventually, a new entry control point, closer to my level II facility, opened up on our FOB. As more enemy contact occurred in the sector closer to my aid station's side of the FOB, more combat casualties were evacuated to my aid station. Later, offensive operations outside of the original BCT sector also required the echeloning of company treatment assets outside of the FOB. This shows how the reality of the OIF battlespace sometimes can fly in the face of traditional support doctrine. Instead of shifting the proximity of BSMC assets to better support the brigade in battle, the location of the brigade fight had to shift before the medical company assets became relevant.

Level II facilities in Iraq also frequently find their patient-hold areas completely empty. This is chiefly due to the outstanding FOB living conditions that most Soldiers enjoy. With climate-controlled trailers a common feature, it makes more sense for doctors to put sick Soldiers "on quarters" rather than keep them on a patient-hold cot. Patients who require 24-hour nursing supervision are evacuated directly to the CSH, where a shortage of beds is less of an issue because the Air Force has secure mobile aeromedical staging facilities that can strictly enforce the theater evacuation policy.

BSMCs also have seen their traditional role of reinforcing task forces dwindle in OIF. This is not caused by a lower requirement for medical personnel in the task forces; many units, particularly field artillery and engineer units, find that they do not have enough medics to cover all of their daily patrols. However, the decentralized nature of the BCT battlespace, with each task force focused on an assigned sector, makes it difficult to provide medical company assets to other BCT units since the brigade support battalion (BSB) also will have an assigned sector (which may be the FOB itself). To keep maneuver task force Soldiers on patrol, BSMC personnel often serve with other BSB Soldiers on guard towers or FOB work details. These duties, daily sick call, and FOB ambulance coverage leave few medics to help task forces with patrols.

> The BSMC commander must understand that FOB support will occupy most of his company's time.

### How BSMCs Can Be Employed in OIF

These limitations frustrate the BSMC commander who attempts to employ his unit in the same way that he would during a combat training center rotation. To support his BCT effectively, a medical company commander should approach OIF with four "most likely" missions in mind: ancillary services, FOB support, class VIII and medical maintenance program management, and maneuver task force reinforcement.

***Ancillary services.*** The commander must understand that his company's center of gravity in OIF will be his ancillary services, including the treatment platoon area support squad (laboratory, x ray, and dentistry), the preventive medicine team, and the combat stress control team. This is a giant cultural shift for most Medical Service Corps officers, who were taught that their ambulance platoon (through evacuation and AXP operations) was the company's center of gravity. This attitude is often reinforced during predeployment field training events, where units may establish AXPs and evacuate patients without concession to current force protection doctrine on size and composition of convoys.

Emergency evacuation is a minor part of the mission of most BSMCs in OIF, and AXPs are virtually nonexistent. In 7 months in Baghdad, my company performed only two ground-evacuation missions for incidents outside the FOB, compared to well over 200 laboratory tests, 200 x rays, and over 600 patient contacts by my combat stress control team.

The number of civilian contractors and Reservists, many with age and health histories significantly different from the Active Army military population, made lab and x-ray services critical to our treatment mission. My two-Soldier combat stress control team was requested frequently for critical-incident debriefings following patrols that had suffered casualties. My preventive medicine team also worked with coalition and

local-national contractors on developing the infrastructure of not only our FOB but also Iraqi facilities such as the Iraqi National Guard Academy. In northern and eastern Iraq, where malaria is a greater threat than it is in Baghdad, preventive medicine had a critical role in surveying insect populations and making recommendations to sustain the health of the command.

***FOB support.*** The BSMC commander must understand that FOB support will occupy most of his company's time. FOB support means more than supplying manpower for guard duty or FOB work details. It also means developing and manning an ambulance coverage plan for the FOB, drilling the company to support FOB MASCAL incidents, and ensuring that the resources exist to treat a patient population with age and health problems that may depart from normal expectations. During a multi-day offensive operation in April 2004, I sat glued to the brigade command net in case a MASCAL developed in the sector. Although a combat-related MASCAL never happened, my treatment platoon did receive two contractors from inside the FOB who had possible heart attacks after an average day of work in 90-plus degree heat—a situation with which most combat medics have little experience.

*A physician examines a Soldier's ears during sick call in a level II medical facility in Iraq.*

***Class VIII and medical maintenance program management.*** The BSMC, in conjunction with the BSB support operations office (SPO), oversees brigade class VIII management and the medical maintenance program. This duty is frequently overlooked in garrison and at the combat training centers because DMSO supervises all class VIII management and because the daily requirements are low for class VIII in both environments. As a result, many BSMC commanders and support operations offices deploy unaware of the level of planning and oversight required to maintain class VIII flow and medical maintenance properly in the BCT area. This cannot continue now that the DMSO has been removed in favor of BMSOs owned and supervised by the BSMCs.

Medical company commanders must take a personal interest in the standards outlined in Army Regulation 40–61, Medical Logistics Policies, and in how their BMSOs (normally run by junior lieutenants with 10 weeks of training) do business. Taking the time to contact the supporting medical logistics unit to discuss availability of operational readiness floats for critical biomedical equipment such as x-ray machines, a schedule for medical maintenance contact team visits, and synchronization of their class VIII delivery plan with the corps and BSB LOGPAC (logistics package) schedule can reap huge benefits over the course of the deployment.

***Maneuver task force reinforcement.*** Medical companies must be ready to reinforce the maneuver task forces. This does not always mean providing them with additional medics or ambulances. Medical companies also can supervise the brigade combat lifesaver program, organize and command convoys to the nearest CSH for routine referrals and appointments, provide physicians and medics to help with the screening and instruction of Iraqi National Guard medics, and maintain a ready posture for FOB MASCAL support. Providing daily sick call and transfer physicals for detainees in the brigade internment facility are also missions that often fall to the BSMC and are critical to both daily operations in theater and the legitimacy of the overall mission. By taking on these necessary support missions, the BSMC can keep the task force medics available for missions in their sectors.

Sometimes a medical company can reinforce a BCT in the most unexpected ways. For example, a Green Zone-based medical company, through its contact with the Iraqi healthcare community, obtained intelligence for its BCT on local insurgent activities. Ensuring that medics and doctors are aware of the commander's critical information requirements and

can recognize and report key intelligence while treating or working with local nationals can contribute in vital ways to the overall operation.

### Preparing the Medical Company

Because of the requirements of the OIF battlespace, BSMC commanders must keep several factors in mind when preparing their units for deployment.

First, they should make sure that their area support squad members know how to operate and repair their equipment. Our closest medical maintenance support consisted of a single medical equipment repair specialist, who was located 2 hours away by ground convoy. During a semiannual service visit, the corps medical maintenance contact team taught my x-ray technician how to conduct several simple repair tasks so that he could make minor repairs to our sole x-ray machine without evacuating it from the FOB. BSMCs should cross-train their combat medics as secondary and tertiary operators on their dental, lab, and x-ray equipment. This will allow units to send area support squad Soldiers on environmental leave without losing operational capability.

Second, BMSCs should train medics on sick call and trauma procedures before deployment and also provide an aggressive in-country sustainment training program. Medics will spend an inordinate amount of time on sick call patients, and their patient population often will include older Reservists and civilian contractors who have health conditions not normally taught as part of healthcare specialist (military occupational specialty 91W) initial training or sustainment training in modification table of organization and equipment (MTOE) units. Medics must be trained and proficient at primary assessments of both medical and trauma patients. Training Circular 8–800, Semi-Annual Combat Medic Skills Validation Testing, provides a good starting point for training and assessing these skills.

Third, the BSMC commander, in coordination with the BSB SPO, should establish a BCT class VIII distribution plan while in garrison. All customer units should understand how to open and maintain accounts with the BMSO. The SPO medical officer should develop a class VIII authorized stockage list (ASL) in conjunction with the BSMC commander and the BCT healthcare providers. This will ensure that proper items and quantities are brought to theater for resupply during the first 90 days. Garrison demand data will not provide an accurate picture of what the BCT "go-to-war" class VIII ASL needs to include to support the medical mission. The ASL should be developed in concert with the brigade surgeon and task force physician assistants to ensure that it meets their needs. One technique for constructing a BCT class VIII ASL is to use the expendable component listings of the trauma and sick call medical equipment sets, the current medic bag used by task force medics (usually the surgical instrument supply set individual [SISSI] bag), and the combat lifesaver bag as a starting point. A panel of BCT medical providers and senior medics can then add and delete items and quantities to the ASL based on their experiences.

Finally, BSMCs must have a good Professional Officer Filler System (PROFIS) integration plan. PROFIS designates qualified Active Army Medical Department personnel serving in table of distribution and allowances units to fill positions in Army Forces Command early-deploying MTOE units. The commander should find out who his "fillers" are and try to schedule an opportunity for them to see the medical equipment sets and planned contingency stocks of class VIII before they are deployed. The participation of PROFIS officers during early predeployment activities taught me more about what to pack for an initial entry contingency stock of class VIII than any other event in my military career. Establishing a working relationship and defining lanes of responsibility with PROFIS early will streamline operations while deployed. I had been deployed for 5 months before I realized that my PROFIS registered nurse (attached for the MTOE purpose of supervising my empty patient-hold tent) could best support the company by streamlining initial triage procedures during sick call and supervising medical training. These were essentially the daily duties he had in garrison as the officer in charge of an installation primary care clinic.

OIF presents an environment significantly different from that in which most medical companies are trained to operate. An understanding of the commander's intent and the need to shift the company's focus from evacuation to treatment and area support as your center of gravity will set you up for success as you prepare to deploy and support your BCT in combat. **ALOG**

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# Preserving Readiness Through Ammunition Packaging

BY ROBERT M. FORRESTER

*Containers of 25-millimeter linked ammunition are transported through the desert during an exercise at the National Training Center at Fort Irwin, California.*

Every Soldier knows that the weapons and munitions he uses have been tested thoroughly and are subject to strict quality control. The reason for this care is obvious: Weapons and munitions must work properly and safely every time. But probably few Soldiers know that the containers used to transport munitions receive the same high level of testing and must comply with standards just as exacting as their contents.

The OD ("olive drab") metal container—the one that can work as a tool box as well as an ammunition box—has an entire team of engineers behind it that has designed, tested, redesigned, and retested it to meet the warfighter's needs. Every container currently being fielded is designed to protect its contents for at least 20 years through the worst conditions possible.

The people who test these containers are packaging engineers. In the hands of these dedicated professionals, the "ammo can" has matured from wooden crates to high-tech, Soldier-proof, insensitive ammunition containers. [Insensitive containers will resist explosion when engulfed by fire or hit by small arms fire or fragments from larger ordnance.] The process is intensive, but the result is a container that provides full life-cycle protection of ammunition.

## Design

The first step in the container design process is to configure the basic overall envelope. When ammunition is small enough to fit many rounds in a box, the container used is usually rectangular. Missiles or larger shells generally are packaged in big metal tubes with square brackets welded in the middle and on the ends to permit stacking.

The next step is to determine the internal configuration of the container. An internal support system is usually placed inside the outer package. For some rounds, this can be simple foam padding; for others, a complicated plastic support is required.

## Testing

Generally, the first series of tests for a newly designed container is outlined in Military Standard (MIL–STD)–1904, Design and Test Requirements for Level A Ammunition Packaging. The tests are designed to see if the round will be protected during transportation and that it will arrive at the firing line intact and functional. Dropping is the most common abuse of an ammunition container, so the testers drop them—over and over again.

The first drop test simulates a Soldier accidentally dropping the container. The height depends on how large and heavy the round is. For most packaged rounds that weigh less than 150 pounds, the first drop is 3 feet. The second drop is from 7 feet, which simulates a package falling from a truck or hovering helicopter. During these drop tests, containers of dummy rounds are dropped in every way possible, hitting every edge. Three feet may seem like a short distance, but a 100-pound container dropped only a few feet lands with a great deal of force. Through these tests, each container must be able to maintain an internal overpressure of 3 pounds per square inch to ensure that moisture is kept out. This overpressure must not be released during drops (except for a few exceptions during the 7-foot drop), and the container must be usable afterward.

These drop tests demonstrate what happens when containers are dropped shorter distances, but what happens if a crane drops a pallet of containers while loading a ship? Those containers are likely to fall much farther than 7 feet, so the next test is a 40-foot drop. Although few containers come through unaffected and still sealed when dropped that distance, they pass the test as long as the rounds inside remain safe to handle.

The next series of tests involves vibration. The first, a "loose cargo test," simulates a loose container rattling around in the back of a truck. The second vibration test simulates a situation in which the container is tied down. The third simulates transport of the container in the storage rack of its intended tactical vehicle during typical operations. For all of these tests, the item must be protected and the container still must function as intended.

Containers also must be tested in different environmental conditions. There is a big difference between dropping a container from 40 feet in Iraq in the middle of summer and from 40 feet in Alaska in the middle of winter. In addition, when an Air Force cargo aircraft is at cruising altitude, the temperature in the cargo area routinely drops far below zero. So, to make sure ammunition stays safe no matter its location, every one of these tests is done at three different temperatures: –65 degrees Fahrenheit, +73 degrees Fahrenheit, and +160 degrees Fahrenheit.

The container also must stand up to corrosion tests, 20-year accelerated aging tests, electricity conductivity tests, water transmissibility tests, and burning tests.

***A container is subjected to a heat-conditioned 7-foot drop test at Picatinny Arsenal, New Jersey.***

## Ensuring Insensitivity

All of the tests are designed to ensure that packaged ammunition is protected from the rigors and hazards of transportation and the environment. But how is the Soldier protected from the ammunition? The answer is to make the containers insensitive. Another series of tests—outlined in MIL–STD–2105C, Hazard Assessment Tests for Non-Nuclear Munitions—is used to examine this aspect of packaging. This series of tests includes fragment impact, bullet impact, fast cook-off, slow cook-off, shape-charge jet impact, and sympathetic detonation.

## Ongoing Testing

Testing does not end at production. Every year or two, depending on the container configuration, performance-oriented packaging (POP) testing must be conducted. These tests are designed to ensure that nothing has changed. To make sure that containers in a palletized configuration will stay together, the MIL–STD–1660, Design Criteria for Ammunition Unit Loads, test is conducted. Transportability Testing Procedures, TP–94–01, are used to ensure that palletized loads will survive transportation.

The Logistics Research and Engineering Directorate at Picatinny Arsenal, New Jersey, tests ammunition containers to ensure that the ammunition shipped in them will reach Soldiers intact. The various tests conducted on the containers are designed to simulate any damage or hazard that the containers may encounter during shipment and delivery. The ultimate goal of these tests is to ensure Soldier safety. **ALOG**

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# A Proposed Modular Distribution Unit

BY CAPTAIN JEREMY D. SMITH

Supplying the Army's new brigade combat teams (BCTs) requires a fundamental change in how logisticians provide support. Concepts developed to support the traditional battlefield are no longer valid for today's nonlinear, noncontiguous battlespace without front lines.

Distribution-based logistics provides the most efficient and effective use of assets to support BCTs. Currently, the performance of sustainment operations requires that a series of distribution hubs be set up throughout a theater of operations. Distribution hubs, or centers, allow commanders, item managers, shop officers, maintenance officers, and support operations officers to track supply status effectively using interrogators and radio frequency (RF) tags. Transportation assets that are not aligned with maneuver BCTs can be consolidated at these hubs, which improves command and control of those assets and allows leaders to place them where they are needed most. Consolidating forward operating bases (FOBs) under regional distribution hubs also helps to fill sustainment convoys faster because units at smaller FOBs receive supplies at the hub as quickly as units at larger FOBs.

While the establishment of corps- and division-level distribution hubs supports the combatant commander's plan of attack, no standard governs how a distribution center is to be formed or operated. No organization with a modification table of organization and equipment (MTOE) exists to serve as a distribution center. To better support the warfighter, modular units that are organized for the distribution mission must be established. This article presents a proposal for the creation of a modular distribution unit.

## Iraqi Freedom Distribution Hubs

During Operation Iraqi Freedom (OIF) 2, the 1st Cavalry Division's Division Distribution Center (DDC) used Alpha Company from the Forward Support Battalion (FSB) of the 39th Enhanced Separate Brigade, Arkansas Army National Guard, to perform the DDC mission. Alpha Company's automated logistical specialists [military occupational specialty (MOS) 92A] were not operating a supply support activity (SSA) and thus were available to execute the DDC mission. With Alpha Company operating a DDC, the 39th Brigade decided to use the consolidated SSA operated by the 27th Main Support Battalion of the 1st Cavalry Division. Alpha Company's replacement for OIF 04-06—Alpha Company, 125th FSB, 3d Brigade, 1st Armored Division—was responsible for establishing and operating an SSA and thus was

*"Division buys" of the 3d Infantry Division G–4 sit under cover from the elements as they await breakdown and shipment to FOBs throughout Baghdad.*

*A 10,000-pound ATLAS (All-Terrain Lifter, Army System) forklift moves an Air Force 463L pallet to the appropriate RIC lane in preparation for transportation by either air or ground to an FOB within the Baghdad area of operations.*

unavailable to operate the DDC. Operating the DDC during OIF 04-06 became the responsibility of the 226th Quartermaster Company, 87th Corps Support Battalion (CSB), Division Support Brigade, 3d Infantry Division, which also became responsible for operating the 27th Main Support Battalion's SSA.

### DDC and SSA Similarities and Differences

In many ways, a distribution center resembles the receiving and issue sections of an SSA. In a process similar to that of an SSA receiving section, commodities arrive at the distribution center on convoys and must be processed and segregated. Commodities designated for units either assigned or attached to the Multinational Division-Baghdad area of responsibility first go to the Corps Distribution Center at Balad. All commodities for 3d Infantry Division's area of responsibility then are transported to the DDC at Taji. Soldiers process incoming shipments and place supplies and equipment into segregated routing identifier code (RIC) lanes for each SSA (a task similar to that performed by the SSA's issue section). Mixed shipments must be broken down and placed in the appropriate lanes.

A distribution center also resembles an SSA's turn-in section. Units turn in serviceable and unserviceable excess to an SSA. The SSA processes the parts and attempts to fill shortages in one unit with excess parts turned in by another. Reparable parts are sent to the maintenance unit for repair and return to the system. The SSA cross-levels excesses and shortages among the units it supports. All serviceable and unserviceable excesses are retrograded to the regional distribution center, where the process is repeated on a larger scale. The two goals of retrograding excesses are to keep units and SSAs from being swamped with unneeded parts and to identify parts that can rapidly fill shortages in sister units without having to reorder the same part, ultimately saving the Army money and reducing transportation requirements.

Despite these similarities, the distribution center is not a large SSA. An SSA is a warehouse that stores authorized lines of supplies determined by commanders, demand, and item managers. A distribution center, meanwhile, holds supplies for a short time before they are shipped elsewhere and therefore more closely resembles a transportation unit's trailer transfer point. Depending on supply priorities and available transportation assets, the distribution center will hold items for several hours to a few days.

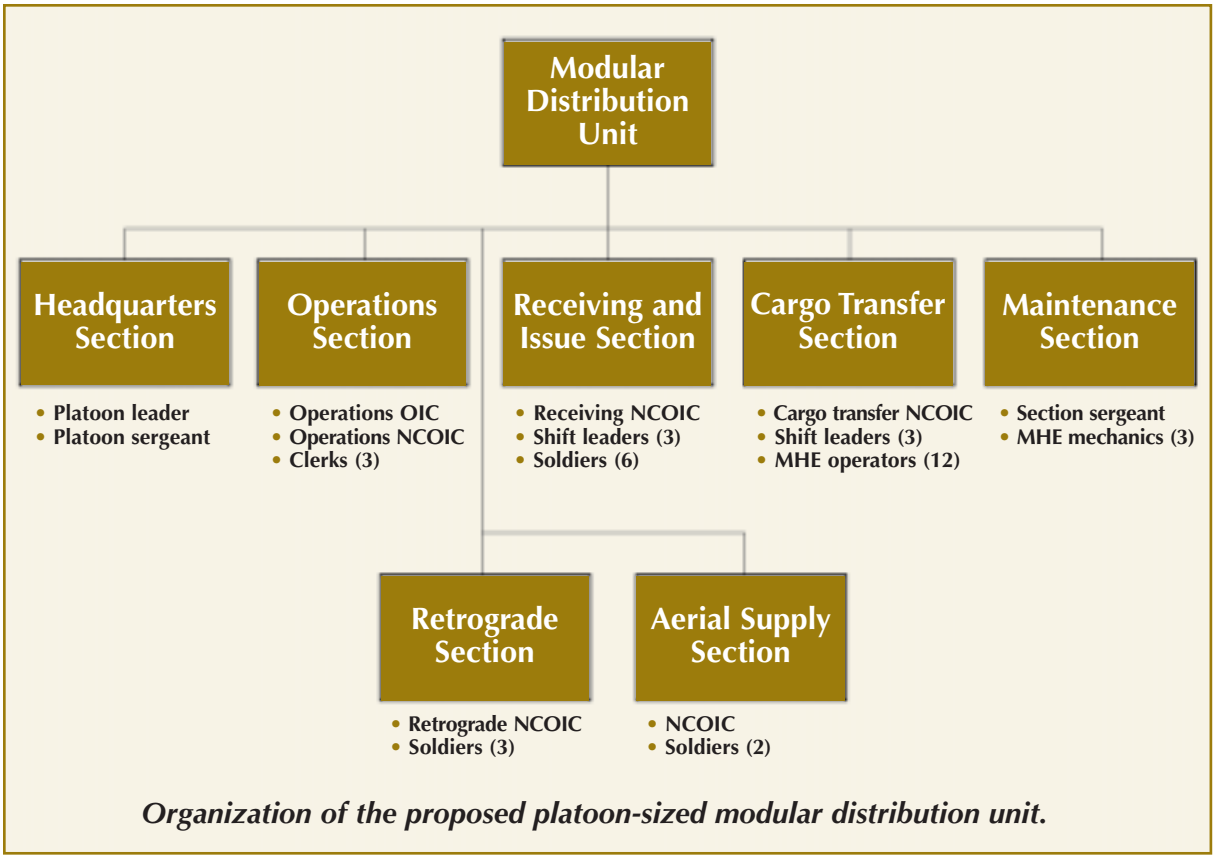
Distribution centers are most effective when they are not restricted to one mode of transportation. They work best when they are located near major road networks, railheads, and airports because each node provides access to a different way of moving commodities. Important, "war stopper" items can be moved forward using helicopters or fixed-wing aircraft, while large, bulk commodities can be shipped most efficiently by rail. Meanwhile, ground convoys are the primary means of shipping supplies throughout the area of operations and move the great majority of all classes of supply within the Iraqi theater.

### Distribution Problems in Iraq

A variety of problems confront the current distribution hubs used in Iraq. Leaders have identified many of these problems and are in the process of addressing them. However, the most significant issue remaining is that no unit exists to conduct distribution center operations as part of its mission-essential task list. Combat service support (CSS) units with defined missions find themselves operating distribution centers in an ad hoc fashion. While the Soldiers in these units do an admirable job in executing their new mission, the units are not properly resourced with personnel, equipment, or training.

Quartermaster direct support companies like the 226th Quartermaster Company possess the capabilities and personnel to inventory and segregate commodities. Their SSAs also have some of the materials-handling equipment (MHE) and operators needed to move bulk pallets and CONEXs

***A civilian container handler assists the DDC by offloading a MILVAN from a host-nation truck.***




***Organization of the proposed platoon-sized modular distribution unit.***

(containers express), but they do not have personnel to track convoy movements; their 92As are needed for other SSA duties. Transportation movement control teams have the expertise to track convoy movements effectively, but they possess neither the personnel nor the equipment to handle the commodities transported by convoys. Transportation cargo transfer companies have the equipment needed to cross-load equipment rapidly, but they lack people to inventory commodities and track movements.

Creating an MTOE distribution unit would effectively blend the capabilities of these three types of units into a single unit that better supports distribution-based logistics.

## Proposed Modular Distribution Unit

The Army needs MTOE units that are already organized, before a deployment, to support distribution-based logistics. These units must be modular to support rapid deployment in support of any contingency. They also must possess the personnel, equipment, and maintenance assets needed to accomplish the distribution mission.

Whenever a distribution unit is deployed, it must work closely with other CSS units. The battalion support operations officer must assist the distribution unit in establishing a working relationship with transportation units to receive and distribute supplies. The distribution unit also must establish habitual ties with a "servicing" SSA and maintenance unit to process and repair reparable exchange parts for return to the supply system. These servicing units must be located near the distribution unit.

The proposed modular distribution unit would be a platoon-sized element with multifunctional characteristics and would consist of a headquarters section, operations section, receiving and issue section, cargo transfer section, retrograde section, aerial supply section, and maintenance section. A total of 44 Soldiers would be needed to operate 3 shifts at full strength. Many of the positions would be MOS immaterial, but some sections would require the skill sets of today's 62Bs (construction equipment repairers), 88Ms (motor transport operators), 92As, 92Rs (parachute riggers), and 92Ys (unit supply specialists). The chart above shows the structure and personnel of the proposed organization.

The platoon would require a variety of equipment to perform its mission, especially MHE, organic bulk transport equipment, either stake-and-platform (S&P) trailers or palletized load systems, light sets, generators, tents, computers, RF interrogators, and radios.

A distribution center requires a large area for operations. The center must be located near major road networks, airfields, and railheads to receive and distribute supplies through a variety of means. Pilferage has been a problem encountered with many distribution centers, so special attention must be given to ensuring that the area remains secured with controlled access.

The area must support heavy traffic and be clear of obstacles or debris that may damage equipment. Overhead cover and some climate-controlled facilities are needed to protect weather-sensitive supplies. Unless the center establishes operations in a prepared location, engineering assets may be necessary to prepare the site.

**Section Personnel and Responsibilities**

The headquarters section would consist of the platoon leader and platoon sergeant and would be responsible for providing leadership, training, and accountability of all Soldiers and equipment. Like other headquarters sections, the platoon leaders would be responsible for processing all administrative actions (awards, monthly counseling, and evaluations).

Daily operation of the distribution center would be handled by the operations section. It would consist of an officer in charge (OIC), a noncommissioned officer in charge (NCOIC), and three clerks. The OIC and NCOIC would work alternate 12-hour shifts, and each clerk would work a separate 8-hour shift to process reports. The operations section would serve as the "brains" of the operation, synchronizing the efforts and priorities of each section to ensure smooth, uninterrupted operations. The section would gather information, manage reports, identify items with missing documentation, and manage MILVAN (military-owned demountable container) and trailer accountability.

The receiving and issue section would be responsible for escorting host nation convoys from the base gate to the distribution center and receiving all convoys. The section also would receive convoys arriving to pick up supplies. The receiving and issue section would consist of an NCOIC, three shift leaders, and six Soldiers. Using interrogators, the Soldiers in this section would check RF tags and inventory each truck as it entered and left the distribution center. The section would sort mixed shipments and process special unit bulk items, such as division acquisitions, for distribution to the FOBs. The NCOIC and shift leaders would use the information gathered from incoming convoys to direct the cargo transfer section properly. They also would enforce quality assurance and control by ensuring that the cargo transfer section placed items in the correct locations.

The cargo transfer section would be the unit's largest section in terms of personnel and equipment. It would download incoming convoys and place containers and pallets in the correct locations. The section also would upload departing convoys and transport supplies to the airfield for the aerial supply section. The cargo transfer section would consist of an NCOIC, 3 shift leaders, and 12 Soldiers who would operate a variety of MHE and S&P trailers. Their primary pieces of equipment will include forklifts, container handlers, and cranes. At a minimum, the section would require four 10,000-pound forklifts, two 6,000-pound forklifts, two 4,000-pound forklifts, one 22-ton crane, two Kalmar Industries rough-terrain container handlers, and two S&P trailers with prime movers.

The retrograde section would maintain accountability of all items delivered for retrograde. Consisting of an NCOIC and three Soldiers, the retrograde section would manage the flow of retrograde items in the distribution center. They would identify and segregate serviceable excess items and prepare them for possible immediate issue to another FOB, thereby saving the Army time and money by returning supplies to the system for nearby units in need. Reparable exchange parts also would be identified, marked, and shipped to the distribution center's servicing SSA for release to the nearest maintenance unit for repair. Unserviceable parts and serviceable excess that could not be used within the distribution center's region would be identified and prepared for retrograde out of the theater.

The aerial supply section would consist of an NCOIC and two Soldiers, who would be responsible for building, weighing, and uploading aircraft pallets with mission-critical, "war stopper" items for immediate resupply. Conducting aerial resupply missions was a rarity during OIF 2. In OIF 04-06, air missions occurred several times a week. Soldiers currently build and weigh up to 12 Air Force 436L pallets a week for air movement; 3 pallets fit in a CH–47 Chinook helicopters. Transporting pallets by air reduces ground transportation requirements and places fewer Soldiers at risk of injury from improvised explosive devices. While building pallets and conducting slingload operations are branch and MOS immaterial, the NCOIC should be a 92R parachute rigger.

The maintenance section would be responsible for ensuring that MHE remains fully mission capable. This section would include an NCO and three MHE mechanics. They would need a contact truck, mechanic's tool boxes, and a 15-day prescribed load list for MHE. Typically, the mechanics in this section would work directly with the company organizational maintenance section to which the distribution unit is task organized.

The proposed distribution unit is designed to fill the Army's need for a ready-to-deploy modular organization that serve as a distribution hub. If the Army is to realize the full potential of distribution-based logistics, it will need a dedicated, modular MTOE unit to do the job. **ALOG**

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# Logistics Synchronization and the Targeting Process

BY MAJOR KENNETH W. LETCHER

Units at the National Training Center (NTC) at Fort Irwin, California, often have difficulty synchronizing their combat service support (CSS) planning and execution. As a result, logistics ceases to be anticipatory and becomes almost completely reactive. Although many articles have been written over the past 10 to 15 years stressing the importance of logistics synchronization in supporting the maneuver commander's plan, little has changed at the NTC since Colonel Stephen F. Garrett published his article, "Synchronizing Battlefield Logistics," in the March–April 1997 issue of *Military Review*. He cited fourth quarter fiscal year 1994 trends at combat training centers: "Units are not synchronizing CSS planning with the OPLAN [operation plan]. Result: CSS staff officers are reacting rather than acting to support requirements."

In today's information-centric environment, logistics planners have become increasingly focused on information as the key to mission success. However, as Garrett pointed out—

> Information is not centrally key to success—it is merely a decision making tool. It represents what we know—situational awareness—not what we want to do—operational execution—or what we want to happen—mission. If we concentrate only on received information, no matter how timely it is, we can only react. Using information to determine how we want to shape the battlespace is the only way we can properly use the ever-growing automated information environment and be proactive.

So how can logisticians use information to determine how they want to shape the battlespace? CSS units must carefully synchronize logistics with the units they support. The support battalion synchronizes logistics with the maneuver brigade commander's plan and intent.

Field Manual (FM) 1–02, Operational Terms and Graphics, defines synchronization as "(1) The arrangement of military actions in time, space, and purpose to produce maximum relative combat power at a decisive place and time. . . . (2) In the intelligence context, application of intelligence sources and methods in concert with the operational plan." I believe that synchronization in the logistics context is the application of logistics resources and functions in concert with the operation plan. To synchronize logistics within a brigade combat team (BCT), at least two things are required: a process and a tangible result of that process—the synchronization matrix.

## Logistics Planning Process

Merely participating in the brigade military decision-making process (MDMP) is not enough. At the NTC, we see many problems with the brigade logistics planning process. First, the right combination of players for logistics planning is never present for the planning process. FM-Interim (FMI) 3–90.6, The Heavy Brigade Combat Team, specifies that the logistics planners in the heavy brigade are the brigade executive officer, S–1, S–4, surgeon, chaplain, and the brigade support battalion (BSB) commander and support operations officer (SPO).

Another problem is that, at the brigade level, the MDMP seldom focuses sufficiently on logistics. Instead, it usually keys in on the next significant brigade tactical operation. However, FMI 4–90.1, Heavy Brigade Combat Team Logistics, indicates that logistics should be integrated into the BCT planning process. A third problem is that the results of the logistics planning that takes place are not published in a usable form, such as a logistics synchronization matrix, Annex I (the operation order annex that covers service and support), or CSS graphics (a graphic portrayal of the brigade or unit logistics set for a given operation).

## Logistics Synchronization Matrix

At the NTC, attendance at BCT combined arms rehearsals usually includes the BCT commander and other personnel down to the separate company commanders. However, the CSS rehearsal that is normally planned to follow the combined arms rehearsal is either not conducted or not conducted to standard and has inadequate BCT attendance and focus.

So how can this problem be fixed? The first step is to look at the process. As Colonel Garrett stated, logisticians "need a logistics synchronization process similar to the targeting board process used by the field artillery (FA) to synchronize fire support with the mission needs and the commander's intent." This "logistics targeting" meeting should be "a formal, daily, and continuous process that turns information into board decision." The process is commonly referred to as a logistics synchronization meeting, and it focuses on integrating the key CSS assets and requirements into the BCT's maneuver scheme.

How do the BCT and the support battalion conduct this logistics targeting process? As with the brigade maintenance meeting, there has to be a "hammer"—someone who will ensure that the process takes place and that the right personnel

| Combat Service Support Synchronization Matrix | | | | | |
|---|---|---|---|---|---|
| **As of Date:** | **Phase IV (Steady-State) Training Day 3** | | | | |
| **Forward Operating Base/Location** | **Detroit** | **Denver** | **Dallas** | **Boston** | **Logistics Support Activity** |
| **Task Organization** | 1–11 IN<br>1 FSB<br>1BCT HQ<br>111 FA | 1–21 IN | 1–31 IN | 1–41 IN | |
| **Missions** | Cordon and search IVO Medina Wasl<br><br>MEDCAP IVO Medina Wasl | Presence patrol IVO Medina Jabal<br><br>Humanitarian relief operations | Raid IVO cave complex | LFX raid | |

**Legend:**

| | |
|---|---|
| BCT | = Brigade support battalion |
| FA | = Field artillery battalion |
| FSB | = Forward support battalion |
| LFX | = Live-fire exercise |
| HQ | = Headquarters |
| IN | = Infantry battalion |
| IVO | = In the vicinity of |
| MEDCAP | = Medical capabilities operation |

***A synchronization matrix similar to this can be used to organize the logistics synchronization process.***

participate to achieve the desired results. I recommend that the "hammer" be the BCT executive officer (XO) and that the meeting happen either directly after the brigade maintenance meeting or in conjunction with it. All of the logistics personnel in the BCT, such as the BCT XO, battalion XO, BSB commander, BSB SPO, and BSB S–4, attend the brigade maintenance meeting. The rest of the logistics planners (BCT S–1, BCT surgeon, and chaplain) can be asked to attend. A representative from the BCT S–3 also should attend the meeting to provide a by-task-force picture of the BCT. This is essential, especially in stability operations.

The logistics targeting process should be organized by task force, by mission, and by day (in increments of 24-, 48-, and 72-hours) in order to focus logistics and synchronize with the BCT by task force and mission. This targeting process will enable the BCT to apply the right logistics resources at the right point and time on the battlefield to best support the brigade commander's intent. The chart above provides an example of a synchronization matrix that can be used as a framework for the synchronization process.

## Determining the Desired Meeting Output

In the FA targeting board process, the output is a targeting board matrix that codifies, according to Colonel Garrett, "the who, what, when, where and why questions that put fire support on the battlefield at the proper time and place in relationship to mission and commander's intent." In the logistics world, planners need to codify the same issues in a logistics targeting matrix that synchronizes logistics across the time and space of the brigade battlefield. FM 1–02 defines the synchronization matrix as a "format for the staff to record the results of wargaming and synchronize the course of action across time, space, and purpose in relation to the enemy's most likely course of action." The staff can readily translate a synchronization matrix into a graphic decisionmaking product, such as a decision support matrix. Each battlefield operating system can develop its own synchronization matrix with more details on specific tasks.

A logistics synchronization matrix should be distributed to each task force (easily done if all BCT representatives are present at the synchronization meeting) and updated daily. Many options are available for packaging the information on the matrix, such as by class of supply or tactical logistics function. The most important factor, however, is that it allows the logisticians to paint the CSS picture for the BCT and coordinate that with the fight.

Too often at the NTC, we see units that start with a synchronization matrix that does not change during the 14 training days. We see some synchronization matrices list supply point operational hours for the BCT but synchronize nothing. We also see targeting or synchronization processes that occur on tactical operations center tracking boards, but they are not distributed properly and synchronize nothing but the BSB SPO shops.

A focused logistics targeting process that produces an organized, intelligible product is vital to synchronizing logistics operations across the brigade battlespace. The brigade logistics targeting meeting and synchronization matrix are two key components of logistics success for units, not only at the NTC but also in operational environments. **ALOG**

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# PBUSE in the Global War on Terrorism

BY CHIEF WARRANT OFFICER (W–5) PABLO A. BROWN AND CHIEF WARRANT OFFICER (W–5) FRANKLIN D. MEEKS

Over the past few years, the Army has struggled to find innovative ways to manage and track equipment. In its quest, the Army has been able to take advantage of some of the advances that the commercial sector has made in database and Web-based applications.

In March 2000, the Office of the Secretary of Defense issued Defense Reform Initiative Directive 54, Logistics Transformation Plans, which mandates the implementation of Web-based data environments across its departments. As the capabilities enabled by Web-based technology and network-centric architectures matured, the Army realized it had an immediate need for a system that could use those capabilities to address the shortcomings of its current systems and fulfill the logistics information needs of increasingly demanding and complex global operations. To meet the mandate of pursuing Web-based technology, Project Manager Logistics Information Systems (PM LIS) at Fort Lee, Virginia, initiated a pilot program paralleling the supply and property portion of the Global Combat Support System-Army.

The pilot program quickly transitioned into a new software package called Property Book Unit Supply Enhanced (PBUSE), and, within 14 months, PBUSE was ready for Army-wide operation. The PBUSE software was designed specifically to replace the Standard Property Book System-Redesign (SPBS–R) in garrison and tactical environments. PBUSE uses a centralized Web and database server located behind the Army Knowledge Online (AKO) firewall in the Strategic and Advanced Computer Center (SACC) at Fort Belvoir, Virginia.

## A Solution

Because the software is Web-based, many functions that once required user intervention, such as catalog and authorization updates, total package fielding, and split operations reporting, now can be performed automatically. The application also manages basic and operational loads and hand receipts. PBUSE uses a state-of-the-art technology that replicates property accountability data to the corporate database every hour.

To deliver this critical flexibility, the Army has expedited the fielding of PBUSE to provide real-time, Web-based visibility to all levels of the Army and the joint community. PBUSE not only improves property accountability and data integrity but also eliminates the need for Continuing Balance System-Expanded reporting and Unique Item Tracking system reconciliations. PBUSE fully supports serial number tracking, mobility planning, and national-level redistribution. Because PBUSE is Web-based, asset visibility is significantly increased across the enterprise. This is because all users are connected to one database—one system of record. PBUSE complies with the Federal Financial Management Improvement Act and Chief Financial Officers Act mandates for both garrison and tactical environments, which include modification table of organization and equipment and table of distribution and allowances activities.

To maximize the use of the Web, users are advised to operate in the connected mode; however, it may be necessary to operate in a stand-alone environment when a reliable network connection is not available. The harsh reality of today's battlefield dictates the need for PBUSE to provide the capability to manage tactical logistics information when commercial satellite communications are not available. Like Microsoft Outlook, the PBUSE stand-alone application is easy to use and provides similar user interfaces in both connected and stand-alone modes. When a stand-alone tactical requirement has passed, the system is reconnected to the Web for resynchronization of the user's data in the central database.

## Communications

Army leaders realized years ago that a fast, globally accessible, and scaleable data network is required to enable network-centric warfare. The solution to this lies in the development of the Warfighter Information Network-Tactical (WIN–T). The problem is that WIN–T will not be ready fast enough with all the required functionalities. However, the satellite communications network can be used as a temporary measure until WIN–T is ready for fielding.

To improve communications on the battlefield, the Army G–4 implemented the "Connect Army Logisticians" initiative, which increased the number of Very Small Aperture Terminals in Iraq, Afghanistan, and Kuwait by 125 percent. The success of PBUSE in the U.S. Central Command (CENTCOM) area of responsibility has proven that using satellite-based communications is a viable means of providing the global data environment that Army logisticians and their customers need to achieve their logistics and transformation goals. Using these systems, Soldiers in the field can place their supply requisitions and receive status reports on their requests in near real time. With adequate communications, sending military standard requisitioning and issue procedures (MILSTRIP) transactions to the

***Soldiers and civilian contractors in Iraq learn to use the Property Book Unit Supply Enhanced (PBUSE) system.***

supply support activity (SSA) and receiving order status electronically from the supporting SSA can be accomplished with ease and convenience through file transfer protocol (FTP). Once the sending and receiving parties have properly adjusted and configured their systems, FTP transmissions can be conducted with expediency and reliability. Soldiers will no longer have to risk their lives hand-delivering diskettes to SSAs in order to place supply orders.

**PBUSE Rollout and Support**

Lessons learned from current operations in the Middle East point to the need for end-to-end integration and continuous asset visibility. To address these needs, the Army is currently fielding PBUSE to units inside and outside the continental United States and standardizing the systems at multiple locations within the theater of operations.

The materiel developer for PBUSE, PM LIS, is responsible for coordinating, developing, supporting, and evaluating all functional, programmatic, and technical aspects of assigned standard Army logistics systems. PM LIS recently sent its supporting technical and functional personnel to oversee the standardization of PBUSE in Kuwait, Afghanistan, and Iraq. All property book officers there received PBUSE to replace their SPBS–R systems.

Central to the PBUSE fielding effort in CENTCOM's area of responsibility is the automated logistics assistance team (ALAT). The ALAT was established in January 2003 to augment the Combined Forces Land Component Command (CFLCC) G–4 logistics automation office in a teaming arrangement between the Army Combined Arms Support Command (CASCOM) at Fort Lee and PM LIS. The ALAT—

- Provides technical and functional assistance for Standard Army Management Information Systems (STAMIS) support by operating a help desk forward to identify trends and to rapidly address theater STAMIS automation problems.
- Assists with the fielding of logistics automation systems.
- Provides over-the-shoulder training support to numerous deployed organizations. From January to November 2005, 172 users in Kuwait and 188 in Iraq were trained.

One ALAT is serving in Arifjan, Kuwait, and a second is at Balad Air Base, Iraq. Working alongside the ALATs are the combat developers (or functional subject-matter experts) from the CASCOM Directorate for Combat Developments, Tactical Logistics Requirements Branch, who frequent the area of responsibility to assist the CFLCC G–4 on asset visibility matters.

To provide constant and flexible support for deployment operations, PBUSE was upgraded recently with Software Change Package 5.0, which gives staff-level users the capability to build task force organizations.

With PBUSE, property book operations are more efficient, transactions are processed accurately, and workloads are reduced significantly, enhancing command mission and logistics readiness. The development community of Northrop Grumman Mission Systems, CASCOM Tactical Logistics Requirements Branch, and field users have contributed immeasurably to PBUSE success. **ALOG**

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# USAREUR: On Point for Logistics Technology Transformation

BY BRIAN SWAN

U.S. Army Europe (USAREUR) continues to be on the leading edge of technology development for logistics information systems in the Army. USAREUR-developed or -introduced technology includes the Joint Deployment Logistics Model/Logistics Common Operating Picture and automatic identification technology. These technologies were spiral-developed in the command and are based on the changing needs of warfighters. (Spiral development is a process that industry experts describe as "build a little, test a little, build a little." By using this approach, new technologies can be incorporated into new weapon platforms and systems, rather than delivering solutions using only those technologies that existed when the systems were initially designed.)

## Background

USAREUR funded the development of the Joint Deployment Logistics Model (JDLM) as a simulation exercise tool in 1998 for the 7th Army Training Command (since renamed the Joint Multinational Training Command [JMTC]) and the 21st Theater Support Command (TSC) in Germany. JDLM provided commanders and their staffs a tool to use when conducting mission planning, rehearsals, and training associated with power projection. Live data feeds were incorporated into JDLM in 2001, which allowed logisticians to track operational deployments and redeployments in the Balkans.

In 2003, during Operation Iraqi Freedom (OIF), JDLM was used to create the Logistics Common Operating Picture (LCOP). The LCOP provides commanders near-real-time logistics asset management tools and decision support tools using a combination of JDLM, the Integrated Logistics Analysis Program (ILAP), and in-transit visibility (ITV).


***Soldiers in the 21st Theater Support Command receive training on the Battle Command Sustainment Support System (BCS3).***

JDLM/LCOP provides a modeling and simulation capability using real-world feeds and allows automated repetitive tasks and queries to be saved as required. V Corps and the 3d Corps Support Command (COSCOM) used JDLM in the predeployment planning process for time-phased force and deployment data (TPFDD) analysis, logistics modeling, and simulation exercises before deploying to OIF in 2003 and 2004. JDLM/LCOP provided a look at distribution management in combat operations for the theater and corps by integrating strategic logistics information and displaying the information graphically.

Using the spiral development process, USAREUR and Tapestry Solutions, Inc., a company specializing in military modeling and simulation training tools, continued to improve the systems used in OIF. JDLM/LCOP was adopted by follow-on units in OIF and grew into a large operating base embedded with field support engineers. More than 150 JDLM/LCOP systems are currently in place in Southwest Asia.

In early 2004, JDLM/LCOP was formally adopted by the Product Manager (PM) for Battle Command Sustainment Support System (BCS3) at Fort Belvoir, Virginia. JDLM operations integrated the capabilities of the Combat Service Support Control System (CSSCS) to become the Army BCS3.

## BCS3 Concept

BCS3 is part of the Army Battle Command Systems (ABCS) and provides combat power analysis, future

combat power analysis, ITV, logistics course-of-action (COA) analysis, and information for commanders' critical information requirements reports. Together, these functions help commanders to make informed decisions rapidly and effectively to support today's fight and tomorrow's follow-on actions. BCS3 provides the logistics portion of combat power by displaying the current status and future projections of fuel, ammunition, critical weapon systems, and personnel.

BCS3 exchanges data among unclassified and classified systems, integrates actionable data, interoperates with ABCS, and incorporates unit data from Force XXI Battle Command, Brigade and Below (FBCB2). BCS3 provides the logistics portion of the common operating picture.

## USAREUR ITV/RFID

The USAREUR Office of the Deputy Chief of Staff, G–4, pioneered the use of automatic identification technology (AIT), such as radio frequency identification (RFID) and satellite tracking systems, in the theater. RFID technology provides logisticians ITV of sustainment, deployment and redeployment, and contingency operations. The success of ITV technology in USAREUR paved the way for current Department of Defense (DOD) RFID policies.

USAREUR continuously provides resources to improve the quality and dependability of the various AIT systems, including the Defense Transportation Reporting and Control System (DTRACS), Transportation Coordinators' Automated Information for Movement System (TC–AIMS), and Vistar satellite tracking system. AIT transmissions to all service components and commercial vendors that support DOD are distributed from the AIT server in Schwetzingen, Germany.

## Current BCS3 Operations in USAREUR

PM BCS3 provided an interim fielding to USAREUR to support planned V Corps deployments to Iraq and Combined Joint Task Force 76 operations in Afghanistan. The interim fielding of BCS3 replaced the JDLM systems in theater and enabled support of sustainment and contingency operations in the area of operations. USAREUR and PM BCS3 successfully completed the fielding and new equipment training for over 125 systems and operators throughout Europe's Central Region.

BCS3 is being incorporated into the business practices of USAREUR and V Corps, and it provided the logistics and transportation portion of the LCOP in two recent predeployment exercises, Urgent Victory and Unified Endeavor. USAREUR continues to provide funding to support ongoing development of JDLM simulations through the JMTC in order to enhance BCS3 simulation capabilities. USAREUR also is providing development funding for the Internet-based BCS3 TransLog Web application at the 21st TSC.

BCS3 TransLog Web, released by Tapestry Solutions in March 2004, provides a single point of entry for transportation movement requests and publishes a consolidated movement program for distribution operations. It can run on either the NIPRNet (Unclassified but Sensitive Internet Protocol Router Network) or the SIPRNet (Secret Internet Protocol Router Network), depending on the security requirements. TransLog Web works hand-in-hand with BCS3 to provide an end-to-end solution. It has been formally adopted by the 1st COSCOM and the 377th TSC in OIF and is used to manage more than 200 military and contracted convoys a day in combat logistics operations. TransLog Web is currently undergoing testing and evaluation at the 21st TSC. When formally accepted by USAREUR, it will be a key information system for movement control and logistics operations throughout the Central Region.

## Road Ahead

The next steps in technology transformation call for USAREUR to —

- Develop policies and doctrine to integrate BCS3 and AIT into its day-to-day business practices.
- Gather requirements for future development.
- Prepare USAREUR for transformation and BCS3 6.4 ABCS fielding and training.
- Develop BCS3 sustainment training in a classroom environment at the JMTC's Combined Arms Training Center in Vilseck, Germany.
- Continue to work with the PMs for BCS3 and Joint Automatic Identification Technology to develop logistics information technology and capabilities.

Logistics information systems must continuously transform to keep pace with current warfighting requirements while providing a link to the Army's Future Force. USAREUR is proud to lead the way. **ALOG**

*Brian Swan is the Chief of the Command and Control and Mobility Support Branch, Office of the Deputy Chief of Staff, G–4, U.S. Army Europe. He is a recent graduate of the Army Management Staff College's Sustaining Base Leadership Management Course.*

# Supporting SSAs in Iraq With a Hub-and-Spoke System

BY CAPTAIN PAUL E. WILLIAMS, USAR

At the onset of Operation Iraqi Freedom, the receipt, issue, and tracking of supplies became one of the biggest challenges for the Theater Distribution Center (TDC), Logistics Support Area (LSA) Anaconda at Balad, Iraq, and the supply support activities (SSAs) throughout the theater. Problems in managing internal misships, external misships, and serviceable excess at LSA Anaconda were breaking the ability of the SSAs to support units. The solution was the development and implementation of a hub-and-spoke system to provide more timely receipt of parts and materials by units and reduce losses caused by misshipments. Hub-and-spoke operations at LSA Anaconda offer lessons for other LSAs and SSAs facing problems caused by misshipments.

"Internal misships" were those misshipments that were destined for SSAs within LSA Anaconda. "External misships" were those misshipments intended for SSAs located outside of LSA Anaconda, such as those at the 3d Armored Cavalry Regiment, the 4th Infantry Division (Mechanized), and the 101st Airborne Division (Air Assault). "Serviceable excess" included parts or materials that exceeded authorized stockage levels and were returned to the corps distribution center (CDC) for onward movement.

The hub-and-spoke system was designed to relieve SSAs at LSA Anaconda of the need to transport internal misships by delivering all materiel to the correct SSAs at LSA Anaconda within a 24-hour period; to consolidate and transport external misships to the CDC for onward movement to units throughout the Combined Joint Task Force 7 (CJTF–7) area of operations; and to transport serviceable excesses to the CDC.

## Iraqi Freedom Supply Challenges

In early March 2003, LSA Anaconda was established to support warfighters and conduct combat service support (CSS) operations. However, the LSA did not receive the support it needed from the TDC. The commander of the 7th Corps Support Group (CSG) put together a Forward Assistance Support Team (FAST) comprising SSA warrant officers and senior noncommissioned officers to function as the CSG's LSA liaison. The goal was to expedite receipt of classes of supply for the six SSAs to be stood up at LSA Anaconda.

The FAST identified CONEXs (containers express), MILVANs (military-owned demountable containers), and classes of supply designated for LSA Anaconda. The team monitored and established a 7th CSG lane at the TDC, ensuring that the lane was not pilfered for supplies and that logistics trains going to LSA Anaconda received priority. The FAST stood up an air port of debarkation lane to ensure the rapid forward movement of aircraft-on-ground (AOG) parts to support combat and medical aviation units at LSA Anaconda. The FAST was able to get supplies destined for LSA Anaconda pushed forward and established "Red Ball Express"-type logistics trains, where supplies would be pushed directly to the LSA and distributed to the six SSAs.

## Impact of Misshipments

Internal misships increased the man-hours of labor that had to be devoted to handling misshipments, increased the use of materials-handling equipment (MHE) because supplies had to be handled multiple times, increased the use of transportation assets needed to redirect misshipments back to the CDC for forwarding, delayed the receipt of parts at supported units, and minimized overall SSA operational capabilities.

External misships to SSAs adversely affected the throughput of supplies at LSA Anaconda and throughout CJTF–7, minimized CDC effectiveness in support of CJTF–7, and inflated the demand for parts. External misships also increased the use of CDC MHE, delayed delivery of parts and materials to units, and minimized the operational capabilities of SSAs throughout CJTF–7.

Backlogs at SSAs at LSA Anaconda and throughout CJTF–7 limited SSA mission capabilities. Internal backlogs turned LSA Anaconda SSAs into misship warehousing facilities and misship distribution centers; exhausted unit transportation assets, which had to be used to move redirected misshipments; and delayed deliveries to supported units by more than 72 hours.

External backlogs outside LSA Anaconda minimized CDC effectiveness in support of CJTF–7 units, increased MHE hours because of double and triple handling of supplies, delayed delivery of parts to CJTF–7 units by at least 1 to 2 weeks, minimized SSA operational capabilities throughout CJTF–7, inflated the demand for parts throughout CJTF–7, and taxed the capabilities and assets of SSAs.

Lost parts increased equipment not-mission-capable rates by 30 to 90 days. Internally lost parts at LSA Anaconda inflated demand for parts, fostered multiple orders for parts, exhausted the supply system, overwhelmed both transportation and MHE assets, and increased the funds spent on local purchases of parts and equipment. Parts lost outside LSA Anaconda increased spending on contracted haulers, exhausted organic transportation and MHE capabilities, increased the number of retrograde items to be managed and transported**,** increased demand for warehouse space to accommodate retrograde items, and limited the operational capabilities of CJTF–7 units.

## Hub-and-Spoke Operations

The concept of operations for the hub-and-spoke system developed out of the need to redirect misshipments between the two primary SSAs at LSA Anaconda, the 240th Quartermaster Company (Direct Support) and the 147th Maintenance Company (Direct Support), both of which are part of the 7th CSG. Each SSA was receiving misships meant for the other SSA, and each lacked the transportation and MHE assets to redirect shipments for issue to supporting units quickly and responsively. So the 413th Quartermaster Battalion (Supply and Services), an Army Reserve unit, was tasked to assist and minimize the impact of misships to the two SSAs.

Two 30-foot trailers staged at the 240th Quartermaster Company were dedicated to handling 147th Maintenance Company misships. The misships were identified, loaded on the trailers, and pushed to the 147th Maintenance Company, where they were offloaded. The trailers then were loaded with 240th Quartermaster Company misships and returned to the 240th Quartermaster Company yard. The frequency of misships to the two SSAs dictated that supplies be moved every other day, with an average volume of 1½ trailer loads. The support the 413th Quartermaster Battalion provided in handling misships allowed the two SSAs to concentrate their efforts on servicing their supported units.

The hub-and-spoke system then was expanded into an internal system that supported all six SSAs at LSA Anaconda. The other four SSAs were A Company, 7–159 Aviation Maintenance Battalion [part of the 7th CSG]; B Company, 7–159 Aviation Maintenance Battalion; the 588th Maintenance Company [part of the 19th Maintenance Battalion, III Corps Artillery]; and the 349th Quartermaster Company (Direct Support) [a California Army National Guard unit]. Fifteen 30-foot trailers were dedicated and staged to receive, transport, and redistribute misships among the six SSAs. The frequency of internal hub-and-spoke misships dictated support 6 days a week, with an average daily volume of 5½ trailer loads.

The final concept of operation expanded the "Anaconda Express" hub-and-spoke system to manage both internal and external support of SSAs throughout CJTF–7. The hub-and-spoke system had proven effective at managing misships at LSA Anaconda, but LSA Anaconda was still receiving misships from other LSAs, retrograded supplies, and unidentifiable frustrated supplies. The focus of the external mission was to support the management of frustrated CJTF–7 misships and serviceable excess. Using seventeen 30-foot trailers staged in support of the SSAs at LSA Anaconda, support was extended to include 1011th Quartermaster Company (Direct Support) frustrated cargo, CJTF–7 misships, and serviceable excess. Frequency of support dictated operations 6 days a week, with an average daily volume of seven trailer loads. Using the hub-and-spoke system, frustrated supplies and serviceable excesses were identified and redirected to other LSAs and the TDC to be put back into the supply distributions system.

The LSA Anaconda hub-and-spoke system increased SSA productivity as the system assumed the task of transporting internal and external misships. It also expedited delivery of needed misshipped materials to SSAs and to other logistics nodes in CJTF–7. Finally, the hub-and-spoke system reduced the number of items lost in transit.

When a theater of operations is opened and the primary plan of support is not adequately responsive to customer units, alternate courses of action must be developed to support supply and distribution activities. Using a hub-and-spoke system as an alternative course of action improved support to SSAs, LSA Anaconda, and CJTF–7 until the theater distribution system became responsive. **ALOG**

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# Joint Force Logistics:
# Understanding Location Basics

BY LIEUTENANT COLONEL JAMES C. BATES, USA (RET.)

In the January–February issue, the author discussed how military logistics management information systems often do not provide visibility of equipment in shipment. In this article, he shows how the basic concepts of latitude and longitude are helping to solve this problem.

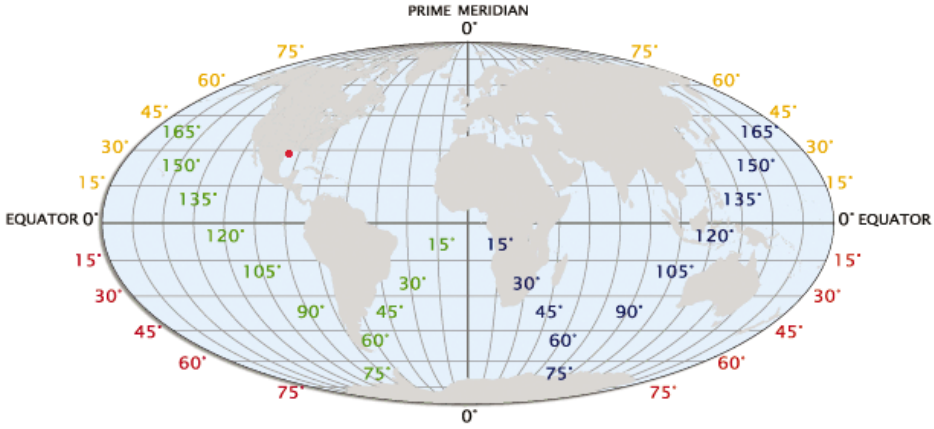
Although military logistics management systems still do not provide total visibility of items in shipment, the Department of Defense has made tremendous progress in its ability to locate items in transit.

## Early Navigation

In 1492, when "Columbus sailed the ocean blue," the use of geometry and observation of the position of the Sun and the stars were the primary methods of navigation. Like other learned people of his day, Columbus believed the Earth was round. This meant that he could use the geometry associated with a circle (360 degrees) and the Sun's position on the horizon to navigate. Although he sailed over 500 years ago, Columbus was able to estimate his latitude through the use of a quadrant and navigational charts. Unfortunately, since the chronometer had not yet been invented, the same could not be said for his longitude. So, during his first voyage to the new

*A Soldier checks coordinates on a map while on patrol near the Syrian border in Iraq.*

world, Columbus and his sailors could only guess how many miles they were from home once they left the familiar waters around the Canary Islands and sailed westward.




***Latitude is shown as horizontal lines that are parallel to the Equator, which is used as one of two navigational reference points. It is designated as 0 degrees latitude. Longitude is shown as vertical lines that are east or west of the Prime Meridian, the other reference point, which is designated as 0 degrees longitude.***

## Sextants

Before the global positioning system (GPS) was invented, the sextant was the primary tool used for navigation. It measures the degree of angle between the horizon and the noonday sun. By comparing the angle to published tables, the user of the sextant can determine latitude. Latitude has been a lifeline for mariners for several hundred years.

After the mutiny aboard his vessel, the *H.M.S. Bounty*, Captain William Bligh was placed aboard a lifeboat, and, in one of the greatest feats of navigation ever accomplished, he and his 18 crewmembers sailed the open boat 3,600 miles to the Dutch colony of Timor using a sextant as their primary navigational tool.

## Chronometers

Early navigation at sea was a problem because of the difficulty in calculating longitudinal position. Although navigators could determine their latitude by measuring the Sun's angle at noon, they had no means of estimating longitude. They lacked a portable method of determining time of day that would function on a ship. The clocks available at the time were pendulum clocks, which were useless on a rolling ship at sea. In 1763, John Harrison, a carpenter from Yorkshire, England, perfected a clock (chronometer) that was not affected by gravity or the motion of a ship.

Once the chronometer was invented, a mariner had to know only the time of day at his location and the time of day in Greenwich, England, to determine his longitude. At the Equator, if Greenwich time was 1200 and local time was 1600, a mariner knew that he was 4,200 miles west of Greenwich, England (each hour representing about 1,050 miles, or 15 degrees of longitude).

The concepts of latitude and longitude, premised on the fact that the Earth is nearly round and has a magnetic north, are not only one of the oldest means of identifying location but also one of the best.

## World Geodetic System

Emerging technology holds the promise to simplify location identification. Satellite-based GPSs and digitized maps frequently express physical locations using the conventions of the World Geodetic System (WGS), which was developed in 1960. Latitude and longitude are essential components of the GPS, so it is important to understand these concepts.

***Latitude.*** The Earth has a circumference of about 25,000 miles at the Equator and a slightly smaller circumference around the poles. Since the Earth is nearly round, it can be divided into 360 degrees. Therefore, we can express location by using the angles of arc between two reference points. Latitudes are horizontal lines that are parallel to the Equator, which is used as one of two reference points; it is designated as 0 degrees latitude.

In the WGS, minutes and seconds are not expressions of time but the amount of arc in the circular Earth. There are 60 minutes (of arc) in a degree and 60 seconds (of arc) in a minute. Therefore, each degree of latitude represents about 69 miles (the Earth's 25,000-mile circumference divided by 360 degrees equals 69 miles). A location with latitude of 45 degrees north is halfway between the Equator (0 degrees latitude) and the North Pole (90 degrees latitude north). A location with latitude of 45 degrees south is halfway between the Equator (0 degrees latitude) and the South Pole (90 degrees latitude south). In the WGS, it is not possible to exceed 90 degrees latitude.

***Longitude.*** Longitude lines (also called meridians) are vertical lines that connect at the poles. Longitude represents location as an angle between a line running north and south through Greenwich, England (called the Prime Meridian), and a vertical location point. The Prime Meridian is the other reference point; it is designated as 0 degrees longitude. Moving west from the

Prime Meridian, one would pass the east coast of the United States, the west coast, and Hawaii to a maximum longitude of 180 degrees west. This is the location of the international dateline, which is on the opposite side of the world from the Prime Meridian. Heading east from the Prime Meridian, one would pass through France and Russia to a maximum longitude of 180 degrees east. This would again be the international dateline.

Converting angles of arc into distance for longitude is much different than for latitude. While lines of latitude are parallel and remain at a constant distance from one another, lines of longitude converge at the poles. The distance between degrees of longitude at the Equator is 69 miles; the distance between degrees of longitude at either of the poles is 0. Typically, the latitude and longitude grid lines shown on world maps are 15 degrees apart. Locations are pinpointed using degrees, minutes, and seconds of latitude and longitude. The latitude and longitude for San Diego, California, for example, are latitude 32 degrees, 51 minutes, and 9.36 seconds north and longitude 117 degrees, 6 minutes, and 36 seconds west.

## Logistics Transformation

GPSs are helping to transform logistics. Twenty-four solar-powered satellites that are 12,000 miles above the Earth serve as the foundation of the GPS. To determine their current location, military personnel can use GPS receivers to retrieve radio signals from the satellites. If they are able to receive signals from three different satellites, the GPS receiver can display location to within plus or minus 10 meters. If the GPS receiver can pick up signals from four or more of the satellites, military users also can determine altitude.

With GPS information—expressed in latitude and longitude and accurate to within 100 feet or better—deployed forces can easily determine their current locations. These could be established sites such as aerial ports of debarkation, shallow-draft seaports, highway intersections, container consolidation points, or supply points. Deployed forces also can use a GPS to determine temporary sites, such as supply storage areas hastily assembled in forests or deserts, helicopter landing zones, tactical assembly areas, container-handling areas, and ammunition transfer points. Once this location information is loaded into a computer network, joint logisticians worldwide can use a variety of software programs to view the locations and surrounding areas on digitized maps. For example, if a Soldier located in a forest on the island of Sumatra needs ammunition and provides the latitude and longitude of his location to a logistician in Australia, the logistician can access a digitized map database, analyze the surrounding area, determine the best route of resupply, and program a Joint Precision Airdrop System, loaded with ammunition, to land within 100 feet of the desired drop location.

## What's Next?

With the dramatic advancements that have been made in GPS technology, telecommunications, automatic identification technology, data processing, and advanced software systems such as those that digitize maps, photographs, and images, there soon will be no need to truncate word-related data fields or encode location data for the Joint Operations Planning and Execution System, the Global Transportation Network, or the Defense Transportation Regulation. Since current computers and telecommunications systems can readily store, process, and transmit a tremendous amount of data, it is no longer necessary to encode location information. Whenever possible, the Department of Defense should express locations as mailing addresses (currently used in direction-finding software such as MapQuest) and cite latitude and longitude. Because of the enormous quantity of logistics data that must be processed to attain asset visibility of items in shipment, military shipment labels and transportation control movement documents should be redesigned to minimize the number of data elements that must be captured at transshipment points.

Locating items in shipment and determining their final destinations is complex, but continuous advancements in technology are significantly improving the process. Many streets in countries around the world will remain unnamed; however, modern technology will enable us at least to determine the latitudes and longitudes of equipment traversing them. **ALOG**

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# Forward Support in the Ia Drang Valley

BY MAJOR STEVEN M. LEONARD

A desperate fight in the jungles of Vietnam 40 years ago marked the dawn of the Army's contemporary tactical logistics doctrine.

Much of what is common practice for logisticians today has roots in the 1960s in the 11th Air Assault Division (Test) and a large clearing at the base of the Chu Pong Massif in the Pleiku Province of South Vietnam. The forward support element concept developed at that time was the forerunner of the forward area support model under the Airland Battle operational concept and eventually evolved into the forward support battalion under the Army of Excellence divisional structure. Today, it continues to exist as the brigade support battalion within the modular force brigade combat team organization. For professional logisticians, recognizing the fundamental principles of our support doctrine is as important as understanding the evolution of that doctrine.

*A pair of Sikorsky H–34 Chocktaw helicopters hovers above a landing zone during an air assault operation at Fort Benning during the testing of the 11th Air Assault Division.*

## Testing the Airmobile Concept

When President Lyndon B. Johnson announced the deployment of an airmobile division to Vietnam on 28 July 1965, the 1st Cavalry Division (the new airmobile unit) possessed a vision of mobility and lethality that was still in its infancy. The airmobile vision—a revolutionary concept first described by General James M. Gavin in a groundbreaking article, "A Proposal for an Airmobile Style of War," in the November–December 1957 issue of *Armor* magazine—had evolved around the notion of the helicopter freeing combat forces from the limitations of terrain and significantly accelerating the pace of battle. The employment of airmobility, Gavin believed, would transform the battlefield into a three-dimensional nightmare that would overwhelm enemy commanders.

On 15 February 1963, the Army organized the 11th Air Assault Division at Fort Benning, Georgia, to explore the feasibility of the airmobile concept on the conventional battlefield. Under the command of Brigadier General Harry W.O. Kinnard, the division established a large contingent of aviation assets to maintain mobility and a wide array of artillery to provide a lethal umbrella of fire support. "Experiment, innovate, test, and evaluate" became the division's watchwords, but the one constant throughout the existence of the 11th Air Assault Division was change.

Not surprisingly, the division's maverick approach to change spurred one of the most significant organizational innovations in combat service support history. During one of the division's frequent organizational evolutions, its Division Support Command (DISCOM) began experimenting with tailored support elements capable of providing highly responsive, forward logistics support in the rapidly evolving airmobile environment. The DISCOM Forward Support Element (FSE) possessed true multifunctional support capabilities, with elements drawn from each of the division's four functional logistics battalions: the 15th Medical Battalion, 27th Maintenance Battalion, 15th Supply and Service Battalion, and 15th Transportation Battalion (Aircraft Maintenance).

With a command-selected forward support operations officer in charge, the FSE maintained operational control of a supply platoon, a maintenance detachment, a medical clearing company with medical evacuation

capability, and a team from the aviation maintenance battalion. A graves registration section from the supply and service battalion was to be attached to the FSE in combat.

## On to Vietnam

Through many months of intense training, preparation, and growing pains, the 11th Air Assault Division thoroughly tested and experimented with Gavin's airmobile vision. On 16 June 1965, Secretary of Defense Robert S. McNamara formally announced the authorization of an airmobile division in the Army's force structure and declared that the 1st Cavalry Division would carry the airmobile concept beyond the test stage. Colonel Timothy W. Brown, who commanded the 3d Brigade during the airmobile division test phase, would lead his brigade into combat when the division deployed to Vietnam.

"I have today ordered to Vietnam the airmobile division." With those simple words, President Johnson announced to the world the deployment for which the division had prepared since its inception. On 16 August, the 1st Cavalry Division set sail from Charleston, South Carolina. That same day, the last elements of the 66th Regiment of the People's Army of Vietnam departed from their base camp along the Ho Chi Minh Trail in Thanh Hoa Province in North Vietnam. For the Americans, the journey through the Panama Canal and across the Pacific Ocean would last almost a month; the 800-kilometer foot march through Laos and Cambodia into the central highlands of South Vietnam would take the North Vietnamese regulars 2 months to complete. Destiny would bring these two units together in the valley of the Ia Drang River.

Brown's 3d Brigade, arriving aboard the *USNS Maurice Rose*, docked in the Vietnamese coastal enclave of Qui Nhon in mid-September. The division cleared a huge expanse of scrub jungle and established a base camp just north of the village of An Khe, 68 kilometers west of Qui Nhon on Colonial Route 19.

On 1 November, as lead elements of the 66th Regiment crossed into South Vietnam using trails that followed the Ia Drang, the 1st Cavalry Division's cavalry squadron captured the North Vietnamese 33d Regiment's field hospital 8 miles west of Plei Me. A fierce North Vietnamese counterattack ensued, and, within days, Colonel Brown's 3d Brigade began patrolling in Pleiku Province on a search-and-destroy mission. Assigned to "find and kill the enemy" east of Plei Me, Lieutenant Colonel Harold G. "Hal" Moore's 1–7 Cavalry Battalion found nothing but peaceful mountain villagers. On 12 November, Brigadier General Richard T. Knowles, the assistant division commander, ordered Moore to conduct an air assault operation near the heart of a suspected enemy base camp on the Chu Pong Massif above the Ia Drang Valley. Knowles would later say he issued that order "based on strong instincts and flimsy intelligence."

## Into the Fire

The Chu Pong Massif dominates the serene valley of the Ia Drang, rising 500 meters above the valley floor and stretching westward into Cambodia. At the base of the Chu Pong, a large natural clearing in the surrounding jungle formed an ideal landing zone for Moore's assault into the Ia Drang. The clearing was flat, with few trees, and big enough to land eight helicopters in formation. Unknown to Moore, the North Vietnamese 66th Regiment's 9th Battalion occupied a position less than 500 meters southwest of the clearing, its 7th Battalion was on

***A battery of M102 howitzers provides support from a jungle firebase in South Vietnam.***

a ridge line above the clearing, and its 8th Battalion was just across the Ia Drang to the northeast. The remnants of the 33d Regiment occupied positions along the east face of the Chu Pong directly overlooking the clearing below.

In the early morning hours of 14 November, as Lieutenant Colonel Moore prepared his battalion for the air assault into Landing Zone (LZ) X-Ray, CH–47s positioned Alpha and Charlie Batteries of the 1–21 Field Artillery Battalion on a plateau 8 kilometers to the northeast at designated LZ Falcon. As part of a deception plan, twelve 105-millimeter howitzers would fire for 8 minutes on two alternate LZs (Tango and Yankee) before shifting fire and laying a steel curtain around X-Ray and the adjacent area. Following the 20-minute preparatory fire on X-Ray, the big guns would lift fire and Charlie Battery of the 2–20 Artillery Battalion (Aerial Rocket Artillery) would bathe the perimeter with 30 seconds of rocket and grenade fire, followed by another 30 seconds of helicopter gunship fire. This virtually impenetrable umbrella of steel represented the fine line between life and death for the soldiers of Moore's battalion.

After a 13-minute flight from Plei Me, the initial eight UH–1 Huey helicopters of the first lift dropped their tails to reduce speed and touched down into X-Ray while their door gunners fired into the trees around the clearing. It was 1048 on a clear, quiet morning; Lieutenant Colonel Moore was the first American to set foot in X-Ray. Within seconds, the next eight helicopters touched down with a second wave of troops.

At 1120, Bravo Company of the 1–7 Cavalry reported the capture of a prisoner just as the second lift returned from Plei Me with additional troops. Moore's interrogation of the prisoner—reportedly a North Vietnamese deserter—was simple: provide the location and size of the enemy forces in the area. The prisoner replied through the battalion interpreter that three North Vietnamese battalions were on the mountain, and they were all very eager to kill Americans. Three battalions of enemy equated to more than 1,600 men. Moore had only 160 troops on X-Ray.

Moore's force was outnumbered 10 to 1, so what began as a search-and-destroy mission quickly evolved into a fight for survival. Bravo Company made contact with the enemy at 1245, running straight into a North Vietnamese assault force after crossing the dry creek bed northwest of the landing zone. While maneuvering to support the 1st Platoon's flank, Second Lieutenant Henry Herrick's 2d Platoon broke off from the main body of the company in pursuit of an enemy squad. Within minutes, the North Vietnamese pinned down and surrounded Herrick's platoon with a fierce, relentless volley of fire.

As the third lift arrived on X-Ray at 1330, the enemy assault intensified and North Vietnamese scouts began to breach the landing zone perimeter through the high elephant grass. With most of three rifle companies on the ground, Moore quickly maneuvered the few available troops to secure his tenuous hold on the perimeter, but he desperately needed to slow the assault. With his operations and artillery liaison officers orbiting overhead in the command chopper, Moore ordered them to coordinate the supporting fire, concentrating on the lower slopes of the Chu Pong before ringing the landing zone with fire.

***A CH–47 Chinook helicopter lifts a firing section (both howitzer and ammunition) into a firebase for a mission.***

Sometimes the fog of war favors the unprepared. With the battlefield shrouded in smoke and dust, American forward observers found it difficult to accurately direct artillery fire or identify terrain features, so they "walked" in the rounds. For the next 5 hours, the batteries at LZ Falcon fired for effect. By day's end, the howitzers had fired more than 4,000 high-explosive rounds, exhausting the gun crews and leaving immense stacks of shell casings scattered about the firebase.

## Support

The 3d FSE, supporting Brown's brigade from Holloway Army Airfield just southeast of Pleiku (about 56 kilometers northeast of the firing batteries), worked feverishly to provide necessary support to X-Ray in the heat of battle. Captain Joe Spencer, the Forward Support Operations Officer for the FSE, quickly established an air bridge to both X-Ray and Falcon. This would have been a monumental task under ideal circumstances, but it was a nightmare in combat conditions.

Using procedures developed during the air assault division test phase at Fort Benning, the 1st Cavalry Division DISCOM began moving ammunition directly from the division's backup support command in Qui Nhon to the FSE (what we call "throughput distribution" today). The FSE supply platoon broke down the wooden ammunition crates and organized the fiber containers inside into individual configured loads for the firing batteries. From there, CH–47s slingloaded the ammunition directly to Falcon, depositing each load as close as possible to a howitzer section.

Improvisation remains one of the most significant characteristics of the U.S. Army. The timely use of throughput distribution, combined with the configuration of mission-ready ammunition loads, was pivotal

***A CH–54 Skycrane positions a 105-millimeter howitzer on a hillside firebase during the Vietnam War.***

during the most critical hours of the battle. Without the direct delivery of vital ammunition from the DISCOM to the FSE and forward to the firing batteries, the 1–7 Cavalry would surely have been overrun by North Vietnamese forces.

Although the artillery, along with a hail of ground and air fire, did not halt the North Vietnamese assault on the landing zone, it crippled the flow of enemy reinforcements into the battle. North Vietnamese soldiers making their way down the slopes of the Chu Pong Massif had to pass through a tremendous fire of ordnance.

Meanwhile, efforts to rescue Herrick's "lost platoon" continued with little success. Sergeant Ernie Savage, now leading the platoon after the deaths of Herrick and Platoon Sergeant Carl Palmer, fought for his life along with a handful of other survivors. With the enemy literally in and around his precariously held position, Savage called in artillery fire and held it as close to his perimeter as possible. Throughout the day and into the night, the enemy attacks on the lost platoon continued unabated, but so did the fire support. The first light on 15 November revealed scores of North Vietnamese dead in the tall grass around Savage's position.

Nightfall on 14 November had brought a dilemma to Joe Spencer at Holloway Army Airfield. During the division's test period, someone removed the graves registration capability from the DISCOM. Spencer found himself in the middle of the biggest firefight of the war with his limited means to process human remains virtually overwhelmed.

Spencer notified a fellow forward support operations officer at the division's base camp at An Khe, Captain Griffin Dodge, who requested support from the 34th Quartermaster Battalion in Qui Nhon. The response from Qui Nhon was immediate, but, because of the limited availability of air transport, the response would not arrive until the following morning. Working through the night, Spencer and his handful of graves registration specialists met the emergency by processing remains with the assistance of a team of volunteers from the maintenance battalion.

At 0640, as Moore and his staff began preparations for rescuing the lost platoon, the 7th Battalion of the North Vietnamese 66th Regiment launched a massive attack along the southern sector of the LZ. Superior fire support again proved the difference. The 1–21 Artillery liaison officer to the 3d Brigade, who was coordinating fire from Brown's command helicopter circling above the LZ, directed artillery so close to the perimeter that individual forward observers on the ground had to shout warnings as the howitzers fired each successive volley. Seconds later, the troops in X-Ray heard the rounds split the air overhead and the distinctive crack of the detonating high explosives, immediately followed by the disturbingly familiar sound of shrapnel tearing through the vegetation around them.

By 0900, the attack was repulsed and the first lift of reinforcements touched down on the eastern edge of the landing zone. At the same time, Brown established a second firebase at LZ Columbus, 5 kilometers northeast of X-Ray; this added two batteries of howitzers to the steel curtain protecting Moore's battalion. Shortly after noon, Lieutenant Colonel Robert Tully's 2–5 Cavalry Battalion arrived to reinforce Moore's beleaguered troops after an overland march from LZ Victor, 3½ kilometers to the southeast.

Moore and Tully immediately assembled a relief column, and by 1500 the men of the lost platoon were all inside the relative safety of X-Ray. Amazingly, once Savage took charge the previous afternoon, the platoon was able to avoid any additional fatalities. Savage's precise placement of artillery throughout the siege enabled the platoon to survive the long ordeal. For his gallantry under relentless enemy fire on an otherwise

insignificant knoll in the valley of the Ia Drang, Ernie Savage received the Distinguished Service Cross.

Despite their horrible losses, the North Vietnamese were not yet prepared to abandon the fight. All four batteries of artillery rained a ceaseless barrage of hot steel around the perimeter. Nevertheless, a series of whistles signaled a renewal of the assault at 0400. The forward observer for Tully's Bravo Company, First Lieutenant William Lund, ordered the batteries to mix point-detonating and time-fused high-explosive shells with white phosphorous rounds, saturating the enemy with a veritable shower of death.

By 1000, the siege on X-Ray was broken. Within half an hour, the lead elements of Lieutenant Colonel Robert McDade's 2–7 Cavalry Battalion closed on the landing zone after an overland march from LZ Columbus. A flurry of Hueys and Chinooks carried the men of the 1–7 Cavalry away from X-Ray that day for a much-deserved rest. Two days after his arrival in the Ia Drang, Hal Moore climbed aboard his command chopper. He was the last man of his battalion to depart the battlefield.

***A CH–47 Chinook helicopter provides ammunition resupply during a fire mission in Vietnam.***

## Aftermath

The following day, a North Vietnamese ambush decimated McDade's battalion as it completed a sweep of the area leading into LZ Albany, 5½ kilometers north of X-Ray. While other battalions sweeping the valley elected to use the supporting artillery fire to clear their march routes, McDade declined—an ill-fated decision for the men of the 2–7 Cavalry. As the battalion arrived at Albany, the 8th Battalion of the North Vietnamese 66th Regiment caught the Americans in a textbook L ambush, inflicting 279 casualties in the ensuing melee. Inevitably, there were those who would draw comparison to Custer's 7th Cavalry at the Little Big Horn.

In the aftermath of X-Ray, Moore flew directly into Falcon to thank the brave men who relentlessly stood by his battalion through the heat of battle. For 53 straight hours, these men—stripped to the waist and covered with a greasy mixture of oil, sweat, and dirt—managed to fire more than 18,000 rounds in defense of X-Ray. During the battle, mechanics from C Company, 27th Maintenance Battalion, replaced recoil mechanisms on two howitzers firing in support of X-Ray (a maintenance task usually requiring evacuation) in order to maintain the rate of fire necessary to stave off defeat. Surrounded by mountains of empty brass shell casings rising to a height of 10 feet, Moore extended his gratitude to the Soldiers with heartfelt emotion.

In the Battle of the Ia Drang Valley, artillery proved to be the difference between life and death for Hal Moore's troopers. But logistics support was the enabling force behind the firepower, providing the edge necessary to earn victory in the face of imminent defeat.

In November 1965, General Gavin's airmobile concept received a baptism of fire in the Ia Drang Valley. Under direct, intense enemy fire in the central highlands of South Vietnam, the troopers of the 1st Cavalry Division proved the validity of numerous tactics, techniques, and procedures, many of which have endured the test of time. Operations in the Ia Drang also redefined the use of fire support in a war fought without definable front lines.

In the heat of battle in the Ia Drang, Captain Joe Spencer defined logistics tenets that would influence an entire generation of support doctrine: anticipation, integration, continuity, responsiveness, and improvisation. Men like Joe Spencer played pivotal roles in the development of tactical logistics concepts, engineering innovative methods of providing responsive support forward in the trackless jungles of Vietnam. Yet, while most logisticians know the tale of the Battle of the Ia Drang Valley, few recognize that moment in time as the dawn of our contemporary tactical logistics doctrine. Ultimately, the FSE concept, pioneered by the 11th Air Assault Division and proven in combat by the 1st Cavalry Division, evolved to become the nexus of our current forward support doctrine and the foundation of modern tactical logistics support. **ALOG**

*Major Steven M. Leonard is a lead author for the Field Manual 3–0 rewrite team at the Army Combined Arms Center and an observer/trainer for Operations Group-Logistics for the Battle Command Training Program at Fort Leavenworth, Kansas. He is a graduate of the Army Command and General Staff College and the School of Advanced Military Studies.*

# Maintenance Evolution

BY MASTER SERGEANT JAMES I. ADAMS, JR., ILARNG (RET.)

In April and May 1976, I was a young Soldier working in the S–3 shop of the 1st Brigade, 2d Armored Division, at Fort Hood, Texas. I was unhappy because, although I had trained to become an armor crewman, I was assigned as a light vehicle driver and the assistant schools noncommissioned officer (NCO). However, I didn't realize at the time that I was in a position to witness dramatic changes in my branch of service. In my schools NCO role, I was tasked with helping prepare handouts for Major General George S. Patton, Jr.'s conference on the concept of operation for the next phase in land warfare—the combined arms team. At that conference, the general unleashed new ideas and precepts that evolved into the land-air-sea battle concept that the Army would use to conduct war for the next three decades.

Today's increasing operating tempo and the advent of the joint force headquarters concept are causing the lines of command to blur. The face of deploying units has become that of a composite force in which Army National Guard elements sometimes command Active Army and Army Reserve elements. The lines of command in the maintenance community also have been blurred with the advent of the two-level maintenance program. Combat service support unit structure must evolve. This is especially true in the maintenance community, where methods must be developed that will allow for the optimum use of available assets.

I believe that the Army needs to take a hard look at the structural and command lines between the Active Army and the Reserve components as they affect unit formation, maintenance, and location. This is particularly important as the functional composition of the Reserve components changes (more military police units and fewer field artillery units, for example) and as base realignment and closure plans affect the locations of National Guard armories and Army Reserve centers.

Cross-leveling of support activities needs to be established in order to properly use assets that can be located as much as 100 miles from their supporting maintenance facilities. I suggest that a new type of maintenance plan be developed that uses "maintenance cells" to provide support. An all-Army maintenance cell would provide maintenance services to any unit within a specific geographic area regardless of its component affiliation. It could be affiliated with and operated as a specific unit (Active or Reserve), or it could be a regional cell operated by a combination of Active and Reserve personnel. Army equipment would receive maintenance from the closest Army facility.

The G–4 for the major Army command owning the equipment would coordinate the funding for the parts, and the labor costs would be shared among the units in the region. Funding for the parts would be the most significant controller. A unit needing maintenance could order needed parts and deliver them to the maintenance facility doing the work, order the parts to be delivered directly to the facility, or allocate funds to the facility so it could order what it needs.

Laterally transferring man-hours could be accomplished administratively. A maintenance request could be used to account for man-hours, regardless of ownership of the item being repaired. Savings of 8 to 12 man-hours could be realized in the time needed to recover the vehicle, repair it, and return it to its unit.

Some limited versions of the maintenance cell concept already are being used. However, the concept should be implemented Army wide. Joint service and interagency cooperation in planning for new facilities has been considered—mostly for cohabitation. However, limited efforts are being made toward sharing the cost of vehicle repair facilities.

I believe that, as the Army moves closer to modularity, a faster approach to applying the maintenance cell concept to existing facilities and resources will be needed. It does not behoove organizations within the same geographical area to duplicate their efforts. Moreover, those who control funds should not devote more time and money to dysfunctional or archaic systems. Better business is not bigger business; better business is smarter business.

*MASTER SERGEANT JAMES I. "TANKER" ADAMS, JR., ILARNG (RET.), RECENTLY RETIRED AS AN EQUIPMENT SPECIALIST WITH THE SURFACE MAINTENANCE OFFICE, ILLINOIS ARMY NATIONAL GUARD. HE HAS ASSOCIATE'S DEGREES IN LIBERAL ARTS AND HUMAN RESOURCES AND IS A GRADUATE OF THE ORDNANCE BASIC AND ADVANCED NONCOMMISSIONED OFFICER COURSES.*

# ALOG NEWS

## DOD SEEKS INDUSTRY PARTNERSHIP

Taking a cue from industry, the Department of Defense (DOD) plans to create a partnership with a world-class transportation services coordinator to increase efficiency across its supply chain. A study of industry best practices shows that using a world-class transportation services manager reduces cycle times, increases shipment visibility, and improves customer confidence for most types of freight shipments within the United States. Shipment of certain materiel, such as munitions, would be excluded from the provisions of the partnership.

A project office has been established near Scott Air Force Base, Illinois, to explore the partnership effort, which is called the Defense Transportation Coordination Initiative (DTCI). Experts in contracting, logistics operations, and information technology are preparing a performance work statement and a draft solicitation to present to members of industry. Current plans call for a phased implementation of DTCI, with initial contract award expected in October 2006. Full implementation of the initiative is expected by late 2009.

More information about DTCI is available on line at http://dtci.transcom.mil.

## 'ROADMAP' EXPLAINS DLA TRANSFORMATION

A comprehensive overview of the Defense Logistics Agency's (DLA's) transformation efforts is available in a new document, the *Transformation Roadmap*. It summarizes how DLA is revolutionizing its business practices through 13 initiatives and how those initiatives relate to each other and to the DLA Strategic Plan, the Department of Defense (DOD) Transformation Strategy, and the National Defense Strategy.

The 13 initiatives are intended to work interdependently to meet the 4 goals of DLA's Strategic Plan—

- Provide responsive, integrated, best-value supplies and services consistently to DLA's customers.
- Develop and institutionalize the internal processes required to deliver value-added logistics solutions to the warfighter.
- Ensure that the DLA workforce is enabled and empowered to deliver and sustain logistics excellence.
- Manage DLA resources for the best customer value.

DLA's transformation initiatives are—

- Customer Relationship Management. This initiative is designed "to more accurately predict future military requirements, define mutually agreed upon levels of support for those requirements, and then precisely monitor the level of actual performance achieved."
- Supplier Relationship Management. Improved supply chain management will be the focus of this initiative. While customer relationship management will define warfighter requirements, supplier relationship management will marshal the domestic industrial base to meet those requirements.
- Business Systems Modernization (BSM). The heart of DLA transformation, BSM will replace DLA's legacy materiel management systems with commercial off-the-shelf software that links the complete supply chain from customer to supplier.
- Distribution Planning and Management System (DPMS). This system will improve the visibility of materiel from its point of origin to its point of consumption and help DLA reach its goal of providing global, end-to-end distribution management.
- Integrated Data Environment (IDE). This system will replace DOD's Joint Total Asset Visibility capability and create seamless sharing of information between DLA and its customers.
- Business Systems Modernization Energy (BSM E). This system, formerly known as the Fuels Automated System, will create an integrated supply chain management system for fuels.
- National Inventory Management Strategy. The goal of this initiative is to "merge wholesale and retail inventories into a national inventory that can be managed in a more integrated manner." This will extend supply chain management of consumable items from the wholesale level to the customer.
- Global Stock Positioning. This initiative is designed to ensure that the right inventories are in the right places. Materiel will be stocked in a minimum number of distribution centers; items with well-defined patterns of demand will be located with their customers; and items with special handling requirements or less well-defined demand patterns will be stocked centrally.
- Executive Agent. DLA has been designated as the DOD executive agent for subsistence, bulk fuels, construction and barrier materials, and medical materiel. It soon will be designated the executive agent for clothing and textiles.

**(ALOG NEWS *continued on page 48)***

# LOG NOTES

## Unauthorized Fuel Practice

The November–December 2005 issue of *Army Logistician* contained an informative and interesting article. "PMCS: Key to Readiness During Deployment" was well written and emphasized the need for preventive maintenance checks and services to ensure equipment readiness. However, in the paragraph about fuel systems, the author mentioned adding engine and transmission oil to diesel fuel to reduce friction in the engine's moving components. The author did comment that this practice is not sanctioned by project managers or the Army Materiel Command. An extensive amount of information has been distributed to the field to inform Soldiers that adding oil products to fuel is not beneficial.

This "field remedy" first appeared during the first Gulf War in 1990 and 1991, when the Single Fuel Forward concept was introduced on a large scale. At that time, the Army's contractor-operated Southwest Research Institute conducted laboratory testing to see if additions of oil products would offer benefits. The testing revealed that adding up to 5 volume percent of engine, transmission, and gear oils did not solve the friction problem. These higher viscosity oils did not significantly increase the hydrodynamic film strength (thickening of the aviation turbine fuel). The testing also proved that engine oil, when added to the fuel, did not improve the lubricity of the fuel but actually increased the level of wear.

It is unfortunate that some individuals continue to follow this unauthorized practice.

**Maurice E. Le Pera**
**Harrisonburg, Virginia**

***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.

## CORRECTION

The photo that appeared on pages 28 and 29 of the November–December issue of *Army Logistician* shows a CH–47D helicopter from the 159th Aviation Regiment, not an MH–47 from the 160th Special Operations Aviation Regiment. We apologize for the error.

# ALOG NEWS

*(continued from page 47)*

• Product Data Management Initiative. This initiative is designed for technical users and will create a single system offering visibility of product and technical data for all DLA items.

• Workforce Transformation. This initiative covers a variety of strategies that will strengthen DLA's human resource management.

• Reutilization Modernization Program. Under this program, the Defense Reutilization and Marketing Service's information requirements will be incorporated into DLA's overall information architecture.

• Base Realignment and Closure (BRAC). BRAC initiatives will have a significant impact on DLA. The agency will establish four regional strategic distribution platforms, with its remaining distribution depots becoming forward distribution points; DLA will assume management of all DOD tires, compressed gas, and packaged petroleum and lubricants; and it will assume centralized procurement responsibility for DOD depot-level reparable items.

DLA is investing approximately $2.1 billion in the transformation initiatives and expects to return about $3 billion to the services by fiscal year 2011. BRAC recommendations applied to DLA should save another $1.8 billion.

The complete *Transformation Roadmap* can be accessed at www.dla.mil/library/DLATransRoadmap.pdf.

## ARMY REFINES PLANS FOR BASIC OFFICER TRAINING

The sites for phase II of the Army's new Basic Officer Leadership Course (BOLC) have been reduced to two: Fort Benning, Georgia, and Fort Sill, Oklahoma. The Army originally planned to conduct BOLC II at Fort Knox, Kentucky, and Fort Bliss, Texas, as well as at Forts Benning and Sill. However, the move of the Armor and Air Defense Artillery Schools to Fort Benning and Fort Sill, respectively, under the base realignment and closure process led to the decision to consolidate BOLC II at those installations.

According to the BOLC Charter Task Force, the goal of BOLC is to "develop competent and confident leaders imbued with a Warrior Ethos who, regardless of branch, are grounded in fieldcraft and are skilled in leading Soldiers, training subordinates and employing and maintaining equipment." BOLC II will be the main instrument for achieving this goal.

BOLC will have three phases. BOLC I will be the precommissioning phase conducted at the United States Military Academy, Officer Candidate School, or Reserve Officer Training Corps sites.

All newly commissioned second lieutenants, regardless of branch, will attend BOLC II for 7 weeks and receive initial-entry training in small unit leadership and tactics. Eighty percent of BOLC II will take place in a field environment.

Immediately after completing BOLC II, officers will attend BOLC III at their branch schools to receive branch-specific training for 6 to 15 weeks. After graduating from BOLC III, officers either will go to their first unit assignment or attend additional assignment-oriented training.

The Army plans to begin full implementation of BOLC in June. Pilots for BOLC II began at Fort Benning in the fourth quarter of fiscal year 2005.

## ARMY COOK PROVES THAT ALL SOLDIERS MUST BE WARRIORS FIRST

Every Soldier, even a cook, must be prepared to be a warrior. Quartermaster Chief Warrant Officer (W–3) David J. Longstaff proved this as he was returning from a procurement mission to Baghdad in August 2003. Longstaff's convoy of two high-mobility, multipurpose, wheeled vehicles (humvees) and one 5-ton truck encountered a burning humvee whose Soldiers were pinned down in an ambush. Longstaff provided covering fire while Sergeant First Class Richard Bryant, a member of Longstaff's convoy, assisted the Soldiers trapped behind a civilian vehicle. Longstaff then provided rear security while the casualties were evacuated for medical treatment.

In December, Longstaff was awarded the Bronze Star Medal with Valor for his quick reaction to the situation, which allowed the ambushed Soldiers to move out of the kill zone.

"I was intrigued that as a cook, I found myself in the middle of Baghdad taking fire," said Longstaff. "It just goes to show what you can do when put into any situation. So you should just be prepared." Longstaff, who is now the manager of the Army Culinary Team, commented further, "Regardless of where you compete in the world of chefs, we are warriors first, and that's important."

## ALMC AND PENN STATE JOIN TO OFFER SUPPLY CHAIN MANAGEMENT TRAINING

The Army Logistics Management College (ALMC) at Fort Lee, Virginia, has partnered with Penn State Executive Programs, part of the Smeal College of Business at Pennsylvania State University, in offering Penn State's Certificate in Supply Chain Management program for military personnel.

Military personnel from all of the services can earn the certificate by completing three executive education courses in supply chain management offered by Penn State Executive Programs. Under the new agreement, military personnel can earn the certificate by completing the Fundamentals of Defense Supply Chain Management Course offered by ALMC and two more courses at Penn State. The pilot of the ALMC course was last August.

According to Colonel Shelley A. Richardson, the ALMC Commandant, "The course at ALMC has already received rave reviews from participating Department of Defense (DOD) students. The prospect of continuing their education in supply chain management at Penn State and earning a certificate will make the course even more significant and appealing to senior supply chain managers and logisticians throughout DOD. We look forward to a long-term partnership with Penn State in educating our Nation's military logisticians and applying [the] best practice in supply chain management currently utilized by private industry to enhance support to the warfighters in the field."

Penn State's Center for Supply Chain Research offers certificates in supply chain management

## LOGNet OFFERS LOGISTICIANS A NEW WAY TO SHARE THEIR EXPERTISE

Logisticians involved in the dynamic combat environments of Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) sometimes find that they must adjust the doctrine and the tactics, techniques, and procedures they learned at their branch schools to meet the real-world conditions they face. This inevitably creates a knowledge gap between what is taught at the schools and what logisticians in the field have learned. To help bridge this gap until doctrine is revised, the Army Training and Doctrine Command's Combined Arms Center at Fort Leavenworth, Kansas, in conjunction with the Office of the Deputy Chief of Staff, G–4, Department of the Army, has developed an online, collaborative communications forum for the Army logistics profession called the Army Logistics Network (LOGNet).

By using LOGNet, logisticians can reduce the time needed to resolve problems, increase the sharing of innovative ideas throughout the Army logistics community, disseminate in near-real-time the best practices developed in the field among logisticians, and better prepare other logisticians for OIF and OEF deployments.

LOGNet allows logisticians to engage in open or private peer-to-peer discussions in all logistics functional areas, such as transportation, supply, maintenance, and automation. It also furnishes a peer-based support network for Soldiers to consult between their periods of school attendance. Through LOGNet, members of the logistics community can find subject-matter experts who can help resolve difficult technical and professional problems and answer questions.

LOGNet is actually part of a larger knowledge network called the Battle Command Knowledge System (BCKS). BCKS was developed and is managed by the Combined Arms Center.

Logisticians can access LOGNet by taking the following steps—

- Go to https://lognet.bcks.army.mil.
- Click "Request an Account."
- When requesting an account, a user must use his Army Knowledge Online (AKO) user name and password.

Users will be unable to view what is displayed on LOGNet until they request a LOGNet account. With an account, they can enter LOGNet and participate in discussions, post messages, and submit material they have authored to share with others in the logistics profession.

Among LOGNet's features are "Official LOGNet Tools" and the "SOP [standing operating procedure] Library." The tools area contains 13 professional software tools designed and developed by LOGNet to supplement existing Standard Army Management Information Systems (STAMIS) or to fill STAMIS shortfalls. Each tool is designed to help units and commands with a variety of logistics and other tasks. The SOP Library contains more than 80 examples of SOPs and tactical SOPs (TACSOPs) covering virtually every aspect of logistics and supply. A user can download an SOP or TACSOP and modify it to suit his unit's needs. These two tools are just a sample of the many useful tools, job aids, and knowledge items available to LOGNet members.

For more information on LOGNet, contact Bob Dalton, the LOGNet facilitator, at bob.dalton@us.army.mil.

and supply chain leadership in conjunction with Penn State Executive Programs. The center was founded in 1989 and has become one of the Nation's leading institutes for supply chain management research and education. A recent survey of supply chain practitioners and instructors in the United States, Canada, and Mexico ranked Penn State's program first in a ranking of the top 20 supply chain programs in North America.

For more information, see the Penn State Executive Programs Web site at www.smeal.psu.edu/psep and the ALMC Web site at www.almc.army.mil.

## ARMY FIELD SUPPORT BATTALION-IRAQ CAPTURES DEFENSE LOGISTICS AWARD

An Army unit providing vital support to warfighters in Iraq and its contractor partner have received a 2005 Defense Logistics Award. The Army Materiel Command's Army Field Support Battalion-Iraq and the L–3 Communications Corporation/Vertex Aerospace Tactical Wheeled Vehicle Service Center won in the "In-Theater Contractor-Military Collaboration of the Year" category for the add-on armor program in Iraq. This program, which began in April 2004,

has upgraded the protection of thousands of light and heavy tactical wheeled vehicles in order to counter insurgent threats.

According to Dennis Mirabile, the L–3 Vertex program manager, "What started as a small heavy equipment transporter (HET) team has developed into a critically important tactical wheeled service center. We now have 150 employees supporting this effort with add-on armor and quality vehicle maintenance services and repairs. This mission to support the warfighter is being fulfilled under difficult circumstances and would not have been possible without the support and dedication of our employees and Soldier-partners."

The Defense Logistics Awards were presented in November 2005 as part of the Defense Logistics USA conference in Washington, D.C.

***The new Associate Intermodal Platform resembles a large, black waffle.***

## DLA CONSOLIDATES REUTILIZATION AND MARKETING WAREHOUSES

Following a public-private competition, the Defense Logistics Agency (DLA) has decided to retain in house the performance of warehousing functions at 68 Defense Reutilization and Marketing Service (DRMS) sites in the United States. DRMS warehousing supports the disposal of excess Department of Defense property, including hazardous materials.

The decision endorses the creation of a "most efficient organization" structure for DRMS, under which warehousing operations will be consolidated at 18 sites. The sites are at Mechanicsburg, Pennsylvania; Fort Bragg, North Carolina; Marine Corps Air Station Cherry Point, North Carolina; Eglin Air Force Base, Florida; Fort Polk, Louisiana; Wright-Patterson Air Force Base, Ohio; Fort McCoy, Wisconsin; Minot Air Force Base, North Dakota; Fort Riley, Kansas; Fort Sill, Oklahoma; Red River Army Depot, Texas; Fort Carson, Colorado; Malmstrom Air Force Base, Montana; Hill Air Force Base, Utah; Marine Corps Base Camp Pendleton, California; Port Hueneme, California; Fort Lewis, Washington; and Barber's Point and Manana, Hawaii. The other 50 sites currently in use will be closed.

The consolidation is scheduled to begin in March and conclude in July. The projected 5-year net savings to the Department of Defense are $36.2 million, or a reduction of 38.3 percent compared to the cost of current DRMS warehousing operations.

## LOW-COST PALLET COULD SAVE MILLIONS

Use of a new "pallet on a pallet" shipping system developed for the U.S. Transportation Command (TRANSCOM) could save the U.S. military millions of dollars in shipment costs. The Associate Intermodal Platform (AIP) system consists of an 82-inch by 102-inch by 8-inch rectangle made of a linear, low-density hexane copolymer. Cargo can be loaded onto the AIP, cargo netting attached, and the whole package tied down and loaded onto a 463L pallet for shipment. The AIP can be used alone or to transport a loaded ISO container.

Once in theater, the AIP can be offloaded and sent on to its final destination and the 463L pallet returned to the Defense Transportation System (DTS). Currently, 463L pallets and nets are sent to the final destination and frequently are lost, damaged, or used for other purposes, such as makeshift tent floors.

"The 463L pallet and net system cost $1,700 per set and the [proposed] cost of the AIP system is $400," said TRANSCOM transportation specialist David Blackford. "This equates to a $1.3 million cost avoidance per 1,000 pallets sent to the theater. We send several thousand pallets to theater per month. We created the AIP to keep the 463L assets in the DTS and still meet the COCOM [combatant command] requirements for unitized cargo loads."

The AIP system has been in development for more than 2 years. Operational testing of the first group of 120 AIP systems will be conducted at the Defense Distribution Depot Red River in Texarkana, Texas.

*Improved, long-life M1A1 Abrams tank engines, called "tiger engines" (such as the one above), are being used to replace tank engines that cannot be repaired in Kuwait. The tiger engine incorporates computerized chips that can diagnose problems and record a "cradle to grave" maintenance report. The introduction of the tiger engine coincides with the move of tank engine repairs from Camp Doha, Kuwait, to a new facility at Camp Arifjan, Kuwait, that opened in November. To save time and avoid transportation delays, tank engines are repaired in theater whenever possible instead of shipping them to Anniston Army Depot, Alabama. Engines that cannot be repaired in theater are sent to Anniston for rebuilding and shipment back to Kuwait. Honeywell Corporation technicians and Anniston Army Depot civilian mechanics perform engine repairs and make replacements with tiger engines.*

## 3D COSCOM OPENS WATER BOTTLING PLANT

A water-purification and bottling plant established at Balad, Iraq, by the 3d Corps Support Command (COSCOM) will supply the bottled water needs of Camp Victory, Taji, and Balad. Bottling water on site eliminates the need for bottled water to be delivered to Iraq by trucks from Kuwait, Jordan, or Turkey and therefore reduces the number of Soldiers and contractors at risk from improvised explosive devices, car bombs, or small arms fire along Iraq's roads.

The plant can bottle 220,000 1-liter containers of pure drinking water a day using a reverse osmosis water processing unit and a "hyperpurifier" to refine water from the Euphrates River. Each bottle is etched with the date and time it was bottled. Army medical personnel constantly monitor water purity.

Plans call for a larger plant to be built at Camp Victory and four additional plants at other sites in Iraq in the future.

## HUMVEE CREWS IN IRAQ TEST COOLING VESTS

Liquid-filled cooling vests developed by the Army Tank Automotive Research, Development and Engineering Center (TARDEC) and the Natick Soldier Center are being tested in Iraq and Kuwait by the crews of some high-mobility, multipurpose wheeled vehicles (humvees).

After humvees were fitted with add-on armor, inside temperatures rose as high as 130 degrees. To keep the crews cool, air conditioners were installed. However, temperatures inside the humvees still reached 95 degrees—an untenable situation that led to the development of cooling vests.

Soldiers wear the vests under their body armor. A hose from each vest is plugged into the vehicle's onboard air-conditioning system, and fungicide-treated water is chilled and circulated through it. A rapid-release system allows Soldiers to disconnect the hoses quickly so they can jump out of the vehicle and keep the vests on.

According to Charlie Bussee, a TARDEC engineer, about 13,750 humvees in theater already have air-conditioning systems installed and 21,000 more systems have been ordered.

For their efforts in developing the vests, TARDEC and Natick received the 2005 Research and Development Laboratory Collaborative Team of the Year Award presented by the Assistant Secretary of the Army for Acquisition, Logistics, and Technology.

*Cooling vests keep Soldiers riding in specially equipped humvees cool by circulating water chilled by the vehicle's air-conditioning system.*

# Writing for *Army Logistician*

If you are interested in submitting an article to *Army Logistician*, here are a few suggestions that may be helpful. Before you begin writing, review a past issue of *Army Logistician*; it will be your best guide. Keep your writing simple and straightforward (try reading it back to yourself); attribute all quotes; avoid footnotes (*Army Logistician* is not an academic journal); and identify all acronyms and technical terms. *Army Logistician's* readership is broad; do not assume that those reading your article are necessarily soldiers or that they have background knowledge of your subject.

Do not worry too much about length; just tell your story, and we will work with you if length is a problem. However, if your article is more than 4,000 words, you can expect some cutting.

Do not submit your article in a layout format. A simple Word document is best. Do not embed photos, charts, or other graphics in your text. Any graphics you think will work well in illustrating your article should be submitted as separate files. Make sure that all graphics can be opened for editing by the *Army Logistician* staff.

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