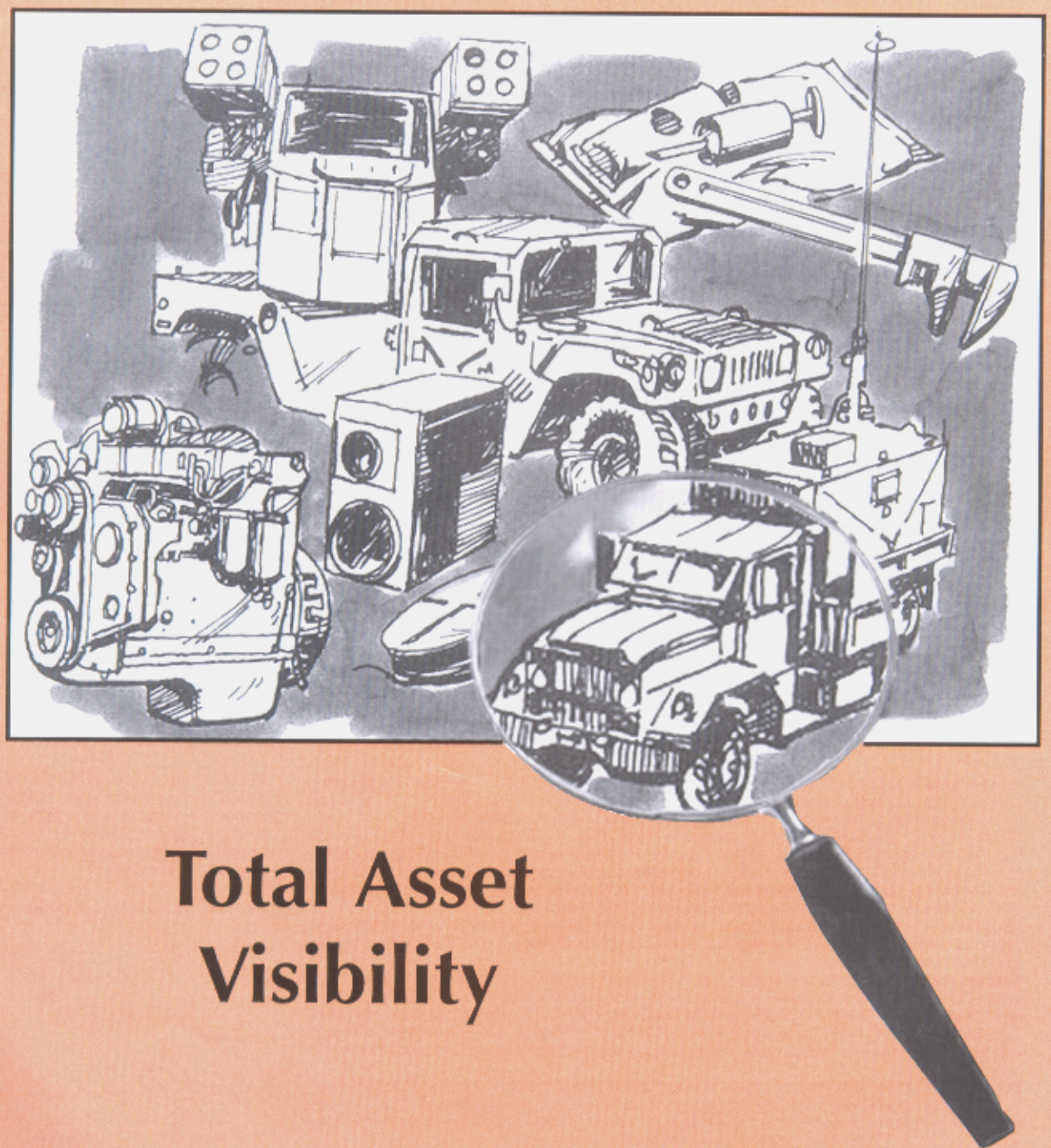
# ARMY LOGISTICIAN

JANUARY-FEBRUARY 2001



## Total Asset Visibility

PB 700-01-1 Headquarters, Department of the Army

# ARMY LOGISTICIAN

PROFESSIONAL BULLETIN OF UNITED STATES ARMY LOGISTICS

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## ARTICLES



## DEPARTMENTS




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**Mission:** ***Army Logistician*** is the Department of the Army's official professional bulletin on logistics. Its mission is to publish timely, authoritative information on Army and Defense logistics plans, programs, policies, operations, procedures, and doctrine for the benefit of all logistics personnel. Its purpose is to provide a forum for the exchange of information and expression of original, creative, innovative thought on logistics functions.

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## COVER

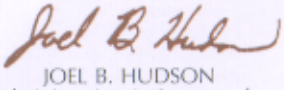
The Army relies on total asset visibility (TAV) to provide timely and accurate information on the location, movement, status, and identity of units, personnel, equipment, and supplies in the logistics pipeline. Several articles in this issue address TAV topics, including the Army's efforts to improve the integrity of TAV data (page 5) and TAV's role in ensuring uninterrupted support to warfighters (page 8).

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:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

Official:



JOEL B. HUDSON
Administrative Assistant to the Secretary of the Army
0028503

## *Coming in Future Issues—*

- CSS Quick-Reaction Force
- U.S. and Russian Engineers Find a Common Bond in Bosnia
- The Campaign in the Shenandoah
- Mobilization of DS Fuel and Electric Capabilities
- Logistics-Over-the-Shore Operations
- Commentary: The First Level of War
- War on a Shoestring
- Integration of AIT Into Ammunition Logistics
- Beep, Beep . . . Road Runner Returns!
- Operational Architecture for CSS
- Do You Have the Parts to Support Change?
- The Certified Professional Logistician Program
- The Realm of Possibilities

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# ALOG NEWS

## ARMY HAS NEW DCSLOG

Lieutenant General Charles S. Mahan, Jr., recently was appointed Deputy Chief of Staff for Logistics (DCSLOG), Department of the Army. He replaces Major General Charles C. Cannon, Jr., who has been the acting DCSLOG since General John G. Coburn left in 1999 to become Commander of the Army Materiel Command.

General Mahan previously served as Chief of Staff of the Army Materiel Command. He has held many other duty assignments in a variety of locations in six countries. General Mahan has a bachelor's degree from the U.S. Military Academy and a master's degree in business administration from the University of Miami. His military education includes completion of the Quartermaster Officer Basic and Advanced Courses, the Defense Language Institute, the Army Logistics Management College's Logistics Executive Development Course, the Army Command and General Staff College (School of the Americas), and the Army War College.

LIEUTENANT GENERAL CHARLES S. MAHAN, JR.

## LAST TAACOM MERGED INTO NEW THEATER SUPPORT COMMAND

The multicomponent theater support command concept took a major step forward with the inactivation of the Army's last theater army area command (TAACOM). The 9th TAACOM at Camp Zama, Japan, was merged with the Army Reserve's 310th Theater Support Command (TSC) at Fort Belvoir, Virginia, to form the 9th TSC. The new unit consists of about 40 active-duty soldiers at Camp Zama and approximately 400 Army Reserve troops at Fort Belvoir, 9,000 miles away.

The new unit is the latest multicomponent active-reserve unit. The merger gives the 9th TSC the manpower to carry out its mission, which is to provide logistics support to U.S. Army Pacific. The merger is part of the continuing trend to combine Active Army and Army Reserve units to support the Army's worldwide commitments and to take advantage of the skills and experience reservists can bring to active-duty units.

"We have the mission, and merging with the 310th gives us the people we need to carry it out," said Major General Alan D. Johnson, commander of U.S. Army Japan and the 9th TSC. "The whole idea of the multicomponent unit is to give Active Army units additional resources to accomplish the mission. For reservists, the merger means they will be able to focus their time and training on real-world missions and to know where they fit and what they'll be doing in the event of mobilization."

*(News continued on page 42)*

# NEWS

*(News continued from page 1)*

## EXPERIMENTAL SYSTEM PROVIDES REAL-TIME IN-FLIGHT DATA

Among the technology tested last September at the Joint Contingency Force Advanced Warfighting Experiment at Fort Polk, Louisiana, was the Enroute Mission Planning and Rehearsal System (EMPRS). EMPRS enables leaders to communicate with each other from separate aircraft, receive updated information from a ground-based headquarters by satellite, and modify their mission plans as necessary before they arrive at the operation site.

"When you put an airborne force or a light force . . . on an airplane, you essentially put them in an isolation booth, so all they know is what they knew when they got on that airplane," said Lieutenant General Randall L. Rigby, exercise director for the experiment.

During one test of the system, paratroopers from the 3d Battalion, 325th Airborne Infantry Regiment, 82d Airborne Division, Fort Bragg, North Carolina, were tasked to take the airfield on the fictitious island of "Aragon." They learned 15 minutes after takeoff that a cache of SA–18 anti-aircraft missiles north of the drop zone had to be seized as well.

With the help of EMPRS, Lieutenant Colonel Michael Garrett, 3d Battalion commander, drafted a new plan of attack, briefed the joint task force headquarters at Fort Bragg, and informed his men of the additional mission before they reached the drop zone. He was able to section off a detachment to seize the missiles well before the paratroopers hit the ground.

Based on such performance, some officials believe the EMPRS could play a key part in the success of Army Chief of Staff General Eric K. Shinseki's plan to create brigade combat teams that can deploy anywhere in the world within 96 hours. "If you can't plan to rehearse while you are in the air, then we won't be able to make the 96-hour time line," Rigby said.

Although EMPRS worked well during the tests, some officials feel that it needs some fine-tuning. For example, Captain Dave Pierce, commander of C Battery, 2d Battalion, 319th Airborne Artillery Regiment, 82d Airborne Division, believes the system's computer takes up too much space on a C–130 aircraft. Having the EMPRS onboard meant that only 52 paratroopers—not the usual 64—could be on board.

Program engineers argue that the system used in the experiment was designed to prove the concept, not to take to war. Ed Bullwinkel, senior engineer for the Army Communications-Electronics Command, agrees that there is a lot of wasted space but says, "As technology turns out every year, we are going to do major size, weight, and complexity reductions."

General Rigby feels confident that the system is "something we would want to pursue further."

## ARMY BEGINS REBUILD OF ABRAMS TANKS IN EUROPE

The Abrams Integrated Management (AIM) program will completely rebuild every M1A1 Abrams tank in U.S. Army Europe over the next 3 years. The AIM program is a part of the Recapitalization Program that was established to extend the life of the Army's aging legacy equipment. AIM will provide long-term sustainment of M1A1 Abrams tanks through fiscal year 2025. Higher-than-normal mileage for the tanks during operations in the Balkans and training in Germany made the overhaul necessary.

The Military Traffic Management Command's (MTMC's) 838th Transportation Battalion at Rotterdam, The Netherlands, received the first tanks for shipment to the United States in September. Up to 75 percent of the tanks were not operational. MTMC transported the tanks to Anniston Army Depot, Alabama, where they will be disassembled. The hull, turret, engine, and other parts will be sent to the tank production plant in Lima, Ohio, to be reworked. MTMC will return the rebuilt tanks to Europe, where they will be swapped one-for-one with tanks that still need repair. The first shipment of rebuilt tanks should arrive in Europe by fall.

## MTMC CHANGES THE WAY IT DOES BUSINESS

The Military Traffic Management Command (MTMC) soon will begin using the Federal Acquisition Regulation (FAR) when establishing long-term, recurring surface transportation contracts. For many years, the transportation industry was heavily regulated and thus exempt from using the FAR, which is used by all other Federal agencies to purchase supplies and services. Since Congress has eliminated most transportation regulations, MTMC now needs to start using the FAR to contract for its transportation needs.

## LAND WARRIOR TESTED AT JRTC

☐ **Airborne infantry soldiers participating in the Advanced Warfighting Experiment prepare to enter a building at the Shughart-Gordon Military Operations in Urban Terrain site at the Joint Readiness Training Center.**

The Joint Contingency Force Advanced Warfighting Experiment (AWE) provided an opportunity to test the latest version of the Army's Land Warrior system in the field. The exercise, at the Joint Readiness Training Center at Fort Polk, Louisiana in September, was designed to evaluate how a number of new technologies might affect the way forces fight in the future. Soldiers from 2d Platoon, C Company, 3d Battalion, 325th Airborne Infantry Regiment, 82d Airborne Division, from Fort Bragg, North Carolina, tested the Land Warrior system in a night parachute assault jump, a night assault on an urban area, a night live-fire attack on an urban facility, and a night live-fire ambush. The soldiers received the newest prototype of the Land Warrior system—which includes a new helmet, new body armor, a battledress uniform with lifetime insect repellant, and new boots—in early June so they could learn to use the system before the September test.

The AWE was the toughest test to date for the Land Warrior electronics system, which consists of a computer, a digital radio with helmet-mounted speaker and microphone, video and thermal sights, and a global positioning system (GPS). The video sight is just for daylight, but the thermal sight can be used in all battlefield conditions. The computer sends the images to a helmet-mounted monocular eyepiece. In urban combat, a soldier can use the rifle to look around corners to pick up targets, exposing only his hands. The computer receives and sends graphics, plus it can transmit video frames from the battlefield to platoon and company commanders. The GPS shows the locations of all soldiers on a map of the area of operations, and the digital radio permits instant communications throughout the platoon.

During the AWE, the Land Warrior microprocessor and built-in GPS enabled every soldier in the platoon to locate targets, navigate with precision over foreign terrain, and remain in constant contact with leaders. After their initial night jump, the soldiers were able to find the assembly area in half the time it normally takes.

Soldiers identified some problems with the system during the test: The radio system was unreliable at distances beyond 200 meters, depending on the terrain; and the load-bearing harness distributed weight poorly. The paratroopers had identified many of the shortcomings while training to use the Land Warrior system. Many of the problems had been resolved with the next generation of software and a new load-bearing frame, but there was no time to outfit all the soldiers with the updated equipment before the AWE began.

Overall, officials were pleased with the results of the test. Colonel Bruce Jette, Project Manager-Soldier, Army Soldier Systems Center at Natick, Massachusetts, said, "So far, the system has met and demonstrated all that we expected it to."

The change will alter the method MTMC has used to procure transportation services for over 35 years. In the past, MTMC has used a tender method. Transportation providers were notified by telephone of the services needed—sometimes with as little as 4 hours' notice. This often made it difficult for the transportation industry to provide services. Under the FAR, the Government will sign long-term contracts with transportation providers. Using this method, a carrier will be able to anticipate needs and ensure it has the equipment needed to support Government shipments.

MTMC leaders are enthusiastic about the change. The rules for the purchase of surface transportation will make providing services to MTMC easier for trucking and

barge transportation providers in the United States. At a meeting of the National Defense Transportation Association's Surface Transportation Committee, MTMC commander Major General Kenneth L. Privratsky said, "We are currently out of specification. With this change, we bind both parties—the Government and the carrier. No one can walk away."

MTMC will continue to use a voluntary tender procedure for shipments not covered under a long-term contract. Military household goods are not affected by the proposal.

**☐ After a roll-out ceremony in September, the first production models of the Forward Repair System (FRS) were fielded with the Army's first digitized division, the 4th Infantry Division, at Fort Hood, Texas. The FRS is a mobile, self-contained repair shop designed to perform field-level repair and maintenance on major combat systems such as the M1 Abrams tank and the M2 Bradley fighting vehicle. It has a crane capable of lifting the complete engine and transmission from an M1 tank, an electric generator, welders, compressed air, a kit for cleaning up oil spills, lights, test and diagnostic equipment, and a full set of power tools and handtools. The Force XXI concept calls for the FRS to be deployed forward with repair teams to support mechanized infantry, armor, and field artillery forces.**

## PROCEDURES FOR MOVING WEAPONS BY MAIL CLARIFIED

The Army recently completed a review of the rules governing physical movement of arms, ammunition, and explosives (AA&E) by units. This review was prompted by two incidents that placed Army weapons at risk, one involving the use of Federal Express (FedEx) and the other the United States Postal Service (USPS). The review of applicable Army, Department of Defense, and USPS policies and procedures verified that registered mail provides a secure transportation protective service for transporting weapons and a signature tracking system to ensure accountability of weapons during shipment. Moreover, the policies prohibit the shipment of weapons by FedEx and only authorize the shipment of 15 or fewer weapons via USPS registered mail with return receipt requested.

However, clarification of the Army policy (described in AR 190–11, Physical Security of Arms, Ammunition, and Explosives) was needed to provide further guidance to commanders at the company and battalion levels and above on the use of USPS to transport weapons. Therefore, the following change to the policy and procedures concerning the shipment of weapons by registered mail has been put into effect—

> Add to paragraph 7–8a of AR 190–11 the following language—
>
> "Units deploying for a training event, force generation, or wartime deployment must coordinate all AA&E transport requirements with the installation transportation office or equivalent designated activity. Units deploying for training events, force generations, or wartime deployments are not authorized to transport (move) weapons using the US Postal Service."

Commanders can find information on the transportation protective measures required for organic and unit movement of Army AA&E in chapter 7 of AR 190–11.

## LOGISTICS EXCHANGE PROVIDES ONE-STOP SYSTEMS INFORMATION

The Defense Logistics Agency Logistics Operations (J–3) (formerly the Defense Logistics Support Command) home page offers a one-stop guide to 11 automated systems that provide logistics information. The Logistics Exchange Supply Chain Management website, http://www.supply.dla.mil/Logistics/exchange/, contains hotlinks to cataloging, requisitioning, asset status, distribution, and transportation system products. The Logistics Exchange offers a summary of each system's capabilities, the computer software and hardware required to use the system, directions on how to acquire access, and points of contact. There are also links to four cross-functional systems, such as the Joint Total Asset Visibility capability, for assistance in providing optimal support. The page also features on-line audiovisual tutorials, a form for submitting supply assistance requests by e-mail, and logistics notes.

The Defense Logistics Information Service in Battle

Creek, Michigan, offers tailored training on using the Logistics Exchange. For more information, call (616) 961–4829 or DSN 932–4829.

## E-COMMERCE SPEEDS MTMC CUSTOMER COMMUNICATIONS

MTMC is using the Internet to improve customer communications. It has created an e-commerce site that makes communication between customers and the Military Traffic Management Command (MTMC) faster. Using the e-commerce site, commercial customers can access MTMC's automated transportation systems directly by bypassing the Department of Defense's Nonsecure Internet Protocol Router Network (NIPRNet). Customers can access the system at https://eta.mtmc.army.mil.

## ARMY MAINTENANCE PROGRAM GOING HI-TECH

The Army is testing an analog embedded diagnostics (AED) system that can connect to the existing sensors built into the engines of its trucks, Bradley fighting vehicles, and ammunition carriers. When connected, the AED system will be able to monitor engine systems constantly and record critical data in a small computer processor mounted in each vehicle. When vehicles are brought in for service checks or repair, maintainers can download information from the AED system to determine if the engine has been functioning within the specified parameters.

"We're tapping into the built-in sensor with a computer to record the data," said Patrick Stevens, office of the Program Manager, Test, Measurement, and Diagnostic Equipment (PM TMDE). "We compare that information with what should be happening. If it goes outside the parameters, we know that there's a problem right now or that one may be coming . . . With the [AED] system, we should be able to predict the failure before it occurs."

"The system will help the maintainer locate problems quicker, and without performing unnecessary replacements," said Stevens. "The obvious benefits are cost savings through more efficient maintenance and repair and improved readiness. The quicker they're fixed, the better."

Rymic Systems, Inc., of Huntsville, Alabama, is developing and testing the system. Once in production, each AED is expected to cost approximately $1,000. After initial testing at Fort Riley, Kansas, PM TMDE will outfit one entire company with AED. It then will compare that company to another company with a similar mission operating under similar conditions without AED to see the impact on costs of parts, hours of maintenance, and readiness levels. With favorable results, system production is expected to begin in fiscal year 2002.

The AED system is not limited to use in ground vehicles. The South Carolina Air National Guard is working on a similar system for the AH–64A Apache and the UH–60 Black Hawk helicopters to reduce vibration problems. Once that system is developed, it can be adapted to other Army aircraft.

## WORLDWIDE AMMUNITION, MISSILE, AND TMDE CONFERENCE DATE SET

The Army Ordnance Missile and Munitions Center and School will host the 2001 Worldwide Ammunition, Missile, and Test, Measurement, and Diagnostic Equipment (TMDE) Conference 12 to 16 March 2001 at Redstone Arsenal, Alabama. Call DSN 746–9179 or (256) 876–9179 for conference information. Information and on-line registration also are available on the World Wide Web at http://www.redstone.army.mil/ommcs.wwconf.htm.

## TRANSPORTABILITY TB GOES DIGITAL

The Military Traffic Management Command Transportation Engineering Agency (MTMCTEA) is replacing the hard-copy version of Technical Bulletin (TB) 55–46–1, Standard Characteristics for Transportability of Military Vehicles and Other Outsize/Overweight Equipment, with a digital version. The digital TB is available on compact disk or on the World Wide Web for downloading. The January 2001 version of TB 55–46–1 will be the last to be produced and distributed in a hard-copy format.

Besides outsize and overweight equipment, the new digital version of the TB includes all table of organization and equipment (TOE) end items and over 1,800 equipment images. It incorporates capabilities that will allow users to search for data and to print only selected sections of the TB.

The digitized TB will reduce production and distribution costs and will permit users to obtain the latest

changes to equipment characteristics. Distributing equipment characteristics data in an annual hard copy of the TB meant that users relied on increasingly dated information until they received the next hard copy.

For information about obtaining the CD version of the TB, contact TOPS (Telephone Ordering Publications System) Customer Assistance at (703) 325–9224 or DSN 221–9224, or send an e-mail to usapa-dof.custs@arpstl-pub1-emh1.army.mil. Comments, concerns, or suggestions concerning MTMCTEA's intention to discontinue the hard copy version of TB 55–46–1 can be forwarded to TB55@tea-emh1.army.mil.

## INITIATIVE SPEEDS DEFENSE SHIPMENTS

The Department of Defense Strategic Distribution Management Initiative that began last year has increased the speed of shipments and resulted in efficiencies and customer satisfaction. Freight shipments within the continental United States that once took 22 days now take 9, and freight shipment times between the United States and Europe have been reduced from 54 days to 39.

The premise of the initiative is to synchronize the work of Defense Logistics Agency depots with U.S. Transportation Command freight shipments. Trucks now are scheduled to arrive for their cargoes when the freight is ready for shipment. This initiative takes over from the Army Velocity Management program and expands it to the entire Department of Defense.

Major General Kenneth L. Privratsky, Military Traffic Management Command commander, described the initiative as "an example of aligning our work force with our workflow to meet customer delivery expectations."

## BLACK HAWK UPGRADE SCHEDULED

The Army has received the go-ahead from the Defense Acquisition Board to upgrade its aging fleet of 1,500 UH–60 Black Hawk helicopters. The modernization will increase the lift and range of the UH–60A's and equip the aircraft with new glass cockpits and instruments that provide better situational awareness.

Modernization of the UH–60M's will include installation of upgraded engines and gearboxes, new blades, and a digital cockpit with voice recorder. The improvements will lower operation and support costs and establish an aircraft fleet half-life (average age) of 10 years. Corpus Christi Army Depot (CCAD), Texas (and other sites if the work load exceeds CCAD's capabilities), will strip and prepare the helicopters for shipment to Sikorsky Aircraft Corporation in Stratford, Connecticut, for refurbishing. Low-rate initial production of the modified systems will begin in 2004, followed by full production at a rate of 60 to 85 a year until the project is complete.

**☐ A mechanic from Combat Equipment Base-Brunssum, The Netherlands, makes last-minute adjustments to the windshield of a truck bound for Qatar. The truck is one of more than 2,700 pieces of equipment that the Army Materiel Command's Combat Equipment Group-Europe (CEG–E) prepared for shipment from Antwerp, Belgium, to Qatar's new pre-positioned stock facility in September. Equipment loaded onto the *MS Green Dale* for shipment was drawn from CEG–E units in Italy, Luxembourg, and The Netherlands. (See related article on page 19.)**

## GUARD ACTIVATES NEW JOINT UNIT

The Army National Guard activated a new joint unit on 1 October at U.S. Joint Forces Command (USJFCOM) headquarters in Norfolk, Virginia. The unit, which is composed of 40 Army National Guard and 10 Air National Guard members from Virginia and North Carolina, joined the USJFCOM Joint Reserve Unit as the Joint National Guard Augmentation Unit. Most of the guardsmen are assigned to experimentation, training, and task force-civil support.

The merger enhanced the command's knowledge base of total force integration substantially in every directorate.

"This [is] an opportunity for our people to gain joint experience and for us to lend some of the Guard's core competencies to Joint Forces Command," said

Lieutenant Colonel Norman Gilmore, a Marine Corps reservist who managed the activation of the joint Guard unit at USJFCOM.

While serving with the Joint National Guard Augmentation Unit, guardsmen will remain subject to traditional activation in response to mobilization orders from their state commands.

## ARMY TEAM WINS WORLD COOKING COMPETITION

The Army Culinary Arts Team won the world championship title in the International Culinary Olympics held in Germany in October. The U.S. team took the championship by winning 22 gold, 3 silver, and 3 bronze medals in the hot meal and cold-food buffet categories. Held every 4 years, the International Culinary Olympics is the world's oldest, and arguably most prestigious, cooking competition. Cooks from 29 national teams and 16 military teams vied for the 2000 championship title.

Chief Warrant Officer (W–2) Travis Smith, from Fort Lee, Virginia, led the Army team. Team members included Sergeant First Class Mark Warren and Sergeant First Class Willie Meeks from Fort Bragg, North Carolina; Staff Sergeant Mark Morgan from Hunter Army Airfield, Georgia; and Sergeant Joshua Sperl from Fort Drum, New York.

## NEW MODULAR TENTS TO BE USED AS BASE COMMAND AND CONTROL CENTERS

The Army's World War II era general-purpose (GP) tents are being replaced with the new, lighter, modular general purpose tent system (MGPTS) beginning this year. The MGPTS will serve as the basic building block for a new base module system that will be used as a rapidly deployable, multipurpose command post for various field needs—the bare base command and control module.

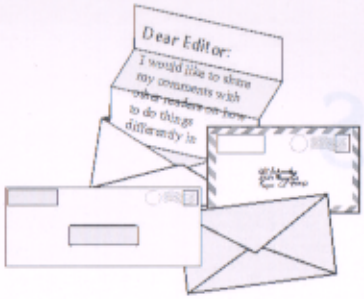
The MGPTS is made of vinyl-coated fabric with heat-sealed seams for better weatherproofing. It has built-in screen walls that eliminate the need for the liners used on the old GP tents. A floor also is available that extends several inches above the ground and wraps around the walls to form a "bathtub" effect, keeping out rain and other undesirable elements. The new tent is 2 feet wider, 4 feet longer, and 1 ½ feet higher at the sidewall than the old GP tent. Four soldiers can erect a tent in 30 minutes.

**☐ The Modular General Purpose Tent System has built in screens for ventilation and ducts for connecting external heat or air conditioning.**

Since the MGPTS is modular, it can be extended in 18-foot increments by adding intermediate modules. Each doorway of the tent can be connected to the Army's tent, extendable modular personnel vestibule, which is impossible to do with the GP tent.

The bare base command and control module uses 5 MGPTS's to provide 3,400 square feet of work and living space and accommodates up to 32 soldiers. Eight soldiers can assemble it in less than 4 hours.

The command and control module is part of a forward operating base system that commanders can expand with various reach-back modules. These are available through a "commander's menu" concept, which offers a number of module designs to improve the quality of soldier living conditions, efficiency, and productivity. The commander's menu is composed of the command and control module, shower and ration modules, winter and summer modules, a plus-up billeting module, large area maintenance shelters, and a deployment system. All components of the commander's menu, except for the shower and ration modules, are currently available.




# LOG NOTES

## Civilians in BDU's

I read with interest the article, "Managing, Deploying, Sustaining, and Protecting Contractors on the Battlefield," in your September-October issue. The article may have provided the documentation I need to bring a problem to the attention of higher authorities. It has been a sore point for me for the past few years. It concerns the safety of emergency essential civilians (EEC's) who are deployed during conflicts. I am a Vietnam vet and was sent to the Balkans twice (in 1996 and 1998) during the bombings, so I speak from first-hand experience.

I am not sure exactly how many EEC's are presently in the U.S. Army work force, but at last count I believe we numbered around 750 to 1000. I am aware that the Marine Corps has similar positions, as does the Navy. EEC's are routinely required to accompany the U.S. Army into hostile areas. The fact that my position requires this is not an issue with me, but the wearing of the U.S. Army battledress uniform (BDU) is! Many of my colleagues have attempted to challenge the wearing of this uniform by civilians during deployment because we believe that it endangers our lives.

Mr. Fortner's article includes the following statements:

> "... Combatants (soldiers) are uniquely privileged to conduct war. In doing so, they can knowingly and deliberately kill opposing soldiers. No civilian ever has that right. If a soldier kills during warfare and subsequently is captured, he can be held only as a prisoner of war. A civilian who kills during warfare and subsequently is captured can be held, tried, and punished as a criminal. This is a powerful reason for not permitting contractor personnel to wear military uniforms; it avoids the potential for jeopardizing the soldiers' protected status. As long as contractor personnel do not violate their legal status, they are entitled to prisoner-of-war status if they are captured."

My job description requires that I routinely familiarize myself with a standard Army-issue 9-millimeter pistol for personal safety purposes so that I am prepared to carry arms when I am deployed. While deployed, I am required to wear a distinguishing black baseball cap provided by the Army Materiel Command (AMC), not the standard issue BDU cap. It doesn't take a lot of imagination to envision the danger this presents. The enemy could look at me, wearing a uniform, possibly carrying a standard Army sidearm, but wearing a black baseball cap, and in a given situation could declare and charge me as a murderer. And my Government, by international law, would be unable to defend me after having placed me in this position.

Attempts to outfit the work force in a work-style, single-piece jumpsuit with proper name tag, headgear, and footwear have failed. I feel this may be because military planners and leaders perceive the absence of a uniform as loosening control over the work force, which is absurd.

I am certainly not going to jeopardize 30 years of service and retirement by ignoring the requirements of a position that requires that I sign documents in which I agree to deploy and to live and work in deployed scenarios. But something needs to be done to correct this situation. I am sending a letter to my Congressman in the hope that he will understand the predicament that some Department of the Army civilians may find ourselves in because our own Government put us there.

For more information, see Senate Bill S.768 that later became a law titled "Military Extraterritorial Jurisdiction."

**M.L. Studer**
**Redstone Arsenal, Alabama**

*[Mr. Fortner, author of the article, provided the following response to Mr. Studer's letter.]*

When the Contractors on the Battlefield Integrated Concept Team (ICT) was developing FM 100–21 and AR 715–9, the lawyers involved determined that there is no law that requires civilians (to include contractor personnel) to wear BDU's. Likewise, there apparently is no law prohibiting such. The ICT interpreted that to mean that the law is silent on the matter. Therefore, we did not have a legal issue; we had a policy issue. That was agreeable to us because the ICT cannot make law, but it can propose policy. And it did—and embodied it in AR 715–9.

But AR 715–9 and FM 100–21 only apply to contractor personnel. Department of Defense (DOD) civilians come under different regulations and policies. We have shared our views with the Army Office of the Deputy Chief of Staff for Personnel and many other interested agencies (including AMC). The agreement within the ICT is not unanimous, but the majority of the individual members agree that no civilian should be in the same uniform as U.S. soldiers. We have published policy with respect to contractor personnel, but at the current time there is no comparable policy for DOD civilians.

**Joe A. Fortner**
**Fort Lee, Virginia**

## Correction to News on Chinooks

On page 60 of your July-August issue, you show several pictures of a CH–47D being loaded into a C–5A Galaxy. The caption for the pictures implies that the CH–47's stationed in Korea were all grounded by a safety of flight message and that the two aircraft being shipped were needed in order for the units in Korea to perform their mission. In truth, the grounding of the Chinooks was lifted in August of 1999, and the Korea units were and are performing their missions as before.

The two aircraft you featured were part of a normal rotation of aircraft from the depot facility to field units to replace airframes in the field identified by the Army Aviation and Missile Command as requiring overhaul. These rotations are on a one-for-one swap basis. In July 2000, two more aircraft were swapped between Korea units and Corpus Christi Army Depot.

**Staff Sergeant Blake E. Brodeur**
**Camp Humphreys, Korea**

*[A response from Corpus Christi Army Depot follows.]*

The Corpus Christi Army Depot, as far as we know, for the first time, sent two Chinooks by C-5A to Korea to ensure that the customer had their aircraft as a part of their readiness posture. Staff Sergeant Brodeur's comments are correct, and we thank him for writing the letter.

**Ralph Yoder**
**Corpus Christi, Texas**

## An Idea Whose Time Has Come

Regarding the commentary, "Bring Back the Troop Ships," in the July-August 2000 issue: This is something that makes sense, saves time and money, and gets a troop to a unit, ready to go. His housing requirements could even be transmitted to his assigned post so that quarters would be available when he hits the ground. His privately owned vehicle also could be transported on the same ship.

Someone is thinking. This could work for all services, not just the Army, and we could save a whole lot of money that could go for training or spare parts or updating facilities. Now the problem will be to get the leadership to make it happen.

Let's work smarter, not harder.

**Les Bentley**
**Lansing, Michigan**

## Misnamed Vehicle

I would like to comment on your news item about the corrosion test facility in the September-October 2000 issue. The Family of Medium Tactical Vehicles (FMTV) is produced for the Army by Stewart & Stevenson Tactical Vehicle Systems, LP. Two Army FMTV systems that were tested at the Aberdeen Test Center are the first military vehicles ever to complete a full-scale, 22-year accelerated corrosion and durability test.

The caption for your photos contains an error. I believe the truck in your photos is a medium tactical vehicle replacement (MTVR). It is being procured for the U.S. Marine Corps as a replacement for their M809/M939 older 5-ton trucks.

**Paul Justice**
**Sealy, Texas**

Reference the news item, "Corrosion Test Facility Helps Extend Vehicle Life," in the September-October 2000 issue: The photo caption contains an error. The caption should read, "At the ATC, a 7-ton medium tactical vehicle under development to replace the 5-ton M939. . ." The Marine Corps has never had an FMTV; therefore, the vehicle shown cannot be the Marine Corps FMTV replacement.

For the record, the FMTV program was the first tactical wheeled system to be tested successfully at the Aberdeen Test Center (ATC) corrosion test facility. The PM-MTV (Project Manager-Medium Tactical Vehicles) assisted in the development of the 22-year equivalent test procedure and contracted with experts from industry to assist in the test procedure development and in the facility equipment selection.

In a ceremony in October 2000, the PM-MTV gave recognition awards to ATC personnel and corrosion experts that made the ATC corrosion test facility project in support of the Family of Medium Tactical Vehicles program a success.

**Dennis Mazurek**
**Warren, Michigan**

## Food for Thought

I have some comments about some of the articles in the September-October 2000 issue of the *Army Logistician*. In reference to your article "Managing, Deploying, Sustaining, and Protecting Contractors on the Battlefield," I realize that we're going to have contractors supporting all facets of the military service operations even though it is significantly more expensive than using military members to do the job; but sending contractors into combat areas where there is a significant chance of being engaged is ludicrous. To top it off, we then include in FM 100–21, which is nonregulatory, all the reasons, ideas, and philosophies that would dictate the scenario where an individual can carry a personal weapon. To limit a contractor to a 9-millimeter pistol that essentially has a maximum effective range of 25 meters is putting a contractor into a situation where he or she would already be dead. Not many enemy soldiers are going to hold their fire until they "see the whites of their eyes."

Firearms should be carried that would allow the individual a chance of survival. An M–16 would at least give the individual a couple hundred yards of "standoff range." Someone needs to do a realistic evaluation of this requirement as well as the entire manual. Let's put soldiers to work in most of these areas that we contract out and cut the cost, improve the reliability, improve responsibility and, in the end, get a better end product.

I enjoyed the article, "Buying Spare Parts for the Last Time," but when will the concept ever be put into practice? A prime example is the UH–1 aircraft that the Army is planning to get rid of by the end of FY 04. This is an exceptional aircraft for the mission that it is designed to do and the training benefit that it provides, yet we as an Army refuse to procure adequate parts to allow us to use

these aircraft until the time of retirement. One of the main UH–1 aircraft parts that I'm talking about is the main rotor mast assembly. There was a safety of flight message issued on that component that grounded approximately 80 percent of the aircraft in the Army's fleet. Yet there are civilian masts on the market that are exactly identical and cost no more than the Government version, according to Bell Helicopter, the manufacturer, but the Army refuses to allow units to procure these masts. We have hundreds of aviators sitting on the ground receiving no training, providing no support, and getting paid while the Army does virtually nothing about it. Why is the Army not employing the life of type purchase program for this part? By the time the Army goes through its normal procurement process, even the Comanche helicopter will be out of date!

Next, the news article, "Some Hueys to Get New Engines," states that 365 of the UH–1's are mission capable. I routinely talk to both active duty and National Guard units around the United States, and no one is even close to a 37 percent operational readiness rate. The numbers that I hear are, "We have 40 UH–1's and 3 are flyable" or "We have 8 UH–1's and 1 is flyable." Where are all these flyable UH–1's? Also, the time required to "rebuild" a T53–L–13B engine is not overnight. By the time the engines are rebuilt by Corpus Christi Army Depot (CCAD), FY 04 will be upon us. It's also curious that we are sending the engines to the CCAD for rebuild when that facility is the one that is responsible for the majority of the problems in the first place.

Finally, the statement that the Black Hawks will replace the UH–1's is 100 percent false. Ask anyone in the "aircraft supply channel," and they'll tell you that there are not near enough Black Hawks to fill the void that will be left by the UH–1 retirement. The latest information on the ArmyLINK News is that the Army Chief of Staff, General Shinseki, is ordering the transfer of 122 Black Hawks from active duty units to the National Guard. How will these 122 fill the void left by over 600 NG UH–1's, and what's going to happen to the units losing the 122 aircraft? Also, what about all the active duty units that are not going to receive any replacement aircraft for their UH–1's? How do they continue to support their mission and training requirements? These units include the National Training Center in California, the Joint Readiness Training Center in Louisiana, the Combat Maneuver Training Center in Germany, and numerous flight detachments for installation support, test, and evaluation.

And to drive the knife deeper into the backs of the Army, especially aviation, personnel, the United States is sending 40 brand new Black Hawks and 33 refurbished UH–1N's to Colombia as part of a $1.3 billion drug package that actually ends up costing $7.5 billion in the end (according to the *Washington Post* and other media). If we kept even part of that money at home, we could immediately solve a very significant portion of the Army aviation's problems. Every UH–1 could have a rebuilt engine, new main rotor mast, and a rebuilt tailboom and, very likely, every Black Hawk could be upgraded for the money that we're giving to Colombia. That would allow Army aviation to continue for the next 10 years standing on both feet instead of flat on our backs. This money also could be used to rebuild hundreds and hundreds of Humvees and other vehicles that are sitting stripped in motor pools.

I know it sounds like I'm down on your magazine, but I'm not. Keep up the good work of reporting what is going on in the world. Maybe, someday, someone in the Washington area will actually read what you're telling them. It's great to upgrade and improve, but not at the expense of the overall readiness of the military. Let's consider some "phasing" out of vehicles and aircraft as replacements become available and make more new systems available to the units that need them.

**Name Withheld**
**By Request**

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I certify that the statements made above by me are correct and complete: Janice W. Heretick, 6 October 2000.

# ATAV–E: Better Data for Asset Visibility

by Gary Suders and Cecilia Butler

Army Total Asset Visibility-Enhanced offers the user web-based access to more accurate data.

One of the key objectives of improving automation support of the Army's logistics transformation is the capability to provide logistics situational awareness. Total asset visibility remains central to achieving that objective, and the Army Total Asset Visibility (ATAV) program continues to be an important tool for providing warfighters access to data that facilitate quick and efficient deployment and sustainment of forces. Current ATAV efforts focus on improving data accuracy and validity and providing web-based access to logistics management information through the development of Army Total Asset Visibility-Enhanced (ATAV–E).

In every major deployment of recent years, military forces have been plagued by a lack of visibility of materiel and equipment entering their theater of operations. The sheer volume of materiel moving through the logistics pipeline has taxed the abilities of soldiers, logisticians, and managers to track items manually, maintain accurate records, and provide timely information to commanders. The ATAV program resulted from the many logistics deficiencies identified after Operations Desert Shield and Desert Storm. During those operations, thousands of containers arriving in Southwest Asia had to be opened, inventoried manually, resealed, and reinserted into the logistics pipeline because of a lack of visibility of their contents.

A dedicated effort has been underway since 1990 to ensure that such problems do not recur. The Army has developed an integrated ATAV capability, which currently is operational and has been implemented Army-wide. ATAV is an automated capability that improves the ability of soldiers, logisticians, and managers to obtain information on the location, quantity, condition, and movement of assets all along the logistics pipeline. It is designed to achieve total asset visibility, which is one of the six tenets of the Revolution in Military Logistics.

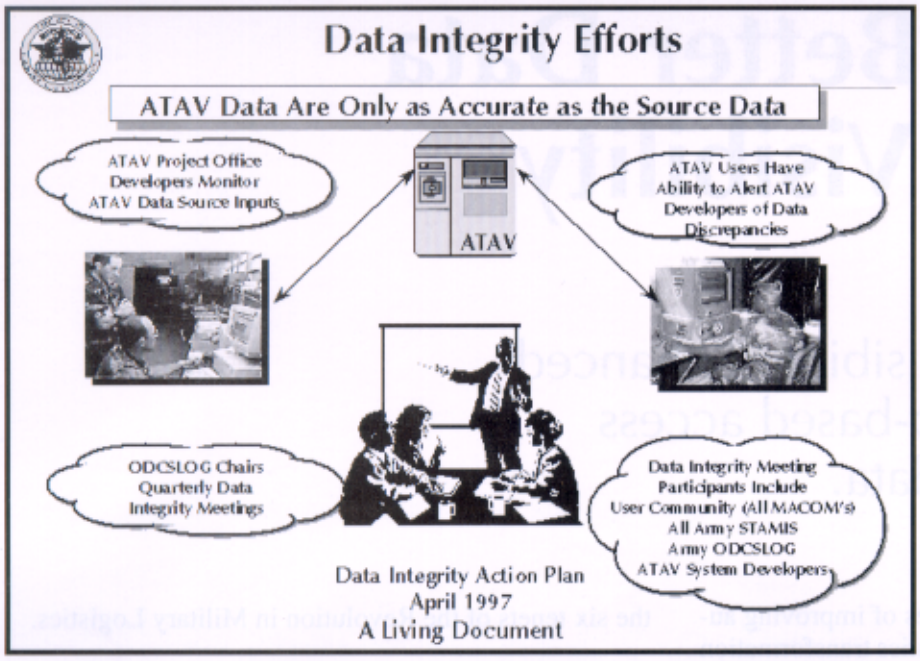
### Improving Data Accuracy and Validity

During fiscal year 1996, the Army began an aggressive effort to improve the integrity of ATAV data. An ATAV Data Integrity Action Plan was developed. Under that plan, the Army Logistics Integration Agency chairs quarterly meetings of an ATAV Data Integrity Work Group (DIWG), which includes representatives from Headquarters, Department of the Army (HQDA); the major Army commands (MACOM's); system design centers; and the Army Materiel Command's Logistics Support Activity (LOGSA). Through the efforts of this work group, ATAV data integrity has improved significantly over the past year.

Accurate ATAV data are essential if users are to have enough confidence in ATAV to use it in making successful supply management decisions. The DIWG assesses the adequacy, accuracy, and timeliness of ATAV data for identifying and resolving problems. Its efforts have focused on increasing the accuracy of class IX (repair parts) data submissions, including updating monthly Asset Balance File (ABF) reconciliations; improving the integrity of Army Pre-positioned Stocks data; resolving force and authorization issues; reducing system downtime; and improving system access for users. Future efforts will include monitoring the impact of emerging logistics processes and systems, such as the Global Combat Support System-Army, the Wholesale Logistics Modernization Program, and the Single Stock Fund, on the asset data provided in ATAV.

### Providing Web-Based Access to Logistics Data

The progress of the data integrity effort led to the desire to enhance ATAV. The result is ATAV–E, a web-based application that uses ATAV data and provides




**☐ The Army is following a Data Integrity Action Plan to improve the accuracy and validity of ATAV data.**

various management reports to HQDA, MACOM's, and materiel management centers. It initially was developed as an application to ATAV's capability to provide visibility of Army redistributable materiel.

The purpose of ATAV–E is to enable logistics managers to identify materiel that can be redistributed to reduce excesses and cross-level items and to provide detailed stockage-level trend analyses for Army supply classes. ATAV–E uses commercial off-the-shelf software to create a web-based application accessible from a personal computer. ATAV–E source data are received daily from ATAV. ATAV–E processes these source data and stores the results in tables to minimize the time needed to respond to user queries.

ATAV–E has been expanded to aid in identifying and resolving ATAV data integrity issues across the full spectrum of Army logistics Standard Army Management Information Systems (STAMIS) and across all command elements. The ATAV–E application also has been expanded to provide tailored materiel management reports used by the Office of the Deputy Chief of Staff for Logistics (ODCSLOG) at HQDA, by Army Materiel Command headquarters, and by other Government agencies. Additional supply classes have been added to the initial class IX repair parts visibility in ATAV–E, including class II (clothing and individual equipment), packaged class III (petroleum, oils, and lubricants), and class IV (construction and barrier materials). Limited Army Prepositioned Stocks reportable item control code 2, class VII (major end items), and class VIII (medical materiel) requirements and asset information also have been added to ATAV–E.

### Using ATAV–E

From a main menu on his computer screen, the ATAV–E user can access three main applications: Categories; Reports; and Army Master Data File/Interchange & Substitutability Guide (AMDF/I&S). Both the Categories and Reports applications have a suspect-record feature that flags records with quantities in excess of 50,000 for manager review. The main menu also provides quick access to a user guide, user data information, comments, links to related logistics websites, e-mail, a bulletin board, and system administration.

ATAV–E displays redistributable materiel data by dollar value, from the highest to the lowest. The Categories application differentiates between organization array and weapon systems array (displaying information by organization or by weapon system). There are two information groups in the Categories application: Redistributable Materiel and Major End Items. The Redistributable Materiel category provides summary dollar-value information for redistributable materiel (by organization) by Army prime national identification item number (NIIN), MACOM summary, and geographic routing identifier code (RIC–GEO). The Major End Items category provides two user options—General Category Descriptions and System Summaries—for finding information on major end items and weapon systems.

The Reports application provides user-select options in two main areas: Redistributable Materiel and Special Reports. The Redistributable Materiel section allows the user to choose data by MACOM or by total redistributable amount. The main difference between the Redistributable Materiel sections under the Reports application and under the Categories application is that the Reports application provides trend data for the previous 30 days, both at the MACOM level and as total redistributable materiel dollar value.

The Special Reports section of the Reports application provides detailed information based on user requests for tailored ATAV–E reports. There are 12 special reports available—

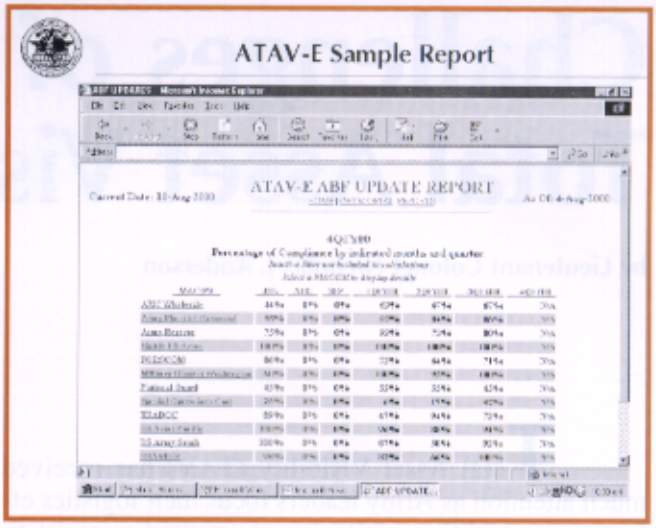
- ABF Update Report.
- National Performance Review Report.
- Army Pre-positioned Stocks Percent of Fill.
- Other Than Army Managed Items Report.
- Authorized Stockage List/Requisitioning Objective Report.
- Retention Report.
- Depot Level Reparable Report.
- Single Stock Fund.
- Government Performance and Results Act.
- Unit Report Date.
- Integrated Materiel Management Center (IMMC) Reports Menu.
- Zero Balance Report.

These reports provide summary-level information for wholesale materiel management reporting and trend analyses.

To view item attributes, the user can select the AMDF/I&S application. ATAV–E uses an AMDF provided monthly by LOGSA and extracts the I&S file from Federal Logistics Data (FED LOG). The user can obtain AMDF/I&S information from every report application by selecting the NIIN link.

ATAV–E does not process any classified information, and none of the reports compiled in ATAV–E is classified. However, the data ATAV–E provides should be considered sensitive information. Log-on identification and passwords provide access control to ATAV–E data and reports.

ATAV–E provides managers with a tool for determining the dollar value of redistributable class IX materiel within a geographic area, a MACOM, and across the Army. This visibility then can be used to identify retail redistributable materiel to wholesale managers, identify a redistributable asset required to satisfy a not-mission-capable supply requirement, identify assets eligible for referral or redistribution, and supplement current command excess reduction programs. In the quest for optimal readiness, ATAV–E provides tools that can assist in logistics management at every level.




**☐ This sample of what an ATAV–E user will see on his computer screen shows one of the 12 available Special Reports, an Asset Balance File (ABF) Update Report.**

The ATAV–E capability is accessible via the web to any Army user who has a need to know. The single requirement is access to a browser (Net-scape 3.0 or higher or Microsoft Internet Explorer 3.2 or higher), a log-on identification, and a password. A log-on identification and password can be requested on line by contacting http://206.166.239.12. For more information on ATAV–E, call the Army Logistics Integration Agency at DSN 977–6339 or 767–7063. **ALOG**

*Gary Suders is a senior logistics management specialist at the Army Logistics Integration Agency at New Cumberland, Pennsylvania. He is a graduate of the Army Materiel Command Education and Training Intern Program.*

*Cecilia Butler is a senior logistics management specialist at the Army Logistics Integration Agency at New Cumberland, Pennsylvania. She is a graduate of the Army Materiel Command Supply Management Intern Program.*

# Challenges of Total Asset Visibility

by Lieutenant Colonel Nicholas J. Anderson

Total Asset Visibility (TAV) has received much attention as Army leaders focus their logistics efforts on providing swift, uninterrupted support to warfighters in the 21st century. Fiscal constraints have forced the Army to abandon the policy of maintaining excess supplies just in case they might be needed and instead adopt a policy of providing just enough supplies at the right time and at the right place. To execute this new policy and ensure logistics support to 21st century warfighters, the Army must devise reliable TAV systems and procedures.

As the Army streamlines operations, organizations at all levels will rely on information technology and automated systems to provide TAV of units, personnel, equipment, and supplies. Information technology serves as the hub for transmitting data to and from various automated systems. Proper applications of information technology and automated systems will create efficient and effective means of managing assets in the logistics pipeline. To realize the fullest potential of information technology, Army automated systems must be connected properly to shared data bases.

Implementing TAV systems will be a challenging process—one that requires significant changes in materiel, training, leader development, organizations, and doctrine. The Army must field integrated TAV automation and communications systems that have common operating systems. Personnel must be trained on how to obtain accurate information rapidly. Leaders must learn how to obtain useful data and how to incorporate those data into their decision-making processes; they also must learn how to evaluate the effectiveness and efficiency of TAV automated systems. Some organizations must be reorganized to support the battlefield distribution concept, and doctrine must be updated.

## TAV

TAV offers timely and accurate information on the location, movement, status, and identity of units, personnel, equipment, and supplies; it provides information about assets in the logistics pipeline. TAV should not be confused with its subordinate component, designated In-Transit Visibility (ITV). While TAV reports the status of asset production, repair, fielding, requisition, and stockage levels, ITV simply provides the status of assets passing through nodes in the transportation system. Personnel involved with managing Army assets need to know about TAV.

Automatic information technology is a very useful tool for providing TAV. Instead of manually collecting and reporting the status of assets, TAV specialists determine status with automated tools such as scanners, radio frequency tags, bar codes, and optical memory cards—all of which feed information into automated systems. For example, instead of physically inventorying the contents of shipping containers, scanners can read information from radio frequency tags affixed to the containers and download that information into computers at depots and warehouses. Authorized users then can obtain the information from the computer data bases to make logistics decisions.

## TAV Automated Information Systems

Ongoing computer upgrades and newly fielded equipment eventually will enable all TAV automated information systems to share data bases with common users. This near-real-time access will eliminate the need for users to query several stovepipe logistics systems, each of which is designed to capture information on specific functions and thus constitute only a piece of the TAV process. Logisticians must link all logistics information systems to secure, web-based networks, thereby providing easy access to view, update, or download TAV information.

Both joint and Army TAV automated systems facilitate focused logistics. Procedures for obtaining information from these web-based systems are similar. Their essential characteristic is their ability to fuse sev-

## Implementing the automated systems needed for Total Asset Visibility will require changes at all levels of the Army.

eral data bases together. But this fusion depends on the compatibility of system protocols. For timely TAV, the automated information network must be capable of sending and receiving near-real-time information.

Several automated information systems currently provide TAV information to shared data bases—

- Global Combat Support System (GCSS).
- Inventory control point (ICP) automated information systems.
- Army Total Asset Visibility (ATAV)/Global Combat Support System-Army (GCSS-Army).
- Global Transportation Network (GTN).
- Defense Standard System (DSS).
- Transportation Coordinator's Automated Information for Movement System II (TC–AIMS II).
- Movement Tracking System (MTS).

***GCSS***. The GCSS is a web-based hub that links Joint Total Asset Visibility (JTAV) information for all Department of Defense (DOD) organizations and activities. DOD automated logistics systems will provide TAV updates to this web-based information center. Authorized users at all levels then will be able to log on to the GCSS web page to view and download information.

Automated logistics systems will send information to the GCSS web page. GCSS will act as a conductor, orchestrating the activities of subordinate automated systems to create a shared data base for DOD users. If a commodity manager needs to know where to locate assets to support a contingency, GCSS will provide useful information on the status of that asset DOD-wide.

***ICP automated information systems***. ICP commodity managers use automated information systems to manage stockage levels. When these systems are linked to shared data bases, the probability of procuring unneeded supplies is minimized. For example, upon receipt of requests for assets that are on hand, commodity managers will not procure additional items to fill the request; they will simply direct on-hand assets to locations where they are needed. If managers do not have the information provided by a shared data base, they may procure assets to satisfy requirements rather than use on-hand inventory.

The ICP automated information systems provide the following types of information—

- On-hand wholesale and retail assets by location and condition code.
- Wholesale assets due in from procurement and their projected delivery dates.
- Items in intermediate- and depot-level repair, with projected repair completion dates.
- Requisitioning objectives and retention limits for every reporting supply activity.

ICP automated information systems also include systems for managing specialized commodities. The major ICP systems providing the status of specialized commodities include the Ammunition Management Standard System (AMSS), Defense Integrated Subsistence Management System (DISMS), Fuels Automated System (FAS), and Defense Medical Logistics Standard Support (DMLSS) System.

***ATAV/GCSS-Army***. The ATAV automated system was developed through an Office of the Deputy Chief of Staff for Logistics initiative to link Army automated logistics systems to a shared data base at the strategic and operational levels. Until the GCSS-Army becomes fully operational, ATAV will serve as the primary instrument for integrating Army logistics information.

The GCSS-Army will integrate logistics information at the operational and tactical levels, feed information into the strategic-level GCSS web-based hub, and interface with command and control systems in the theater. A secure, web-based automated system, GCSS-Army will share information from common data bases with authorized users. This system will enable materiel managers, maintenance personnel, and others with a need to know to access the status of assets in warehouses, supply points, maintenance activities, and other logistics activities.

***GTN***. The GTN provides in-transit visibility of items in the Defense Transportation System. This secure, web-based system provides the status of units, personnel, equipment, and supplies passing through transportation nodes. It interfaces with the automated in-transit visibility systems of commercial carriers via electronic data interchanges.

GTN data help organizations at all levels during all phases of operations, including deployment, sustainment, and redeployment. Organizations from the strategic to the tactical levels rely on GTN information to manage the flow of personnel and materiel into and out of the theater. This critical management tool provides useful

asset tracking information.

***DSS***. The DSS is another automated tool that furnishes TAV information. It provides visibility over the flow of assets into and out of distribution depots and feeds distribution depot in-transit visibility information into the GTN.

***TC–AIMS II***. The TC–AIMS II, another TAV automated system, is a joint system that eventually will provide transportation and movement information to all of the armed services. It presently is under development and will replace the Transportation Coordinator Automated Command and Control Information System (TC–ACCIS) and the Department of the Army Movement Management System (DAMMS). The TC–AIMS II will help movement coordinators plan and execute movements during all phases of military operations.

***MTS***. The MTS provides near-real-time visibility of assets moving through the logistics pipeline in the theater of operations. It permits users to redirect movements without requiring vehicle operators to return to their home stations for additional instruction.

## Materiel

The challenge of implementing TAV systems begins with materiel. While combat service support (CSS) organizations must replace and upgrade automated equipment over time, the overriding materiel issue in TAV is access to communications. TAV automated systems must be able to transmit near-real-time data to common data bases. To do this, they must be supported with uninterrupted communications that enable them to operate in an interactive, semi-interactive, or remote mode. This support is critical because of the number of standalone systems still in use and because of variations in operational conditions.

Communications networks must be robust enough to handle Intranet and Internet requirements. Supply clerks, movement specialists, and other personnel must be able to connect their computers to shared logistics data bases. The Army will be challenged to ensure TAV automated system connectivity with shared data bases when either the tactical communications network cannot support such connectivity or when organizations have to wait for the tactical communications network to become operational. Signal units may not arrive early enough in the theater of operations to provide communications support for managing the flow of assets into the theater effectively. How will CSS organizations in the theater, especially early arriving units, obtain visibility over the asset flow?

CSS organizations must have redundant communications capabilities in case the tactical communications infrastructure cannot support TAV automated requirements. CSS units should not assume that data reception and transmission capabilities will be in theater when they deploy. Early-entry organizations such as port battalions, arrival and departure airfield control groups, movement control teams, and supply companies must have deployable, integrated communications and TAV automated systems. Several systems are available on the commercial market that can be adapted for military use, and the Army should procure them and field them Army-wide. Commercial communications networks provide numerous wireless Internet connection devices, such as handheld personal computers, digital cellular telephones that can connect to computers to send and receive data, and the International Maritime Satellite System.

The Army must abandon outmoded procurement procedures in order to field the newest technology quickly. TAV automated systems must be replaced and upgraded to keep pace with technology developments. Under existing new equipment fielding procedures, some new equipment is obsolete by the time it reaches organizations. The equipment fielding process for some automated systems takes as long as 10 years.

To field the best integrated communications and automated equipment while keeping pace with technological developments, the Army should lease TAV automated information systems rather than buying them. Technological breakthroughs occur often, so the Army continually faces the dilemma of replacing recently fielded automated equipment with something better. Leasing arrangements will improve the Army's efficiency and effectiveness by providing quick access to the best automated information operating systems as technology changes. The Army must field improved logistics automated information systems that will provide the best means of attaining the seamless integration of automation and communications to meet Army XXI TAV requirements.

## Training

Training programs for operators of TAV automated systems must meet the needs of the organizations responsible for providing TAV information. The Army needs TAV automated system operators who can manipulate shared-data-base information quickly and then provide useful information to decision makers. In most cases, these operators already will have a full-time job. For example, the Army needs full-time movement specialists in emergency operations centers to track shipments into and out of the theater. The Army needs full-time arrival and departure airfield control groups and port movement control teams to track flights and ships scheduled to arrive at their locations. The Army also needs full-time supply specialists who can order supplies and adjust reorder points as conditions change. However, recent operations in Bosnia reveal that many personnel in positions that require them to operate TAV

automated systems do not know enough about those systems to manipulate the data bases to acquire the information they need.

The Army should train specialists to operate TAV systems in garrison like they will be operated in contingency operations. They need to learn to input accurate data into the systems, to deploy to austere field environments, and to operate in emergency operations centers. Organizations required to provide TAV should rotate as many of their soldiers as possible through those scenarios so they receive hands-on training with TAV automated systems. This exposure will help prepare them for contingency TAV requirements. In addition, the Army's branch schools should place more emphasis on training soldiers to use web-based automated systems.

When these trained soldiers arrive at their organizations, they should be assigned positions that require them to operate automated TAV systems as part of their everyday work, not just for deployments. TAV specialists should internalize relevant procedures and should be familiar with the equipment they will use to generate TAV.

## Leader Development

Leader development programs also need to be improved. Leaders must understand how the TAV automated process works and how to measure the efficiency and effectiveness of their piece of that process. Leaders must know how to use TAV data generated by the logistics automated systems in order to make decisions on such matters as diverting shipments, increasing stockage levels, using alternate sources of supply, and replacing rather than repairing damaged equipment. To assess the efficiency and effectiveness of TAV automated systems, they must develop management tools that provide feedback on the performance of those systems.

Performance goals and objectives must be established, along with a disciplined approach to implementing and managing TAV automated systems. Unless this is done, leaders will implement the systems blindly without knowing what their contribution to the TAV process should be. According to a recent General Accounting Office report, DOD has established goals of attaining 90 percent asset visibility and reducing order-to-receipt time by 50 percent. Army leaders are challenged to quantify these goals into measurable objectives and then to establish procedures for meeting them.

Leaders at all levels will implement automated systems to improve logistics support to the warfighters. At the strategic level, ICP and depot commanders should use automated systems that minimize procurement of more assets than the Army needs while delivering assets to the warfighters faster. At the operational and tactical levels, CSS organizations should focus on capturing in-transit visibility over assets en route to the theater to facilitate swift distribution to requesting units. Shipments should go directly to the using unit without being warehoused. This will reduce shipping time and stockpiling of assets.

Leaders should know up front that someone is watching to determine if the TAV automated system initiatives are being implemented in accordance with established goals and objectives. The Army must ensure that organizations do not waste time and energy on TAV programs that neither support goals and objectives nor deliver what the Army XXI TAV system needs. Effective TAV means warfighters will have more soldiers dedicated to operational requirements, not soldiers "spinning their wheels" operating automated systems that do not help the fight. The TAV organizational concept must be designed to streamline logistics support and not just replace a stovepipe bureaucracy with an electronic information bureaucracy.

## Organizations

The next TAV challenge for the Army will be organizational changes. Business will not take place as usual under TAV. This means that some organizations must be restructured to support battlefield distribution. In some cases, CSS functional components must be reorganized to provide a unified approach to managing assets in the logistics pipeline.

Several organizations help distribute assets. At the strategic level, the main ones include the Defense Logistics Agency, DOD depots, the U.S. Transportation Command, the Military Traffic Management Command, the Military Sealift Command, the Army Materiel Command, and supported and supporting unified command joint movement centers. At the operational level, the main organizations include the joint task force joint movement center, theater support command, theater distribution management center, and theater movement control agency. At the tactical level, the main activities include the corps support command (COSCOM), distribution management center (DMC), corps support group, division support command (DISCOM), division materiel management center, corps movement control battalion, support battalion, movement control team, and supply, ordnance, maintenance, and transportation companies. Staffs at all levels also perform TAV functions.

To facilitate battlefield distribution, the Army must create distribution management organizations at all levels. At the strategic level, the Joint Staff, service components, and DOD commodity managers track assets, spare parts, and requisitions and redistribute supplies and materiel as required. They will use the GCSS common data base that links materiel and movement automated systems, such as ICP automated information systems,

DSS, ATAV/GCSS-Army, and GTN, to accomplish these functions. Although they will operate from separate locations, they will execute TAV functions the same way as DMC's do.

At the operational and tactical levels, the DMC links materiel, movement, and distribution functions. The materiel management center and movement control battalion either will merge to form the DMC or will continue to operate as separate organizations under the supervision of the higher headquarters staff. Significantly, commodity managers and movement specialists need not collocate to provide TAV for the theater or corps as long as they have access to shared TAV data bases. Commodity managers and movement controllers at this level need access to GCSS, ICP automated information systems, DSS, GTN, ATAV/GCSS-Army, TC–AIMS II, MTS, and other logistics automated systems to obtain visibility over assets in the logistics pipeline.

Organizational structures will change to meet operational requirements. The Army will tailor CSS forces for future operations. As the Army becomes leaner, more demands will be placed on logisticians to streamline operations, but not at the expense of providing TAV. Thus organizations like the COSCOM and DISCOM will continue to deploy logistics task forces with TAV capabilities to meet Army XXI requirements. Modular organizations, such as the materiel management center, movement control battalion, and corps support group and their respective materiel management teams, movement control teams, supply companies, ordnance companies, and cargo transfer platoons, must be included in the task force because all of them have TAV responsibilities. Their presence is crucial to effective implementation and management of TAV systems. The bottom line is this: CSS units must be able to adjust to changing operational requirements without losing their ability to maintain visibility over assets in the logistics pipeline.

## Doctrine

Changing operational requirements will affect Army doctrine. Doctrine must be updated, and in many cases established, to formalize the Army XXI TAV program. For example, consider ongoing operator training requirements for recently fielded automated equipment. In some cases, equipment upgrades and changes have been happening so fast that changes to users' manuals have not kept pace. Currently, only a few publications—such as Army Training and Doctrine Command Pamphlet 525–77, Battlefield Distribution; FM 55–10, Movement Control; and FM 100–10–1, Theater Distribution—provide TAV information. Other information available on TAV consists mostly of functional requirement documents, equipment need statements, information papers, briefings, and other informal information. Army organizations need more guidance to implement TAV automated systems.

More guidance must be formalized and published to explain how TAV processes will work at the strategic, operational, and tactical levels. Without formal documents, such as additional field manuals, technical manuals, technical bulletins, and mission training plans, organizations will not have standard procedures for accessing TAV data bases, providing TAV updates, downloading information, and maintaining equipment. Without formal doctrine, the TAV program will not operate efficiently. Instead, the Army will continue to be burdened with operating guides and procedures for stovepipe automated systems that may not complement Army XXI TAV doctrine.

Logisticians will meet Army XXI TAV requirements. They will continue to leverage technology to ensure swift, uninterrupted support to warfighters. Several automated systems will assist logisticians at all levels with the important task of providing the right amount of assets to warfighters at the right time and at the right place. Logisticians will continue to knock down barriers in order to change with the times and to take advantage of technology. Information fusion through web-based systems will simplify the process of providing visibility of assets and distributing supplies on the battlefield. To meet TAV requirements as the Army rolls into the new millenium, leaders at all levels must work positively to overcome materiel, operator training, leader development, organizational, and doctrinal challenges to guarantee uninterrupted logistics support to the warfighters.

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# Revolutionizing Logistics Information Support for the Warfighter

by Lorna Worley

The author discusses the potential of the Logistics Integrated Data Base to empower future strategic planners, decision makers, and soldiers in the field.

Logistics process improvement is critical to providing the best possible support to the soldier. The Army Materiel Command (AMC) Logistics Support Activity's (LOGSA's) Logistics Integrated Data Base (LIDB) represents a giant leap forward in improving the logistics process. Although still under development, the LIDB is the most advanced logistics information gathering, storage, and retrieval system in the Army. By the end of 2001, the fully developed LIDB will provide seamless access to Army logistics information worldwide, empowering the strategic planner, the decision maker, and the soldier in the field.

> Future battlefields won't necessarily belong to the force with the greatest firepower but [to] the one with the most advanced information-gathering, storage, and retrieval capabilities.
>
> —Dr. Paul G. Kaminski
> Former Under Secretary of Defense
> (Acquisition and Technology)

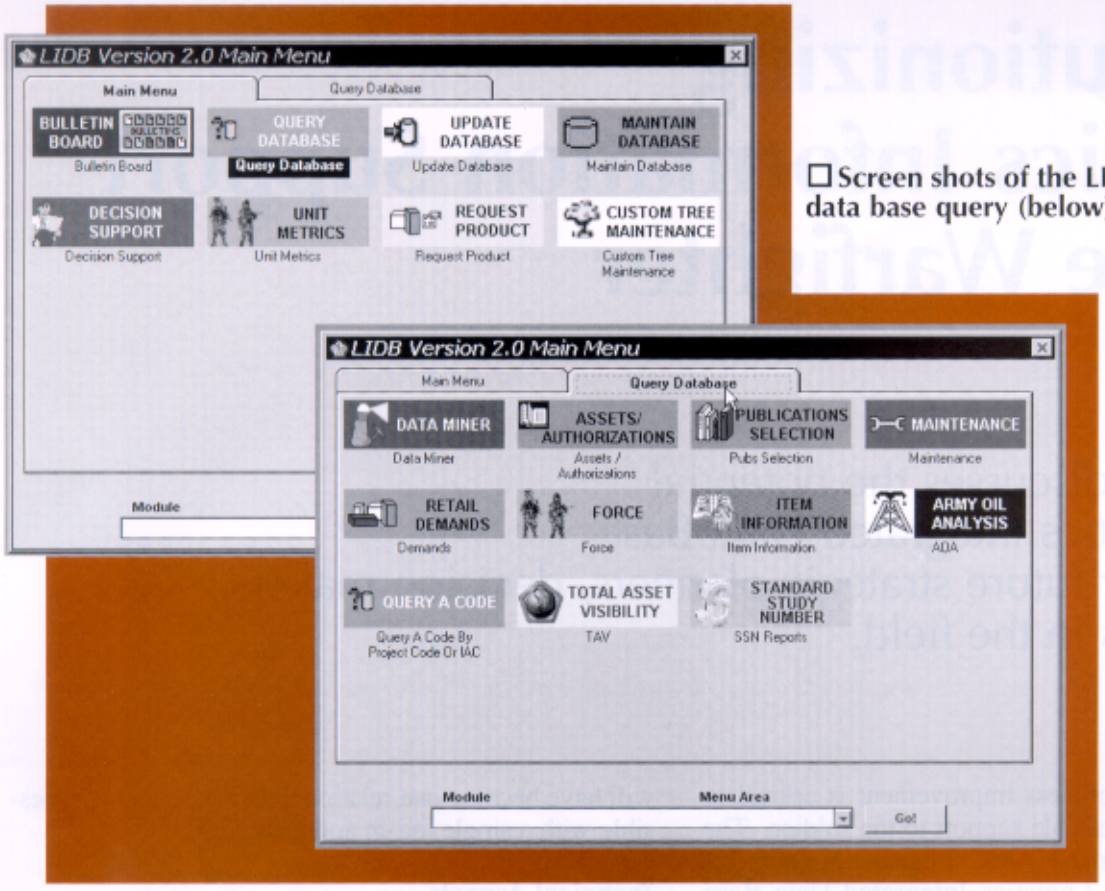
## LIDB's Origin

LOGSA was established in 1993 as a result of the consolidation of six AMC separate reporting activities. After an inventory of each activity's data systems, it was apparent that there was a lot of duplication among the 66 stovepipe automated information systems, data bases, and data files that had been developed over the preceding 30 years. It was the perfect time for LOGSA to reengineer its logistics information business processes. In 1997, AMC sponsored the LIDB concept and authorized its development. When the LIDB is complete, all of those data bases, data files, and information systems will have become one relational data base that is accessible with a single log-in and password.

## Technical Aspects

In an effort to make the LIDB easy to use by soldiers in the field, LOGSA developers evaluated many commercial products and selected those of market leaders whose technology had been used in successful system development programs. Oracle data server technology was used to build the LIDB's central data base and repository. The Oracle data server allows users to manage large volumes of data and deliver those data across a network reliably, securely, and economically. The Oracle data server also supports multiple data types, complex data queries, data synchronization, and high-volume transaction work loads. Sun Microsystems servers provide the host for the data base. Using a single vendor to provide the computer platforms increases the maintainability and serviceability of the LIDB.

Client-server communications options include dial-up capability, wide- and local-area network transmission control protocol and Internet protocol connectivity, and secure and nonclassified Internet protocol routing network access. The system also has the potential for satellite connectivity. Web access to the LIDB will be




☐ **Screen shots of the LIDB main (left) and data base query (below) menus.**

available in the future, but at the time of the LIDB's initial development, a client-server application was the most secure method of providing data to customers.

## Development Schedule

The LIDB is being developed and implemented in phases. Version 1.0, which was completed and distributed in September 1999, includes the functional areas of force management, item management, maintenance management, and asset management. These areas represent the initial information needs of our customers and are the basis of the information needed to produce any report on logistics information.

Version 2 releases are scheduled to begin in the second quarter of fiscal year 2001. This version integrates Logistics Intelligence File capabilities, permitting users to conduct detailed materiel pipeline analysis. It also provides Army Total Asset Visibility, classified readiness information, and Army Oil Analysis Program information. Information about procurement of sets, kits, and outfits; Equipment Release Priority System information; and access to the Army Price Challenge Program also will be available on line.

The final development will be completed under Version 3, which is scheduled for release in October 2001. It will incorporate unique item tracking information, vehicle registration and usage data, the Distribution Execution System, materiel distribution, and other logistics data. At that point, the full benefits of the information management capabilities and cost savings envisioned by LIDB engineers will have become a reality.

## Easy to Use

The LIDB runs on Windows 95, 98, and NT operating systems and can be accessed using a desktop personal computer. A LOGSA System Access Request can be completed on line at LOGSA's website, http://www.logsa.army.mil. Then the user can click on the LIDB user interface application, enter the appropriate account identification number and password, and the LIDB software automatically will connect to the LIDB central server at LOGSA. Users are urged to follow the tutorial provided on CD–ROM before accessing the LIDB.

LOGSA receives retail and wholesale information from the field through Standard Army Management Information Systems, the Commodity Command Standard System, the Defense Automated Address System, the Standard Depot System, and other sources. The LIDB main menu helps customers retrieve logistics-

related information from those sources based on their functional area of interest, such as operational readiness, maintenance and supply cost drivers, equipment authorizations, component and subsystem ordering information, and static or in-transit asset visibility.

In each of the functional modules, a user can specify the level of the force structure he wishes to interrogate, from total Army to company level, by keying in the specific unit identification code or Department of Defense (DOD) activity address code. He also can specify a timeframe, such as current information or a "snapshot" of the past. Finally, he can single out weapon systems or even individual models, or he may request summary information for ground or air systems. The information can be compiled in tabular or graphic form and is transferable to other Windows-based applications.

LIDB allows the user to build his own unique customer base to run reports. Because the LIDB is a relational data base, the user can continue through the menu, seeking related or more detailed information from each successive menu screen. Extensive on-line help is available, and there is a bulletin-board feature to facilitate communication with the user community. Important logistics data can be retrieved, evaluated, manipulated, tabled, graphed, printed, and transferred instantly and easily without trying to figure out which system generates or houses the data or what format the data will assume.

## Support to Other Initiatives

***Army Strategic Logistics Plan.*** Through the concept of shared data and an integrated data environment, all Army process improvement initiatives are working together as elements of the Global Combat Support System-Army (GCSS-Army). The GCSS-Army will include national-level initiatives such as the Wholesale Logistics Modernization Program (WLMP) and LIDB. While WLMP replaces the Commodity Command Standard System and the Standard Depot System, the LIDB will integrate data and reports from the soldier level with national-level data, bringing the Army into a "virtual" environment.

***Defense Reform Initiative Directive No. 54.*** The LIDB supports four objectives of Defense Reform Initiative Directive No. 54, Logistics Transformation Plans, signed 22 March 2000 by Deputy Secretary of Defense John J. Hamre—

- Accelerating progress in implementing customer wait time (CWT) using variance-based computations and other performance measures. The LIDB will have the capability to capture and report CWT data.
- Adopting a simplified priority system that provides time-definite delivery driven by the warfighter's required delivery date (RDD). The LIDB captures the data to support metrics related to RDD compliance.
- Achieving accurate total asset visibility and accessibility through the use of automatic identification technology, automated information systems, and transformed business practices. The LIDB can track materiel movement via radio frequency tags, velocity management, and pipeline and unit movement visibility.
- Fielding a web-based, shared data environment that provides seamless, interoperable, real-time logistics information. In conjunction with Program Manager GCSS-Army and AMC web development programs, LOGSA continues to improve and incorporate several web initiatives. The web version of LIDB will provide the capability to track small shipments sent by commercial carriers. Current requirements include building a pipeline tracker module for tracking all commercial shipments and a property book update capability.

***Revolution in Military Logistics (RML).*** For our soldiers, the RML promises to provide and maintain a dominating technological superiority over any potential enemy. By partnering strategically with industry and staying current on developments in information technology, commanders can make better and faster decisions than their opponents. LIDB directly supports two of the six tenets of the RML—

- Seamless logistics system. LOGSA maintains the data bases that will be used to support the Single Stock Fund initiative.
- Distribution-based logistics. LOGSA's data bases are used to measure the successes of Velocity Management, such as reduced order ship time and repair cycle time.

In spite of its extensive capabilities, the LIDB is only one step in the fast-paced "evolution" of military logistics—one step closer to GCSS-Army, the RML, and a future DOD seamless logistics system that will support our warfighters unfailingly wherever they go. **ALOG**

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# Military Logistics Continues to Repeat Itself

by Major Jeffrey A. Hughes, USAR

## The author believes that modern military logistics systems will continue to apply centuries-old supply techniques.

The timeless adage that history repeats itself rings true for military logistics. Two basic concepts of logistics have recurred again and again over the last five centuries, even though military logistics systems have become more and more technologically sophisticated. These two concepts, although varying in form and definition from one era to another, are supplying from within and supplying from the rear.

Supplying from within means that military forces carry what they need with them or forage the immediate area for their needs. Supplying from the rear means that military troops receive resources through supply lines from the rear. I believe that use of these two basic concepts that probably began in the 16th century is likely to continue well into the 21st century.

### 16th Century Logistics

In the 16th century, navies assembled great fleets of ships that applied the supplying-from-within concept of logistics. These ships carried everything the navies would need for their missions. Ammunition, food, and water had to be supplied from the outset, or crews would suffer and their mission likely would fail. In the same period, armies also used the supplying-from-within concept, but it was not as logistically developed as that of the navies. Armies used a pillage-and-plunder method to forage the areas they occupied. Soldiers exploited stores of food and fodder the locals had put aside for future use. Armies attempted to create standard supply systems, but they failed because of administrative and financial mismanagement.

### Slow But Steady Change

Foraging continued in the early 17th century, but the concept of supplying from the rear emerged during that time. This concept made armies dependent on supply lines that used horse-drawn wagons or watercraft. Armies also began to develop storehouses for food and fodder and often built fortresses to guard their supply lines and storehouses.

In the late 17th and early 18th centuries, forces devised more calculated ways to get what they needed from their immediate area, and pillaging and plundering became less common. One method involved paying troops more money so they could find food and fodder for themselves. Problems occurred when pay was insufficient or late or when the food supply in the area was insufficient for the number of soldiers. When that happened, soldiers again resorted to pillaging or extortion. Towns that did not produce the supplies the soldiers needed or pay them money ran the risk of being sacked and burned.

The most advanced method of obtaining supplies was the "étapes" (French for steps or stages) system, in which forces would stop at local markets at set intervals along their route and buy what they needed. This system freed soldiers from having to carry large quantities of supplies and eliminated the need for them to forage for supplies or to extort money from the local townspeople.

The French Army of Napoleon Bonaparte typified the concept of supplying from within during the late 18th and early 19th centuries. As long as Napoleon's army was moving fast, soldiers could use local resources without having to worry about resupply. However, if his army stopped, their supplies soon would be exhausted and the army would have to move to survive.

This dilemma was solved in the middle of the 19th century by using rail and river transportation. Armies did not have to move when they had used all of an area's resources, because railroads and steamboats could bring supplies to them. Prussia was the first country to use

the railroad to transport supplies. By the middle of the 19th century, rail transportation had revolutionized logistics in Europe. However, the military continued to rely on horse-drawn wagons to transport supplies from the railhead to the battlefield. Thus, rails benefited armies at the onset of campaigns but were of limited use for resupplying them. Once the armies moved away from the railheads, they would outpace the horse-drawn wagons that were bringing supplies to them.

This was not the case during the Civil War. Union and Confederate armies bunched up around the railheads, and it was easier for them to centralize their battles around their umbilical cord of support than to use muscle power to move away from the railheads. The Union Army of the Potomac spent most of the war operating on either the Orange and Alexandria Railroad or the Richmond, Fredericksburg, and Potomac Railroad. Sixteen railcars' worth of supplies could travel from Washington, D.C., to Alexandria, Virginia, by rail, where they then would be loaded on steamboats and shipped down the Potomac River to Aquia Creek. There, they would again be shipped by rail to the front at Falmouth, Virginia. The entire trip took only 12 hours. Shipping the supplies overland to Falmouth or Fredericksburg, which is across the Rappahannock River from Falmouth, would have required 400 to 800 wagons per day. Civil War forces chose to concentrate their energy on fighting rather than on hauling. By centralizing troops at the railheads, the armies had access to quick reinforcements, which was a tremendous advantage over an enemy that relied on wagons for support. This advantage was demonstrated in the Battle of First Bull Run in 1861, when Confederate Brigadier General P.G.T. Beauregard was able to foil Union Brigadier General Irvin McDowell's offensive with reinforcements brought to the front on the Manassas Gap Railroad from Brigadier General Joseph E. Johnston's army.

## No Turning Back

The strategic use of railroads and steamboats in the First Bull Run campaign in 1861 revolutionized the concept of supplying from the rear. Yet this advance did not come without a price: Forces now were dependent on fuels. Navies had to establish coal stations around the globe to resupply their ships. Instead of being able to let their horses graze in the field, armies had to rely on coal shipments to run their trains and steamboats. Supplying from within was no longer an option.

The technological advances of the 20th century expanded armies' capabilities to supply from the rear. The invention of motorized vehicles was a major leap forward for American and British logistics in World War I. Armies could be resupplied quickly with trucks even when they were away from railheads or steamboat depots. Oil-based fuel could be transported much more easily than coal. Although forces still depended on refineries in the rear, they did not have to maintain their forces at fuel supply points as in the Civil War. They could depend on logistics units to refuel them as they advanced on the battlefield or at sea.

While progress was being made in transportation technology, advances also were occurring in weapon systems, some of which generated new problems. New automatic weapons used massive amounts of ammunition, and tracked vehicles required continual resupply of fuel and repair parts. These developments pushed supply trucks to their limits. It also was terribly expensive to transition an entire army from horses to trucks. The European States could not produce enough trucks to supply their armies. Even as late as 1914, the German, French, and Russian Armies depended on horses for supply from the rear, which, because it was so slow, contributed to the German failures in World War I.

Ships always have been vital for transporting troops and supplies. Producing war supplies in the United States and transporting them across the Atlantic and Pacific Oceans was one of the greatest logistics feats accomplished during the period 1915 to 1945. In preparation for the Normandy invasion in 1944, 17 million tons of cargo and 1.6 million soldiers were shipped by the U.S. Navy to the United Kingdom. German Field Marshal Erwin J. Rommel's troops in North Africa depended completely on shipping supplies across the Mediterranean. Ammunition, fuel, food, and even water had to be transported hundreds of miles by the German Navy. Rommel's downfall occurred not only because of the lack of supplies transported across the sea, but also because these supplies could not be moved fast enough across land to keep up with his advances. Supplies piled up at the wharves while shortages occurred at the front line. Today, ships continue to carry massive loads of materials to resupply troops from the rear.

Airplanes were invented early in the 20th century, but they were not used successfully to haul supplies from the rear until the Berlin Airlift of 1948. Since that time, they have proven to be highly valuable in transporting personnel, equipment, food, ammunition, and fuel, as was demonstrated in the Vietnam and Persian Gulf Wars.

Helicopters also resupply personnel and cargo to the battlefield. They can deliver supplies to troops in remote areas because they require only a small clearing on which to land. However, due to various vehicle weights, sizes, and types of cargo, water and land transport are still critical.

## What the Future Holds

As the 21st century dawns, it appears once again that history will repeat itself. Considering the Army Train-

ing and Doctrine Command's (TRADOC's) plans for Force XXI in 2010 and for the Objective Force in 2025, the U.S. military appears to be transitioning back to the concept of supplying from within. TRADOC recognizes that the military cannot continue to be strong for unlimited periods of time without reinforcements. Thus, its resupply plans include not only rear support bases but a reduction in bulk as well. This reduction in bulk will allow resupply by satellite-guided airfoils or pods such as the Advanced Precision Delivery System, the Guided Parafoil Air Delivery System, and the Semi-Rigid Deployable Wing. These inexpensive, unmanned platforms will be able to deliver supplies and equipment with unprecedented precision. Small, ultra-light, global positioning system-guided robotic trucks will make scheduled deliveries and pick-ups on the battlefield. Traditional supply lines will vanish.

Improvements in condensed rations, water production, maintenance, precision munitions, medical care, composite materials, engineering, and alternative energy sources will enable military forces to supply from within for extended periods of time. Condensed rations such as pellets and concentrated energy bars have been developed for soldiers to carry with them. Even more mobile are skin patches that release nutrients into soldiers' bodies at appropriate time intervals. Water will not have to be carried by the gallons over supply lines but will be a byproduct of fuel combustion engines used on the battlefields. Vehicles will have on-board purification systems and water storage tanks.

On-board prognostics and built-in programmable sensors will enable vehicle crews to determine the mechanical status of their equipment before it fails. Just-in-time replenishment will replace just-in-case stockage. Interchangeable repair parts modules will be available for use in various types of equipment to economize on the stockage of parts.

Precision munitions that enable soldiers to "fire and forget" will increase the survivability of the firing team and eliminate nearly all waste of ammunition. ("Fire and forget" means that a soldier can fire a precision round of ammunition and immediately get out of the area instead of having to stay in position and guide the round in). Software that can pinpoint targets, identify friend or foe, select appropriate ammunition and delivery systems, and accurately deliver the ammunition will dramatically reduce the quantities of ammunition required. Alternative munitions such as electric or electro-thermal guns, high-energy lasers, microwave energy, and liquid propellants eventually will eliminate the need to resupply combat forces with ammunition from the rear.

Soldier health monitors that check a soldier's physiological status, interpret the data, and guide caregivers through resuscitation and stabilization will reduce the quantity of medical supplies needed on the battlefield.

Composites will become common in the design of uniforms and tents. A single uniform will provide protection from small arms and directed energy threats, as well as from chemical and biological agents. Genetically engineered materials that instantaneously realign their molecular structure will stop the threat before it penetrates. In addition, the uniform will adjust its coloring automatically to match the environment. Likewise, shelters made of composites will provide protection from cold and heat, avert small arms and electronic threats, and guard against nuclear, biological, and chemical attacks. They will be made of extremely thin lightweight films with multispectral camouflage protection.

Unit laundry and decontamination will be completed in seconds by using high-energy bursts of ultraviolet or ultrasonic energy within special laundry pods.

Advances in foam technology will make it possible to spread foam over mine fields so vehicles as heavy as M1A2 Abrams tanks can drive over the mines without detonating them. Foam also will be used to build pontoon bridges on site, pave roads, and build temporary pads along airfield runways to serve as turn-out points or areas for loading or offloading aircraft.

Finally, alternative energy sources are being developed to eliminate the need for resupply of fossil fuels from the rear. Vehicles will use on-board flywheels and solar energy to complement on-board power packs. Portable power sources will use fuel-cell technologies that use oxygen and hydrogen available on the battlefield.

The Objective Force still will be supplied from within but by using highly sophisticated techniques that are very different from those of the past. The Objective Force will have the same advantages as Napoleon's forces, but it also will have the ability to maintain itself in an area as long as necessary. History will repeat itself, but not without computers, satellites, composites, and alternative energy sources. **ALOG**

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# CEG–E: Evolving to Meet Today's Challenges

by Sergeant First Class Taylor T. Njagu
and Chief Warrant Officer (W–2) Rodney B. Sims

Since the end of the Cold War, Combat Equipment Group-Europe's mission has evolved to support the Army's force projection strategy.

It was 30 December 1995. Lumbering along at 3 miles per hour, two U.S. tank platoons—the vanguard of what would be a flood of 20,000 troops and their armored machines—crossed the Sava River into Bosnia over a just-completed pontoon bridge. Engineers had constructed the 2,043-foot span from 63 individual pieces—the longest pontoon bridge the Army had built since World War II. Nearly all of the 20,000 American soldiers taking part in the 60,000-man North Atlantic Treaty Organization (NATO) peace-enforcing mission had to cross the Sava River to reach Tuzla, Bosnia. As the first troops crept over the bridge, hundreds of local people turned out to watch.

The key to the success of this historic undertaking was the logistics support provided by Combat Equipment Group-Europe (CEG–E), which expediently provided all components needed to construct the bridge. CEG–E continues to be instrumental in building and maintaining Army readiness throughout the world despite massive troop reductions and major organizational realignments.

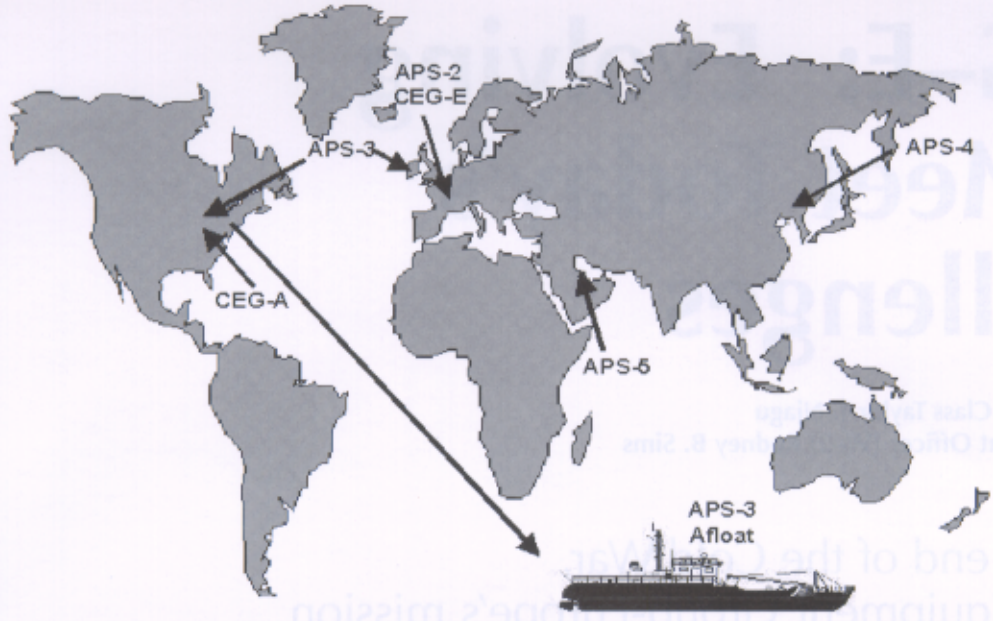
## CEG–E History

CEG–E was established in April 1964 as the 7th U.S. Army Combined Arms Maintenance Group. It was renamed the U.S. Army Europe Augmentation Readiness Group in May 1965 and received its current name in October 1970. CEG–E's mission in those days was to store, maintain, and issue equipment to units from the continental United States (CONUS) deploying in support of the European General Defense Plan (GDP). This plan was tested annually during Return of Forces to Germany (REFORGER) exercises.

In REFORGER, forces deployed from CONUS to CEG–E sites, where they drew their forward-deployed equipment, called pre-positioned organizational materiel configured to unit sets (POMCUS). Units would train in their GDP locations or in other exercises and return the equipment to CEG–E sites, called combat equipment companies, where the equipment was maintained and stored for the next REFORGER exercise or the next implementation of the GDP. U.S. Army Europe (USAREUR) and the 21st Support Command (now the 21st Theater Support Command) provided command and control of CEG–E and its POMCUS assets.

At the conclusion of the Cold War, CEG–E's mission changed drastically as the Army transitioned to a primarily CONUS-based power projection strategy. Many of the POMCUS sets in CEG–E were disassembled, and much of the equipment from inactivated units in USAREUR was sent to CEG–E. POMCUS became known as Army Pre-positioned Stocks (APS). Excess equipment was upgraded to like-new condition for redistribution to APS sites worldwide. CEG–E retained three generic brigade sets that no longer were aligned with specific units.

As a result of the Army's transition to a power projection force, control of CEG–E was transferred from USAREUR to the Army Materiel Command (AMC) in 1995. CEG–E assets were removed from the control of




☐ **The map shows the locations of APS sites that CEG–E supports throughout the world.**

the theater commander and placed under Department of the Army control. In turn, AMC delegated responsibility for CEG–E to the Industrial Operations Command (now the Operations Support Command). A new subordinate organization, the Army War Reserve Support Command (now the Army Field Support Command), was created in October 1996 to command and control all APS sets worldwide. As an AMC organization, CEG–E adopted the automated logistics systems used by the Army's wholesale system, providing the same advantages of worldwide visibility available to stateside depots. At the time of this reorganization, CEG–E consisted of a group headquarters, seven combat equipment companies responsible for ammunition stocks, and an Army war reserve storage facility for the NATO Composite Force.

Since the start of equipment redistribution in 1991, CEG–E has improved the readiness of all APS sets worldwide while maintaining three APS–2 (Europe) brigade sets, undergoing a major downsizing, and supplying equipment for several Army contingency missions. CEG–E's first and largest redistribution mission was in support of Operations Desert Shield and Desert Storm. Since then, CEG–E has provided 23,500 pieces of equipment to support operations in Bosnia and Kosovo and has issued over 45,000 pieces of equipment to APS–3 (afloat) sets on seven large, medium-speed, roll-on-roll-off (LMSR) ships and other APS–3 vessels. CEG–E also has improved the readiness of other APS sets by issuing over 15,000 pieces of equipment to APS–4 (Northeast Asia) and more than 13,000 to APS–5 (Southwest Asia).

## CEG–E Today

Today, CEG–E's mission continues to be driven by the Army's force projection strategy that involves redistributing excess equipment to fill authorized shortages in APS sets. Instead of being primarily a European-based logistics provider, CEG–E's mission has evolved into an extension of the Army's wholesale logistics system.

To make this evolution work, CEG–E fielded the Army War Reserve Deployment System (AWRDS), a Windows-based automated information system that tracks accountability, inventory, and transfer of prepositioned stocks from the Field Support Command to using units. AWRDS also provides worldwide asset visibility and accountability, allowing the warfighter access to information before equipment is drawn. In addition to AWRDS, CEG–E also uses the Standard Depot System, which is an automated accountability system developed by the Army Communications-Electronics Command's (CECOM's) Industrial Logistics Systems Center, to connect national inventory control points with CEG–E equipment data bases, thus standardizing the logistics management of materiel worldwide. (The Computer Sciences Corporation now provides software sustainment and is modernizing the functionality of the Standard Depot System for CECOM.)

CEG–E is completing its fifth year of equipment redistribution, and much of the previously excess material has been shipped out, reducing the storage capacity needed in the old REFORGER days. As a result of this, the Quadrennial Review cuts, and budgetary constraints,

**☐ A Minnesota Army National Guard soldier and a Norwegian soldier guide an M577 command carrier as it is loaded onto a flatbed trailer for transport to a training area.**

CEG–E, under the direction of the Department of the Army, began another major organizational restructuring. The intent of this restructuring was to strike a balance between newly established mission requirements and the necessary manpower levels. As a result of these changes, the 16th Combat Equipment Company, Zutendaal, Belgium; the 20th Combat Equipment Company, Coevorden, The Netherlands; the 22d Combat Equipment Company, Eygelshoven, The Netherlands; and the Combat Equipment Battalion-Northwest, in Coevorden, were inactivated in 1999.

A diverse, multinational, multicomponent CEG–E work force, which numbered more than 5,000 at its peak, is now about 1,350. In spite of downsizing, CEG–E continues to perform several essential missions. It receives, accounts for, repairs, stores, configures, and provides pre-positioned equipment and supplies in support of Allied and U.S. forces. CEG–E still performs operator, unit-level, and direct support maintenance on pre-positioned equipment. This includes preserving the equipment and processing it for storage in one of the four remaining facilities—two in The Netherlands, one in Italy, and one in Luxembourg. CEG–E also operates a supply support activity that supports subordinate organizations with all classes of supply. The Group headquarters now is collocated with the supply support activity in Eygelshoven.

Another vital CEG–E mission is storing and maintaining operational project stocks. Operational project stocks are contingency stocks reserved for the initial troop build-up in a theater of operations. Operational project stocks consist of hundreds of miscellaneous line items, including wheeled vehicles; nuclear, biological, and chemical defense equipment; battledress uniforms; boots; parachutes; fuel pipeline equipment; ski equipment; bridging; boats; and many other items. It also manages and maintains two pre-configured 10,000-soldier sets of chemical defense equipment in support of Kosovo and Bosnia for short-notice shipment, manages equipment stored in Norway for a Minnesota Army National Guard field artillery battalion, and stores Air Force early-entry equipment in Luxembourg.

CEG–E continues to support redistribution missions to enhance the readiness of APS–3 and APS–5. The redistribution work load planned for fiscal years 2000 and 2001 includes 15,142 pieces of equipment, of which 1,071 pieces are rolling stock and 14,071 are non-rolling stock, in support of APS–3. CEG–E also is providing 4,560 pieces of equipment for a division base project for APS–5 and is preparing APS–5 equipment for locations in Kuwait and Qatar. For the European theater, CEG–E is tasked with preparing 12,121 separate items of equipment in support of Army operations in Kosovo.

Clearly, CEG–E's mission constitutes a vital link between the Army Field Support Command's force projection strategy and the warfighter for present and future battlefields. The CEG–E team is proud of its past accomplishments and is committed to maintaining that same standard of excellence as we move into the 21st century. **ALOG**

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# Medical Supply Support to Kosovo

by Major William M. Stubbs, Lieutenant Commander Gary Rakes, USN, and Captain David Turnbull

The authors discuss some of the obstacles that had to be overcome during the establishment of a direct ground line of communication to Kosovo.

A major concern for logisticians during the initial stages of supporting U.S. forces deployed to a new area of operations is establishing ground and air lines of communication (LOC's) for resupply. This becomes even more challenging when the ground LOC's must cross more than one country. There are many tasks involved in establishing a ground LOC across several countries, including planning, coordinating, and executing route reconnaissance, border crossings, customs clearance, and security.

The U.S. Army Medical Materiel Center, Europe (USAMMCE), in Pirmasens, Germany, had to establish such a LOC when its Transportation Branch was tasked to deliver class VIII (medical materiel) to forces deployed to Camp Able Sentry, Macedonia, and, later, to Camp Bondsteel, Kosovo. USAMMCE had provided medical supply support indirectly to units deployed to Macedonia as part of the United Nations Protection Force since 1993. However, it was not until 1999 that USAMMCE was tasked to establish a direct ground LOC to Camp Able Sentry for commercial and military trucks.

## Putting the Plan Into Motion

When given the mission to support troops at Camp Able Sentry, USAMMCE immediately submitted a request for commercial transportation through the 1st Transportation Movement Control Agency (TMCA) to the Intratheater Commercial Transportation Board in Stuttgart, Germany. These two agencies were key players in negotiating border crossings, clearing customs, and providing security before the first truck departed Pirmasens.

During the first 30 days of the Kosovo operation, the first shipments of medical supplies were delivered commercially to Tirana, Albania, by truck and one air shipment by DHL Worldwide Express. When the intermediate staging base was established at Camp Able Sentry, USAMMCE began commercial truck shipments directly to the camp. Once an air line of communication (ALOC) was established out of Ramstein Air Base in Germany, commercial airlift was discontinued.

The Transdanubia Trucking Company was chosen to transport commercial ground LOC shipments to Camp Able Sentry. When Camp Bondsteel was established in Kosovo, arrangements were made with Transdanubia to ship additional cargo to Camp Able Sentry for follow-on movement to Camp Bonsteel. There was no additional cost since the trucks were going no further than their original destination and there was cargo space available on the trucks for the additional materiel. Even with the additional cargo, USAMMCE maintained a twice-weekly delivery schedule to both locations without adding trucks or increasing delivery days.

Once at Camp Able Sentry, the pallets of medical supplies were off-loaded, and those destined for Camp Bondsteel were staged for onward movement. At first, the supplies were sling-loaded to Camp Bondsteel by helicopter. When secure ground convoys into Kosovo were established, the supplies were trucked to Camp Bondsteel by the Logistics Civil Augmentation Program contractor, Brown & Root Services Corporation.

After the border crossings and customs clearances for the medical supplies going to Camp Able Sentry were established, the drivers decided which route to take to the specified border crossing. The usual route was to go south from Germany, through Austria to Ancona or Brindisi, Italy, for transport by ferry across the Adriatic Sea. A ferry carried the truck to the Greek port of Igoumenitsa, and the truck continued through Greece to its final destination in Skopje, Macedonia. Moving medical supplies from Camp Able Sentry to Camp Bondsteel required no additional border crossing or customs clearance, and security was provided by U.S. forces supporting Brown & Root's convoys.

## Overcoming Obstacles

The average transit time from USAMMCE was 4 days to Camp Able Sentry and 1 additional day to Camp

Bondsteel. The major factor affecting this delivery time was weather. During the winter months, road conditions through the Alps and other mountainous areas were hazardous due to ice, snow, and wind. This weather factor was exacerbated in some places by poor roads and limited road-clearing capability. In the warmer months, tourists and vacationers affected delivery time. Ferry officials gave priority to the tourists and only allowed trucks on particular ferries and at certain times of the day. If a driver missed that particular time, he could wait as long as 12 to 24 hours for the next ferry allowing trucks. Whenever these problems did occur, the maximum delay time was usually no more than 2 days.

Other delays occurred at border crossings when the truck drivers were asked for a "payment" to allow them to cross. This delay was usually only several hours. Although drivers not able to make the "payment" were affected most, some of those who did pay were delayed also. This is a normal occurrence for commercial drivers moving throughout some European countries, and it occurred even more frequently in the Balkan states. If a driver was delayed more than a few hours, the company notified the USAMMCE Transportation Branch, and the information was relayed to Camp Able Sentry and Camp Bondsteel. The trucking company accepted responsibility for this cost and made restitution to the drivers without a charge to USAMMCE.

An ALOC also was established to Camp Able Sentry. Daily Air Mobility Command (AMC) flights made it easy to ship emergency and high-priority items when needed. These daily flights also minimized the use of "green-sheeting" items. (A piece of cargo designated for "green-sheeting" was given a higher priority over other Army cargo awaiting air movement and usually went out on the next air mission.) AMC flights also were used for moving certain quantities of compressed gases and hazardous materials and all emergency and life-or-death items.

### In-Transit Visibility

The majority of medical supplies, including medical equipment and hazardous materials, were transported by commercial truck. Initially, USAMMCE only had in-transit visibility of commercial trucks, and that was via a commercial system with limited capability. The system required input from the driver to a data collection system near Paris, France. From the data collection system, USAMMCE was able to download the data file containing positioning data for the trucks carrying USAMMCE shipments. These data then were uploaded manually to the USAMMCE Theater Army Medical Management Information System (TAMMIS) transportation module. USAMMCE personnel, as well as the customers downrange with user access to USAMMCE's TAMMIS, could obtain data to determine the location of the truck carrying their materiel and get a complete listing of all items in that shipment.

In February 2000, USAMMCE began using radio frequency identification (RFID) tags for all shipments to Kosovo and Skopje. This allowed personnel with access to the Joint Total Asset Visibility System, the Global Transportation Network, or the automatic identification technology site in Friedrichsfeld, Germany, to track USAMMCE shipments going to Kosovo or Skopje or any other destination. USAMMCE has just begun adding commodity data to its RFID tags. Before that, only a transportation control number, which was actually the lead document number, was associated with each tag. With RFID tags, a customer can track each pallet and the commodities on each pallet. This system was not all-inclusive, because some items arrived late and were put on a pallet without enough time to add the data to the corresponding RFID tag.

USAMMCE is trying to link its commercial trucks to the Defense Transportation, Reporting, and Control System. If successful, this will increase the in-transit visibility of USAMMCE medical shipments to Kosovo and to other sites it supports throughout Europe, Africa, and Southwest Asia.

USAMMCE continues to set the standard for focused medical logistics in the new millennium. It is the only activity within the Department of Defense that can acquire medical materiel from multiple sources and collect, store, and configure it for direct delivery to the customer using the latest information technology. USAMMCE stands ready for any and all new challenges.

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# More Than a Name Change

by Major Randolph J. Duke, USAR

## The 377th Theater Support Command faces a big challenge for an Army Reserve unit: to provide support to U.S. troops in Southwest Asia.

When the 377th Theater Army Area Command (TAACOM), a New Orleans, Louisiana-based Army Reserve unit, transitioned to a theater support command (TSC), it was more than just a name change; it was a major change in the unit's scope of responsibility. While the primary focus of the TAACOM was supply and maintenance, the TSC now also is responsible for rear-area management, military police, personnel, medical, transportation, and finance functions. Additionally, while the 377th's area of responsibility is still Kuwait and the entire Southwest Asia region, logistics support to joint and designated coalition forces now may fall under the scope of the unit's mission requirements.

Organizational changes resulting from the transition to a TSC included the 377th's primary staff becoming a general staff and adding or realigning various unit sections. These changes were necessary to establish the TSC single-support concept, according to the Support Operations Officer for the 377th TSC, Colonel James Lee. He said that the key to the transition was the 377th's involvement in the planning, development, and validation of the TSC concept, along with the Combined Arms Support Command at Fort Lee, Virginia. While he believes that the unit would face organizational challenges if deployed, Colonel Lee said that the 377th's understanding of the mission, while remaining current with changes in intelligence information, is their key to preparedness. Colonel Lee added, "The transition was easier because of the involvement of Third Army, TSC's wartime higher headquarters, and CENTCOM [U.S. Central Command]."

The 377th's wartime mission is to support troops in Southwest Asia. This is quite a challenge for a reserve unit, but the 377th is setting a standard for others to follow. To ensure that the 377th TSC can execute the single support concept, the unit "trains as it fights." As a result, unit personnel understand mission nuances and added responsibilities. While the unit once supported various smaller or segmented missions as a TAACOM, it now participates in joint operations. It continually interfaces with the active components of the various services. These relationships have established a framework for seamless transition in the event of mobilization and deployment.

The Army Central Command (ARCENT) and CENTCOM rely on the 377th TSC as the sole unit in the theater to meet support requirements within the area of operations. Total ARCENT and CENTCOM reliance on the 377th is perhaps the unit's greatest challenge in converting from a TAACOM to a TSC. Given its critical real-world mission and the need for reservists to support operations around the world, the 377th must be prepared to mobilize on very short notice.

During monthly drills, the TSC staff analyzes the regional situation using monthly updates and real-time logistics and support information. This keeps the soldiers focused on the mission and ensures that they fully understand operational demands. In an effort to be prepared for deployment, the soldiers wear their desert camouflage uniforms to designated drills.

Recently, over 100 soldiers of the 377th participated in Lucky Sentinel, a 14-day training exercise in Kuwait designed to test and evaluate a typical contingency deployment. They were among over 1,300 U.S. troops to join a much larger multinational force. Unit members said that they are even more confident and prepared after this real-world experience.

Although the transition to a TSC is still in progress, the 377th must remain focused on their real-world mission in Southwest Asia. After all, the transition to the TSC was more than just a name change. **ALOG**

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# From the Fort to the Port— The 1179th DSB Makes It Happen

The Army Reserve's 1179th Deployment Support Brigade (DSB) at Fort Hamilton, New York, recently sent a nine-member team to help the 3d Infantry Division (Mechanized) at Fort Stewart, Georgia, prepare for its upcoming deployment to Bosnia. The team checked 400 containers and wheeled vehicles for proper packing, documentation, and measurement.

☐ **At left, DSB team members and the movement officer of the 3–7th Cavalry, 3d Infantry Division, cross-check the identification numbers copied from the actual pieces of equipment with those on a list to be sure they match. The numbers on the list are incorporated in the identification labels and radio frequency identification tags that are attached before shipment.**

☐ **At right, DSB team members check the identification number on a vehicle to ensure that it matches the inventory and other labels.**

☐ **Above and at left, members of the 1179th DSB team check vehicles to ensure that documented vehicle measurements include added equipment and irregular shapes. Often, only the measurements of the vehicle itself, without any add-on equipment, are listed. A discrepancy could result in insufficient stow space for vehicles when they are loaded onboard the ship.**

*The* Army Logistician *staff wishes to thank Bill Cook of the Military Traffic Management Command Deployment Support Command Public Affairs Office for his contribution to this article.*

# Reducing Maintenance Backlog

by Captain Vincent R. Lindenmeyer
and First Lieutenant Gilbert J. Duran

The 82d Airborne Division always must be ready to deploy on short notice. To meet this challenge, its only heavy maintenance company developed a "maintenance-intensive week" to keep the division's equipment ready for deployment.

The 82d Airborne Division at Fort Bragg, North Carolina, is always in a state of alert. Because of this high operating tempo, its maintenance units must be proactive in providing support. As the division's only heavy-maintenance airborne company, F Company, 782d Main Support Battalion, 82d Airborne Division Support Command, is responsible for supporting the rapid-deployment capabilities of all units within the division by providing them with direct support (DS) maintenance. Specifically, F Company supports the overall operational readiness of the airborne units by providing increased mission support, running the central loading area control center for division outload, executing division emergency deployment readiness exercises, and supporting combat training center rotations. The company includes an automotive shop, a battery shop, a fuel and electric shop, and an allied trades section (body shop), as well as recovery, ground support equipment maintenance, and small arms repair capabilities.

The soldiers of F Company are committed to excellence, which is often demonstrated by their ability to accomplish all missions and produce positive results. However, F Company needed a long-range planning tool to plan maintenance-intensive periods proactively so the units it supported always would be ready to deploy. Developing a proactive plan of action to support its customers during periods of high operating tempo and to reduce maintenance backlog during critical times of the division training cycle meant the difference between excellence and mediocrity.

### Innovative Maintenance Concept

Recognizing that reactive operations, often called "surge maintenance," were a problem, we decided, as F Company commander and maintenance control officer, to develop a responsive, proactive program called Heavy Maintenance Intensive Week (HMIW) that would be conducted quarterly. HMIW would decrease the maintenance backlog, allowing a quick turnaround for units preparing to deploy within the 82d Airborne Division's 18-hour deployment posture.

In addition to the increased readiness, a quarterly HMIW would allow the company's sections to work on—

- Float maintenance and turn-in.
- Bench stock and shop stock validation and replenishment.
- Mandatory tool inventories.
- Major assembly turn-in.
- Environmental training.
- Excess metal and wood turn-in.
- Shop cleanliness.

During the development phase of HMIW, the senior noncommissioned officers (NCO's), maintenance technicians, and DS mechanics reviewed the HMIW concept. This process allowed the soldiers to gain ownership of the concept, exercise leadership traits, and propose innovative ideas.

## Implementation

The first step was to apply the HMIW to a long-range planning calendar. We decided to have 100 percent of the company work two 11-hour shifts for 1 week. In the first shift, one-third of the company worked from 0600 to 1730. This shift's duties consisted of preparing jobs for repair, completing jobs that had been started and not finished, and notifying customers that equipment was ready for pickup. In the second shift, two-thirds of the company arrived at 1300 and worked until 2415, creating a 4½-hour shift overlap. Between 1700 and 2415, the second-shift mechanics worked unhampered by the normal duty-day interruptions, such as customer service phone calls, soldiers' appointments, and scheduled airborne proficiency operations, that often restrained our ability to provide uninterrupted DS services. This schedule enabled the second-shift mechanics to complete more customer service repairs during their shift.

Mission orientation focused on both the leaders and soldiers. For the first 4 days of the HMIW, a 30-minute brief was held at 1330 so each section officer in charge and NCO in charge could brief the shop officer about goals, tasks, and daily accomplishments. During the HMIW, other program benefits became apparent. Soldiers began to come up with new and innovative ideas. Morale was higher because of the consistency of a guaranteed work shift for the week. This continued work shift allowed soldiers to work on their military occupational specialty proficiency as part of their sergeant's training time for the week. As an incentive, individuals and sections were recognized for completing backlogs and for special projects. The commander's expectations were surpassed when soldiers and individual sections began to act on ideas for special projects.

## Results

During F Company's first HMIW in September 1999, we completed 100 percent of the jobs that had been on hand for more than 30 days and 44 percent of the jobs that had been on hand for less than 30 days. MOS proficiency increased. Soldiers working in teams shared knowledge with NCO's and technicians. New soldiers entering the company were allowed to apply their job skills, and they observed many cases of NCO leadership-by-example.

One of the company's greatest achievements was saving the division $192,000 by turning in excess class IX repair parts (major assemblies). Additionally, the DS shop saved $8,278 by completely inventorying and reducing unneeded shop stock.

Having met the Department of the Army production standard for the last 11 months, F Company's DS Shop exceeded the production standard during HMIW.

As the maintenance work load tapered off, soldiers were able to focus on special projects. The most notable of these was fabricating a safety cab-bar for family of medium tactical vehicles (FMTV) trucks. The cab-bar is used to lock and hold the FMTV cab in place while mechanics work on the engine. In another special project, the fuel and electric shop developed a new mobile battery cart for portable ground hopping of equipment, including battery, alternator, and starter testing. This idea was presented and developed after a fire safety hazard inspection. (Ground hopping refers to using an alternative source to test and start equipment that cannot be started on its own.) The allied trades section developed a small component repair workbench to which an automotive mechanic can secure his rollaway tool cart.

A second HMIW was conducted in March 2000. As a result of the second successful HMIW, the DS mechanics have eliminated all of the workable backlog (job orders for which parts are on hand) and focused their attention on innovative projects and MOS proficiency. F Company completed 189 jobs, reducing the total backlog by 84 percent.

The HMIW was established to reduce the backlog of equipment needing maintenance, thus making the equipment available to combat units called to deploy on short notice. The program was successful in several ways. The backlog was effectively eliminated, and soldiers had time to work on training, special projects, and maintenance of the work area. As a sign of our success, F Company won the 82d Airborne Division's 1999 Phoenix Award, which is given by Fort Bragg to the unit with the most exceptional maintenance accomplishments. **ALOG**

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# FSC Staffing and Training Needs

by Major Darrel G. Larson

## The author suggests more training and experience for officers assigned to forward support companies (FSC's).

Over the last 2 years, the combat service support (CSS) units of the 4th Infantry Division at Fort Hood, Texas, have transformed to the Force XXI organizational structure. The redesign of the forward support battalion (FSB) and the creation of its subordinate FSC's are integral components of this change. Under the new FSB, a multifunctional company provides supply, maintenance, and transportation support to a single maneuver battalion. By consolidating support elements, CSS will be more effective and economical.

A multifunctional logistics captain will command the FSC. Each FSC headquarters will have a support operations section that is responsible for planning logistics support to the battalion task force. The support operations officer (SPO) will be a lieutenant who will help the company commander carry out both the area support mission and the direct support mission to the battalion.

> The effectiveness of future military operations will be tied to the CSS capability to project, receive, and support the force.
>
> —Training and Doctrine Command Pamphlet 525–5, Force XXI Operations

Tomorrow's battlefield will impose new challenges to support operations and will call for CSS leaders with the foresight and responsiveness necessary to anticipate and maintain the unit's operating tempo. Force XXI will bridge the gap between today's Army and the Interim and ultimately the Objective Force as a knowledge-based force distinguished by its digital capabilities. To set the FSC up for success on the battlefield of tomorrow, I believe the FSC command structure should be changed: a CSS major should command the company, and a senior captain should be the SPO.

### FSC Design

According to a recent Army Training and Doctrine Command news release, "Control of CSS has been moved from maneuver battalion commanders to the CSS chain of command. The armor and mechanized brigades each have a forward-support battalion to provide logistical support. Each maneuver battalion has a forward-support company carrying out a similar mission." Consolidation of supply support has had profound effects on the logistics community. The most severe effect is the increase in responsibilities for an FSC commander because he must control all CSS for a maneuver battalion. As a result, the new design also puts greater responsibility on CSS lieutenants within the FSC. Platoon leaders will have to make many decisions that the company commander now makes.

The support platoon, maintenance platoon, and food service section have been removed from the maneuver battalion's headquarters and headquarters company and given to the FSB, while supply sergeants and the battalion S4 (logistics officer) are retained in the maneuver battalion. The FSC consists of a headquarters section, a supply and transportation platoon, and a maintenance platoon.

### The FSC Commander

The "single logistics operator" is one of the precepts upon which Force XXI logistics is designed. As the

heart of logistics operations, the FSC commander provides unity of command, centralized distribution management, and command and control of logistics assets.

The FSC commander is the single logistics operator at the battalion or task force level and is responsible for all CSS support for a maneuver battalion. He must coordinate between the maneuver battalion and the FSB to anticipate needs, maximize direct support CSS performance, and sustain the unit's combat power. As is often said, he is responsible for all his unit does or fails to do. This includes ensuring the safety and security of his unit and the supplies entrusted to him—by no means a small task.

Security requirements for Force XXI CSS units are increased by the extended battle space, larger areas of operations, and longer supply routes. Since CSS soldiers will be located closer to the forward line, they will be subject to attack more often than they are today. Today's CSS units are not structured to handle this.

When asked to name the most critical tasks of the tactical FSC commander, an FSC commander recently replied, "Defend the task force support area [TFSA] . . . and deploy/move the TFSA and FSC forward." This commander made no mention of myriad other tasks for which he was responsible. He focused on safety and security issues. He will provide oversight of the other mission functions, but he will rely on his subordinates for their successful execution.

### The Support Operations Officer

Within the FSC headquarters section is a support operations section that coordinates and supervises the FSC's CSS mission. According to FM 63–20–1, Forward Support Battalion (Digitized), "The FSC depends upon . . . [the] support operations section for integrated materiel management, movement, maintenance, and distribution management direction." While the FSC commander focuses on safety and security issues, he allows his SPO to concentrate on the intricate details of support to the maneuver unit.

The SPO must be a competent tactical logistician. The success of a battle may depend on his ability to ensure that there are enough ammunition, fuel, and subsistence where the soldiers need them when they need them and that equipment is operational. To do this, the SPO must be completely on top of the logistics situation so that he can anticipate needs so quickly that they can be addressed even before the battalion commander realizes what they are.

The support operations section collocates with the maneuver battalion S1 (adjutant) and S4 sections in order to technically supervise the FSC CSS mission. The SPO is the primary CSS planner and coordinator. He is responsible for providing professional and responsive CSS to the maneuver battalion for all classes of supply, transportation, and maintenance; he must coordinate CSS requirements with internal company as well as battalion assets; he must identify and track all requests for support; and he must assist the S4 in operating and managing the battalion logistics command post. This young, often inexperienced lieutenant has a very big job to do, and how well he does it has a significant effect on the maneuver battalion's success in combat.

The SPO's ability to perform his many duties successfully will depend ultimately upon the skills he brings to the job. Two of these skills stand out in importance and can have the greatest impact on the mission. The first, and most important, is the ability to develop, maintain, and execute a synchronization, or sync, matrix. This powerful tool is used to coordinate and time all aspects of support to the maneuver unit. It lists all tasks by battlefield operating system in a time sequence that is syn-

### Support Operations Officer Responsibilities

- Coordinates and provides technical supervision for the support unit's CSS mission.
- Determines CSS requirements in coordination with the FSB support operations/battalion S4, the FSB S2 (intelligence) and S3 (operations), and the logistics representatives from other customer units.
- Plans and monitors support operations and makes necessary adjustments to ensure support requirements are met.
- Tracks available assets through the FSB support operations/battalion S4 and other customers.
- Coordinates with the battalion S3 on routes in the brigade support area (base cluster operations center and lines of communication routes).
- Coordinates and provides technical CSS supervision to the maneuver battalion or task force.
- Establishes and monitors battalion logistics situation and status reports according to standing operating procedures.
- Plans future operations.
- Establishes and maintains tactical and CSS overlays.
- Establishes CSS synchronization matrix.

chronized with the maneuver unit's tactical plan. The SPO must be able to understand every aspect of the matrix, and he must have the discipline and foresight to update, maintain, and execute CSS operations according to the matrix for the CSS mission to be successful. Using a substandard sync matrix may result in chaos on the battlefield, missed resupply logistics packages, soldiers who are left to fight without critical supplies, and ultimately, loss of the battle.

The second skill needed for an SPO to be successful is the ability to brief effectively. An officer who can communicate his intentions, plans, desires, and orders when talking to superiors, subordinates, or peers is much more effective than an officer who cannot. The ability to articulate a concept of support to the maneuver battalion staff is crucial to the unit's success.

Lieutenants leaving the Quartermaster (QM), Transportation (TC), or Ordnance (OD) Officer Basic Courses (OBC's) for assignments in the 4th Infantry Division (and soon, throughout III Corps) could serve as the FSC SPO. Most senior logistics officers would limit this possibility by using more seasoned first lieutenants, but the possibility still exists that the unit might have to use a very junior second lieutenant to fill that slot. Could that junior lieutenant succeed with the skills given him in an OBC?

> Future battle command starts with competent commanders and noncommissioned officer leaders who have developed an intuitive sense of battle gained from study and experience.
>
> —Training and Doctrine Command Pamphlet 525–5, Force XXI Operations

The average second lieutenant leaving an OBC is probably 22 or 23 years old and has very little experience or knowledge of the Army other than the basic course he has just finished. An FSB commander usually will rotate a young officer through a series of platoon leader jobs to cultivate his abilities and give him some experience in the full range of logistics functions before assigning him as the SPO in the FSC. Even so, the most senior first lieutenant usually is only 26 years old and has less than 4 years of experience in a troop unit. With any luck, all of this time was in logistics-oriented jobs. However, many senior lieutenants branch-transfer from combat arms and, under the new Force XXI force structure, have not had the opportunity to be a unit maintenance officer, let alone a support platoon leader. Although these officers will bring a great deal of tactical know-how to the job, they will not bring any logistics experience to bear on the duties of the job.

The Army of Excellence used CSS majors as SPO's in the FSB's. These officers had a minimum of 11 years of active service and had served in a variety of logistics assignments. Although Force XXI also uses majors as SPO's in the FSB's, the new design takes some duties from these seasoned officers and empowers very junior officers with responsibility that may be too much for them. The success of the brigade combat team will depend on how well these junior officers perform.

## Training CSS Lieutenants

CSS lieutenants receive entry-level training through the OBC at their branch schools. The courses are geared toward giving junior officers a broad-brush overview of doctrine and operations in their branch functional areas. These schools provide the basic knowledge these officers need to assume roles as platoon leaders throughout the Army. Over approximately 14 weeks, officers receive instruction covering a variety of topics ranging from military ethics and force structure to military writing and leadership. In addition, each school provides approximately 280 hours of branch-specific instruction. A logistics officer graduates from his OBC prepared for functional branch assignments at the platoon level in supply and services, maintenance, or transportation, depending on his branch.

The Army Logistics Management College conducts a Support Operations Course for which one of the objectives is "to prepare support operations officers and NCO's to organize support functions and manage combat service support (CSS) in a support battalion/squadron during peacetime and wartime." This course covers the entire gamut of support operations tasks, concentrating on arming, fueling, fixing, moving, and sustaining the force. It provides multifunctional instruction covering QM, OD, and TC tasks to officers who have completed the Combined Arms and Services Staff School (now a part of the Combined Logistics Captains Career Course [CLC3]) and who anticipate being assigned as SPO's within 1 year of completing the course.

## Shortfalls

Shortfalls quickly become apparent when comparing the skills and knowledge base that an effective SPO must possess to the training junior lieutenants receive. The first shortfall concerns the training these officers receive in their OBC's. Although these courses produce well-rounded officers, their knowledge base is very limited. For example, QM lieutenants receive only 4½ hours of instruction in Army maintenance management, including 1 hour on the Unit Level Logistics System (ULLS) interface with the Standard Army Maintenance System

(SAMS) and the Standard Army Retail Supply System (SARSS).

Mechanized forces are so dependent on the quality of their maintenance program that the SPO has to be an expert in both unit-level and DS-level maintenance. This is the person who must manage the unit's maintenance program as well as the unit's repair parts supply program. Force XXI places so much emphasis on the success of the SPO in the FSC that the deficiency in training at the OBC could be a "show-stopper" for the brigade combat team.

The second shortfall involves the use of sync matrices. The program of instruction for the QMOBC makes no mention of the sync matrix. In fact, officers do not receive instruction on developing and using a sync matrix until the Support Operations Course, assuming they take that course. The operating tempo of the maneuver battalion on the battlefield is so high that providing successful CSS to the unit without a sync matrix is nearly impossible; there are simply too many moving parts to keep up with and coordinate.

The third shortfall is the experience level of our lieutenants. It is just too low to ensure the success of the support operations section. Lieutenants have not dealt with enough of the logistics force structure, let alone the combat arms force structure, to merge the two into an effective concept of support that meets the needs of the maneuver commander. Worse yet, a branch-detailed officer who transfers from a combat arms branch has only 4 weeks of logistics training under his belt, which he received at the transition course before he put on his QM, OD, or TC brass.

The last shortfall is the lack of training in multifunctional logistics. Until recently, the first formal training CSS officers received in multifunctional logistics was during CLC3. The Army has a plethora of junior officers in our logistics force who have received no instruction in multifunctional logistics.

**Possible Remedies**

There are several options available for alleviating the problems caused by having junior officers with insufficient training and experience in FSC positions. One possible solution is to restructure the OBC to include multifunctional logistics support. This could be accomplished best by combining the QM, OD, and TC OBC's into a single multifunctional logistics course, thereby providing to our junior officers a taste of multifunctional logistics from the very beginning of their careers. The program of instruction would have to cover all of the functional areas, just as CLC3 now does. A lieutenant who learns the basics of multifunctional logistics early in his training will be more likely to succeed as an FSC SPO. However, there are two problems with this solution: first, it would require a major restructuring of Training and Doctrine Command schools; and second, it does not solve the issue of the officer's lack of experience.

Another option is to send CSS lieutenants to the Support Operations Course before they go to a Force XXI FSB. The Army already is moving toward this. However, this still does not address the experience problem.

A third option is to change the FSC command structure by placing a CSS major in command of the FSC. The experience a major would bring to the position would improve significantly the level of logistics foresight and ability afforded the maneuver unit. Furthermore, if a CSS major commanded the FSC, the SPO could be a captain. The battalion then could be assured that the SPO would be a CLC3 and Combined Arms and Services Staff School graduate with a reasonable amount of experience. This officer could be required to attend the Support Operations Course before his assignment to the Force XXI organization. This would set up the FSC to *succeed* on the battlefield.

Logistics always has played an important part in military operations and will continue to do so in Force XXI and the Objective Force. How the logistics tail is structured now will affect greatly how well the Army fights and survives in the future. The Force XXI FSC is a powerful improvement in the way the Army supports the leaner, meaner force it is becoming.

Setting up the FSC for success is key to the Force XXI design. The training and experience of the officers in the FSC are crucial to its success. Under the current FSC structure, the FSC company commander and SPO do not have sufficient training or experience to meet the requirements of the job. Restructuring the FSC with a major as the company commander and a captain as the SPO would ensure that the officers in those positions have the training and experience needed to be successful.

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# Improving Change of Command Inventories

by Captain Christopher J. Whittaker

Every company commander must conduct a change of command inventory before assuming or relinquishing command. It is critical that the incoming commander know that all hand receipts are in proper order and that all items he is signing for are actually on hand or accounted for. Army Regulation 735–5, Policies and Procedures for Property Accountability, describes inventory and accounting procedures and the consequences of failure to comply. The Captains Career Courses do not elaborate on the change of command inventory process; unit property book officers usually can do a better job of preparing commanders for an inventory by identifying the responsibilities of the incoming and outgoing commanders in a memorandum of instruction.

Here are three tools that I used in the inventory process as the incoming and outgoing commander of the 503d Maintenance Company at Fort Bragg, North Carolina.

***Tool 1: List of equipment documentation.*** An important part of inventorying property is conducting an inventory of all the publications that are available for each piece of Army equipment on your hand receipt. The property book officer can give you a copy of your unit's modification table of organization and equipment (MTOE) or table of distribution and allowances (TDA) on a disk. Send that disk to: Executive Director, USAMC Logistics Support Activity, ATTN: AMXLS–APP, Redstone Arsenal, Alabama 35898–7466. In 4 to 6 weeks, you will receive a printout listing all of the line item numbers (LIN's) you submitted and the related publications. The listing will include all hand receipts, component listings, lubrication orders, and manuals for each piece of equipment. The printout also will list the latest publication date of, and changes to, each publication. You could make part number or item identification mistakes if you do not have the current manuals.

You also should inventory the types and quantities of publications on hand. Later, you can ask your publications noncommissioned officer to order needed quantities of publications for the equipment on hand. During my change of command inventory, I was amazed at the number of publications for each piece of equipment.

***Tool 2: Change of command calendar.*** This is especially useful for large units such as maintenance and headquarters companies. The calendar's purpose is not only to organize the inventory process but also to inform sub-hand receipt holders of the most current layout dates—when the sub-hand receipt holder physically lays out all equipment listed on his hand receipt so that it can be counted and checked for serviceability.

Change of command inventories can be conducted either by LIN or by company section. The most effective, but not always the most practical, method is by LIN. For my company, which had about 20 sections, we chose to inventory by section. Although most supply personnel cringed at this method, it was the most effective way to ensure that each section signed for its equipment. In my company, over 200 general mechanic toolboxes were spread over 15 sections; trying to inventory them all at once by LIN would have been a nightmare. Inventorying one item at a time also would have shut down the entire company, rather than just one section, for a day. This is important for a maintenance company that must provide seamless and continuous support.

After each section is inventoried, the section chief has 24 hours to resolve any tool discrepancies and sign his section hand receipt. The section chiefs then sub-hand receipt the equipment to the users. This helps the incoming commander mark on his equipment list those LIN's that have been accounted for physically. If a section is not ready on the appointed day, smaller section or makeup inventories are conducted.

***Tool 3: Discrepancy log.*** This document maintains a dialog between the incoming and outgoing commanders and helps resolve any issues that might derail the inventory process. As the incoming commander, I developed this system to ensure that all problems I noticed during the inventory were resolved before I signed the hand receipt. The log was a working document that I maintained and passed to the outgoing commander daily, so he knew of issues he needed to resolve, such as finding equipment, making an administrative adjustment, or initiating a change of command report of survey. This gave the outgoing commander a chance to fix things during the inventory process rather than giving him a list of discrepancies at the end.

These inventory tools do not guarantee success for either the incoming or outgoing commander, but they will facilitate a smoother change of command inventory. For a copy of the tools, send an e-mail to WhittakerCJ@mail.vmi.edu. **ALOG**

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# Class VIII Prepacks for Joint Distribution

by Captain Ronald Harper

The author discusses the advantages of using preconfigured procedure packages in joint medical operations.

A typical Army medical center provides over 6,800 lines of expendable class VIII medical supplies daily to support the healthcare mission. At Brooke Army Medical Center at Fort Sam Houston, Texas, 15 percent or fewer of those 6,800 lines are maintained in stock. Improvements in prime vendor supply, standardization, and the use of just-in-time inventory have reduced the stockage level at the medical center from a historical level of over 3,400 lines to less than 1,100 lines over the past 5 years. One initiative that has led to increased reliability of on-hand supply for high-priority items while supporting standardization and reducing on-hand stock is the development of preconfigured procedure packages, or prepacks.

A prepack is an assembly of expendable medical materiel configured for a particular procedure. A package usually contains 10 to 30 different items that constitute the basic materials a healthcare provider needs to complete a procedure. Healthcare providers design a package, and a medical supply distributor or third party vendor assembles it.

This type of materiel assemblage works well when the supply requirements for a procedure can be defined, are recurring, and can be forecast. It does not work well for procedures that have no standardized materiel, are used infrequently, or require very few supplies. In the medical center, the areas that make the most use of preconfigured packages are surgery, specialty procedures, and training operations.

The challenge is to determine how this process can apply to the theater of operations. Often what works well in a fixed facility does not work well in a field environment. In this article, based on my experience at Brooke Army Medical Center, I will present some thoughts on how prepacks might fit into emerging medical supply doctrine, Defense Logistics Agency (DLA) initiatives that support the procurement of prepacks, the use of medical materiel in training, and the comparative advantages and disadvantages of using preconfigured medical supply packages in the theater of operations.

## Doctrine

The Army Medical Department Center and School, Directorate of Combat and Doctrine Development, is writing the future operational concepts for medical logistics based on the concepts contained in Joint Vision 2010. Some of these concepts include—

- Fully integrated systems and processes for all the armed services.
- Responsive deployment concepts based on just-in-time, commercial support structures.
- Reduced costs to procure and manage medical materiel.

These concepts will shape the Army Medical Department for the next 10 years and beyond.

In the doctrine being developed for the years 2003 to 2010, successful implementation of medical logistics support to combat forces depends on preplanned resupply support to deployed forces. The Naval Health Research Center and the Army Medical Department Center and School conducted joint studies to develop medical supply data for first- and second-echelon medical units. The objective of the studies was to develop multiservice, standardized medical materiel sets based on clinical requirements. The ability to plan joint medical materiel support based on expected medical tasks is an example of the anticipatory logistics needed to support the doctrine being developed.

## Mission Requirements

Medical logistics planners and healthcare professionals will use anticipatory logistics to plan medical

☐ **This photo shows a commercial preconfigured procedure package.**

materiel support based on expected medical tasks and patient conditions. They will plan for the surge and sustainment materiel needs of a specific mission by using simulation and modeling tools that evaluate scenarios that include the following information—

- Unit "war core" materiel.
- Mission profile.
- Commander's intelligence information and assumptions about the mission.
- Anticipated patient streams.
- Expected patient conditions.
- Healthcare provider specialties.
- Healthcare provider materiel preferences.
- Local epidemiology.
- Indigenous populations.
- Local infrastructure.
- Evacuation times.

The commander will use these simulation and modeling tools to analyze the factors influencing the scenario and develop a list of line-item materiel requirements to be used for the mission. The simulation and modeling tools to achieve this level of preplanning are still in the developmental stages.

Once requirements are determined, identifying the source and method of obtaining the required materiel becomes the next step in supplying the force. The Army, Navy, and Air Force are coordinating efforts to develop the best practices for obtaining medical materiel since future operations will be joint and multinational.

## DLA Initiatives

DLA currently is developing acquisition tools in conjunction with the Army, Navy, and Air Force, such as vendor-managed inventory, corporate exigency contracts, stock rotation contracts, and specialized prime vendor contract clauses, to support acquisition of tri-service medical materiel for the force today and in the future.

Defense Supply Center Philadelphia (DSCP) is developing strategies to meet the services' medical materiel requirements for future medical systems. Currently, DSCP has one general trauma pack listed on its Distribution and Pricing Agreement (DAPA) program. This prepack, which is produced for the Air Force by Maxxim Medical of Clearwater, Florida, is a trauma pack that contains expendable medical materiel for three procedures. It was designed for use in a hospital emergency room, but it has the same materiel that would be consumed in a battlefield trauma situation.

## Advantages

There are distinct advantages to the supply chain in developing and using prepacks. Assembling a number of lines of medical materiel into a single package reduces the administrative burden of resupply. Ordering prepacks is simpler than ordering each line separately and reduces the chance of error in ordering. The packaged materiel requires less handling by warehouse personnel who otherwise would have to assemble orders item by item. Making prepacks vendor-managed inventory items shifts the burden of maintaining medical materiel from DLA depots to the manufacturer.

Prepacks support standardization of materiel among the different services. Doctrine emerging from Joint Vision 2010 requires increased interoperability among the services for medical support units. Medical materiel distribution will evolve into a completely joint function controlled by the joint medical logistics support center and executed by the joint medical logistics support company. Under this concept, the development of standardized materiel requirements, to include standardized medical materiel packs, is essential to ensuring that each service is able to support the others in a theater of operations.

The advantages of standard prepacks to the user of medical supplies include reduced costs for medical materiel, increased efficiency in resupply operations, and more user-friendly products. Using distribution and pricing agreement contracts, cost reductions can be achieved through special pricing from the manufacturer. Further

cost savings are realized through decreased ordering and storage costs for the logistics supply chain.

The prepacks currently used by industry benefit healthcare providers by presenting them with a complete "procedure-in-a-box" situation. One of the most time-consuming tasks for surgical or trauma cases is gathering and arranging supplies before treatment. Medical materiel prepackaged by the manufacturer reduces preparation time and helps to maintain sterile materiel.

By packaging medical supplies in a procedure-based unit, costs for particular procedures are easier to capture and plan for. This is best seen in the training arena, but it applies to battlefield medicine as well.

The unique nature of training lends itself especially well to the prepackaged supply concept. The amount of supplies needed for each training operation and the time that the training will occur are predictable. The Army Medical Department Center and School has developed preconfigured medical supply training packages for all medical specialist advanced individual training requirements. The course instructors specify the items to be included in each package, and the installation medical prime vendor assembles and delivers the packages to the classroom under a DLA contract. All involved parties benefit from this program—the students, who have all their training supplies available when they need them; the prime vendor, who can forecast materiel requirements for each training class months in advance; and the Army Medical Department Center and School, which can track the cost per student of medical supplies and thus budget accurately for training.

Prepackaged medical training supplies would help simplify training for deploying forces and for forces in the theater of operations. Instructors could implement training quickly and easily with the use of prepacks.

## Challenges

There are challenges to using medical materiel prepacks. Developing preconfigured supply packs, especially in a joint environment, requires extensive up-front coordination. The key players in developing procedure-based packs are the healthcare providers who will use them. Obtaining clinician consensus is the most difficult challenge because of the need to include items that support the doctors' technical requirements without including items that are wasteful. The difficulty of designing prepacks cannot be overstated.

Once the contents of the prepack are determined, the next challenge is negotiating a contract with a vendor to provide the materiel. Prepacks used by the civilian hospital community usually are not the optimal configuration for military medicine. Civilian healthcare providers do not use the required military-unique items and often have "litigation" items included for insurance purposes that may not be needed for battlefield medicine. A balance must be reached between what the vendor will manufacture and store for military use and what creating unique configurations will cost.

Another challenge is addressing the additional space needed for prepacks because they are bulkier than the line-item components contained in them and increase the cube requirements for shipping and storing them.

Much of the utility of the prepack concept relies on tailoring supplies for particular procedures and contingencies. The utility of the prepack is defeated if its design includes excess materiel that is not used consistently in the procedures the pack is designed to support. Information systems for determining these requirements are still under development. Until medical planning information systems are developed, the effective use of prepackages will be limited.

Preconfigured medical supply packages should be developed to meet procedure-based requirements for joint medical operations. Doctrine supports the concept of using medical materiel prepacks to meet the needs of the emerging force under Joint Vision 2010. DLA has initiatives under development to support prepack development. Training is one area where the use of prepacks can be implemented immediately. The current practices of the medical supply industry should be adapted to support the distribution of medical supplies in the theater of operations. While many challenges exist, the advantages of the program far outweigh them. The packaging of medical supplies into expendable materiel sets will increase responsiveness to the needs of healthcare providers for specific applications. ALOG

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# Logistics and the Desert Fox

by Major Jay Hatton, USMC

The tactical brilliance of the theater commander, the fabled Rommel, could not overcome the logistics problems that confronted German forces in North Africa.

Field Marshal Erwin Rommel, the German theater commander in North Africa during World War II, achieved legendary status as the "Desert Fox" for his combat successes. However, logistics factors strongly influenced his actions, particularly during that critical period from his first offensive in March 1941 to his last-gasp offensive and high-water mark at Alam El Halfa in Egypt 18 months later. Even the most abbreviated analysis reveals the decisive role that logistics played in the outcome of this campaign. In fact, few campaigns in history illustrate so vividly the wisdom of the argument stated in Marine Corps doctrine, that "logistics establishes limits on what is operationally possible." However, the specific factors that contributed to the failure of German operational logistics in North Africa need closer scrutiny.

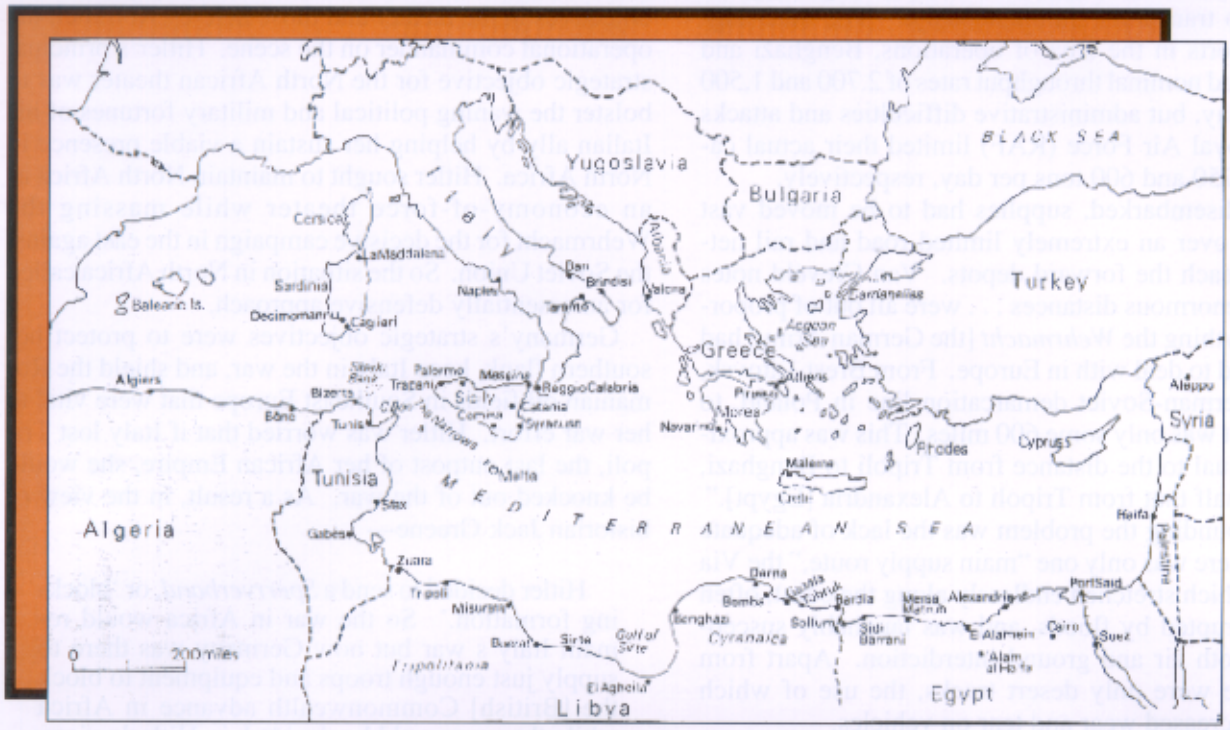
The role of Malta—the British-held island in the middle of the Mediterranean Sea—in disrupting Axis lines of communication and thus defeating German designs in North Africa traditionally has been exaggerated. Instead, two logistics factors played a greater role in the ultimate demise of the vaunted Deutsches Afrika Korps. The first of these was the significant disconnect between German national strategic objectives in the theater and the goals of Rommel, the operational commander. This disconnect created an imbalance between operational ends and logistics means that dogged Rommel's efforts, from his spectacular beginning to his inglorious end. The second decisive logistics factor was the failure of Axis intratheater distribution systems. Careful analysis reveals that this intratheater chokepoint, rather than the intertheater constraints imposed by British control of Malta, was the true Achilles' heel of the Afrika Korps.

**Context: Time, Place, Circumstance**

An understanding of the historical context, including

**North Africa Campaign**

**December 1940–February 1941: British offensive; Italians reeling.**
**12 February 1941: Rommel arrives in theater.**
**14 February 1941: Leading elements of Afrika Korps land at Tripoli.**
**24 March–19 April 1941: First German offensive to recapture Cyrenaica.**
**May–June 1941: Front stabilized; British launch Battleaxe counteroffensive.**
**July–November 1941: Siege of Tobruk; German preparations for offensives.**
**18 November 1941–6 January 1942: British conduct Crusader counteroffensive; siege of Tobruk raised.**
**7 December 1941: Line stabilized at El Agheila.**
**21 January–12 June 1942: Rommel's second offensive; Gazala battles.**
**21 June 1942: Tobruk falls to Germans.**
**June–July 1942: Rommel's pursuit to El Alamein.**
**30 August–1 September 1942: Final German offensive at Alam El Halfa.**
**23 October–5 November 1942: British counter-attack at El Alamein.**
**8 November 1942: U.S. Operation Torch landings.**
**18 January–22 February 1943: German counter-attacks in northwest Tunisia, including Kasserine Pass.**
**13 May 1943: Last remaining elements of Afrika Korps surrender.**




**The North Africa theater and Southern Europe.**

the factors of time, place, and circumstance (the strategic setting), is essential if the lessons of a campaign are to be applied today. The time under study is roughly the period from March 1941, when Rommel launched his first offensive into Cyrenaica (a region of northeast Libya), through August and September 1942, when he led the last major German offensive of the campaign to Alam El Halfa in Egypt. Other key events during the campaign included the first British counteroffensive, Battleaxe, in May and June 1941; the German siege of Tobruk in Libya from July to November 1941; the second British counteroffensive, Crusader, which raised the siege of Tobruk; Rommel's second offensive from January to June 1942, which captured Tobruk; and the subsequent Afrika Korps offensive through Cyrenaica to its culmination at the battle of El Alamein in Egypt. (See the chart at left for a brief chronology).

The area of operations in the North African campaign in Libya and Egypt and its relationship to Southern and Southeastern Europe is shown in the map above. Contrary to popular perceptions, the portion of the area of operations suitable for high-speed maneuver was somewhat limited. This maneuver area consisted of a strip of land, ranging from 12 to 38 miles wide, bounded on the north by the Mediterranean Sea and on the south by the desert interior. Sandstorms, endemic insects, poisonous reptiles, and flash floods combined to diminish the effectiveness and endurance of men and machines alike.

A retrospective "logistics preparation of the battlefield" reveals several other important local factors. First, the nature of the region—underdeveloped at best, inhospitable at worst—meant that, for all practical purposes, everything the Afrika Korps needed to conduct operations (fuel, water, ammunition, repair parts, and the like) had to be moved into the theater over sea and air lines of communication from Italy to North Africa and then forwarded to the fighting units at the front. In modern terms, Rommel's quartermasters could rely on very little host nation support. In *Supplying War: Logistics From Wallenstein to Patton*, the noted historian Martin Van Creveld comments on this predicament, "Operating in the desert, neither the British nor their German opponents had the slightest hope of finding anything useful but camel dung, and while the former did at least possess a base of some considerable size in Egypt, the latter were entirely dependent on sea-transport even for their most elementary requirements."

Dependence on sea lines of communication, in turn, required adequate port facilities to receive materiel, as well as ground lines of communication (road or rail) to distribute it from the ports to the fighting forces. Tripoli was the main Axis supply port for forces operating in North Africa. With a capacity of 1,500 tons per day, Tripoli was capable, according to Van Creveld, of han-

dling "under ideal conditions . . . five cargo ships or four troop transports simultaneously." The other significant ports in the area of operations, Benghazi and Tobruk, had nominal throughput rates of 2,700 and 1,500 tons per day, but administrative difficulties and attacks by the Royal Air Force (RAF) limited their actual capacity to 750 and 600 tons per day, respectively.

Once disembarked, supplies had to be moved vast distances over an extremely limited road and rail network to reach the forward depots. Van Creveld notes that "the enormous distances . . . were all out of proportion to anything the *Wehrmacht* [the German Army] had been asked to deal with in Europe. From Brest-Litovsk, on the German-Soviet demarcation line in Poland, to Moscow it was only some 600 miles. This was approximately equal to the distance from Tripoli to Benghazi, but only half that from Tripoli to Alexandria [Egypt]."

Compounding the problem was the lack of adequate roads. There was only one "main supply route," the Via Balbia, which stretched endlessly along the coast, often was interrupted by floods, and was laughably susceptible to both air and ground interdiction. Apart from this, there were only desert tracks, the use of which greatly increased wear and tear on vehicles.

If anything, the rail network was even sparser than the road network. German Major General Alfred Toppe laconically concluded, "There was no continuous railroad in Libya. The two railroads, each about thirty kilometers in length, in Tripolitania [northwest Libya] and in the Cyrenaica, were of no military importance." These local factors had a critical impact on German logistics efforts.

As for circumstance, or strategic setting, the period in question spans the time when Nazi Germany reached the limits of its territorial expansion. Once its forces were unceremoniously evicted from the European continent, Great Britain's role was reduced to minor operations on the periphery of Axis-controlled Western Europe. In June 1941, Hitler began pursuing his dream of conquering the Soviet Union. His summer offensives of 1941 and 1942 brought the Soviets into the war and to the brink of the abyss. The strategic focus of Germany lay in the east, and most of her available blood and treasure was being expended in the effort to conquer the *Lebensraum* ("living space") that lay beyond the Volga River. Subsequent setbacks at El Alamein and at Stalingrad in Russia, coupled with the active entry of the United States into the European war with Operation Torch in North Africa in late 1942, marked, as Winston Churchill said, "the end of the beginning" of the effort to defeat the Third Reich.

**The African Sideshow**

As stated above, one factor responsible for the failure of German operational logistics in North Africa was the substantial disconnect between German strategic objectives in the theater and those held by Rommel, the operational commander on the scene. Hitler's principal strategic objective for the North African theater was to bolster the waning political and military fortunes of his Italian ally by helping her sustain a viable presence in North Africa. Hitler sought to maintain North Africa as an economy-of-force theater while massing the Wehrmacht for the decisive campaign in the east against the Soviet Union. So the situation in North Africa called for an essentially defensive approach.

Germany's strategic objectives were to protect her southern flank, keep Italy in the war, and shield the Romanian oil fields in Southeast Europe that were vital to her war effort. Hitler was worried that if Italy lost Tripoli, the last outpost of her African Empire, she would be knocked out of the war. As a result, in the view of historian Jack Greene—

> Hitler decided to send a *Sperrverband*, or 'blocking formation.' So the war in Africa would remain Italy's war but now Germany was there to supply just enough troops and equipment to block the [British] Commonwealth advance in Africa while the war would be decided, in Hitler's view, on the steppes of Russia.

Hitler's operational order, issued on 11 January 1941 as Directive No. 22, reflected this defensive mindset: "The situation in the Mediterranean makes it necessary to provide German assistance, on strategic, political, and psychological grounds. Tripolitania *must be held*" [emphasis added].

Rommel held a somewhat different view. Rather than seeing the North African campaign as a strategic sideshow, he viewed it as a means of striking at the heart of the British Empire and into the soft underbelly of the Soviet Union beyond. He later wrote—

> With the entire Mediterranean coastline in our hands, supplies could have been shipped to North Africa unmolested. It would then have been possible to thrust forward into Persia and Irak [sic] in order to cut off the Russians from Basra, take possession of the oilfields and create a base for an attack on southern Russia . . . Our final strategic objective would have been an attack on the southern Caucasian front aimed at the capture of Baku and its oilfields. This would have struck the Russians in a vital spot. A great part of their armor, which was carrying the main burden of the fighting on their side, would have been out of action for lack of petrol. Their air force would have been crippled. They could no longer have expected any further effective American help. Thus the strategic conditions would have been created for us to close in from all sides and shatter the Russian colossus.

☐ A German tank is mired in a desert flash flood.

To accomplish these objectives, Rommel set out to twist Axis strategy to his way of thinking by creating what one author calls the "strategy of self-help," under which he justified additional reinforcements and supplies by achieving spectacular battlefield successes. His position as one of Hitler's favorite generals, as well as the publicity his victories received in the German press, greatly aided him in this effort.

The strategic disconnect had a profound logistics impact for the Afrika Korps and for Germany as a whole. For Rommel, it meant an imbalance between debilitating operational ends and logistics means: the logistics support needed to achieve the objectives he envisioned was not forthcoming from a political regime that viewed his theater as peripheral to the overall war effort. For Germany, the unexpected logistics requirements generated by Rommel's offensive operations resulted in a diversion of critical men and materiel from the Russian front—a circumstance that neither the Wehrmacht nor the *Luftwaffe* [the German Air Force] could afford.

The German historian Wolf Heckmann contends—

> The southern theaters of war eventually demanded a substantial effort at the expense of the Ostland [Eastern] adventure and may have decided the outcome of the war. At the very least, it dramatically influenced its course . . . The code name for the commitment of German troops in Africa was Sunflower. Unconsciously, someone had hit upon the perfect symbol: a huge and showy flower at the end of a long and rather fragile stem.

## Cherries on a Cake

While the critical role of Malta as a base for British interdiction of the Axis strategic lines of communication is undeniable, the limited intratheater distribution system was the more important problem facing the Afrika Korps. The most significant weaknesses in this system were the limited capacity of the available ports and the inadequate capabilities of German and Italian overland transportation assets. These two factors alone contributed more to Rommel's final defeat at Alam El Halfa than did all other factors combined, including enemy action for much of the campaign. Van Creveld states—

> Despite everything, the Italians succeeded in putting an average of 72,000 tons—or just above Rommel's current consumption—across the Mediterranean in each one of the four months from July to October [1941]. Rommel's difficulties, therefore, stemmed less from a dearth of supplies from Europe than from the impossible length of his line of communications inside Africa.

Particularly crippling for the Afrika Korps was the severe shortage of trucks needed to move supplies over the vast distances of the area of operations. In his work, *Panzer Battles*, German Major General F. W. von Mellenthin pointed to this problem—

> Even when our supplies did reach Africa, it was no easy matter to move them to the front, because of the great distances involved. It was 700 miles from Tripoli to Benghazi, 300 from Benghazi to

> Tobruk, yet another 350 from Tobruk to Alamein. *When we were at Alamein, many of our supplies had to be hauled 1,400 miles from Tripoli* [emphasis added].

In a classic "tooth-to-tail" dilemma, Rommel was never able to muster enough trucks to support the combat formations he had in the theater, much less the additional reinforcements he believed were necessary to decisively defeat the British 8th Army. As Van Creveld notes—

> A motorized force of one division . . . required 350 tons of supplies a day, including water. To transport this quantity over 300 miles of desert, the Army High Command calculated that, apart from the troops' organic vehicles and excluding any reserves, thirty-nine columns each consisting of thirty two-ton trucks would be needed.

Considering the size of the forces in the theater and the unavailability, on average, of 35 percent of his vehicles because of mechanical problems, Rommel would have needed over 5,000 trucks dedicated to supplying his three divisions over a 300-mile line of communication. This figure does not include the vehicles required to support the Luftwaffe. British historian D. Braddock adds, "Fuel, water, and ammunition were sources of constant anxiety to the German commander but his greatest problem was the lack of serviceable transport vehicles without which no army could survive for long in the desert." In typical British style, Braddock understates Rommel's feelings on the subject. To say that Rommel was anxious makes him sound only mildly concerned about this problem; to the contrary, at one point during the campaign the Desert Fox requested an additional 8,000 trucks for his supply columns. Small wonder that Field Marshal Friedrich von Paulus listed "vehicles to carry the supplies" as the number two priority for shipment to the theater, second only to "supplies of all types" and ahead of combat units.

Rommel discovered, to his chagrin, that he was consuming a large portion of his precious fuel stocks simply by transporting the remainder to his forces at the front. This, coupled with losses to enemy action, meant that the Germans were losing as much as 50 percent of all fuel landed in North Africa between Tripoli and the front.

Equally disruptive of Rommel's long intratheater lines of communication was their vulnerability to interdiction by British air and ground units. The fluid nature of operations, coupled with the exposed and vulnerable desert flank, made ground interception of supply convoys along the Via Bardia or one of the lesser tracks by British armored car columns a real problem for the Axis. More significant was the aerial threat posed by the RAF. In the flat, relatively treeless North African desert, vehicular columns (and the clouds of dust they inevitably generated) often were visible from a distance of 50 miles or more on clear days. This led one member of the Afrika Korps to lament that his vehicles traveling on the desert floor were like "cherries on a cake" to the RAF pilots flying overhead.

**Damn the Logistics, Full Speed Ahead!**

Rommel's campaign in North Africa from March 1941 to September 1942 provides an excellent example of the decisive impact that logistics factors can have in limiting what is operationally possible. During this campaign, German tactical prowess, particularly in combined arms, was consistently superior to that of their British adversaries. Time and again, Rommel sought to exploit this advantage. His ultra-aggressive approach was driven by his realization that a campaign based on attrition could have only one outcome: German defeat caused by Allied materiel superiority. Consequently, Germany had to exploit any tactical success with extreme vigor—a "Damn the logistics, full speed ahead" approach to desert warfare.

After the campaign, an unrepentant Rommel continued to voice his disdain for the repeated warnings of his logisticians—

> The reason for giving up the pursuit is almost always the quartermaster's growing difficulty in spanning the lengthened supply routes with his available transport. As the commander usually pays great attention to his quartermaster and allows the latter's estimate of the supply possibilities to determine his strategic plan, it has become the habit for the quartermaster staffs to complain at every difficulty, instead of getting on with the job and using their powers of improvisation, which indeed are frequently nil.

Rommel's failure to balance his operational prospects against logistics possibilities exacerbated his already anemic supply situation. Unfortunately for Germany, the quartermasters had the last laugh, albeit out of the other side of their mouths. Rommel recognized too late that his tactical superiority was insufficient in and of itself to gain more than fleeting battlefield successes and vast amounts of useless desert. Van Creveld concludes—

> Given that . . . the capacity of the Libyan ports was so small, the distances to be mastered so vast; it seems clear that, for all Rommel's tactical brilliance, the problem of supplying an Axis force for an advance into the Middle East was insoluble. Under these circumstances, Hitler's original decision to send a force to defend a limited area in North Africa was correct.

In the end, the Afrika Korps' logistics inadequacies prevented it from harvesting strategic fruit from its many tactical accomplishments. The keys to victory in North Africa lay not just with battlefield success but also with logistics acumen—a distinction not lost on the Allied generals who orchestrated final victory in the theater.

For today's logisticians, the relevance of the first logistics factor affecting Rommel—the mismatch between operational ends and logistics means that resulted from the wide gap between Hitler's intentions and Rommel's desires for the North African theater—is largely speculative. Its impact in a future campaign would depend as much on the environmental and political factors governing that campaign as on military necessities or limitations of strategic lift. Naturally, any U.S. forces engaged in a real shooting war would be furnished all the materiel support they needed. However, the emergence of a second major theater war (MTW) would force both military and political leaders to make hard choices about priorities. Despite the rhetoric, the United States is not manned or equipped to fight and win two "near simultaneous" MTW's. This reality may be recognized during the next Quadrennial Defense Review with a change to a "win-hold-win" approach. For those logisticians unfortunate enough to be in the "hold" theater, the experiences of Afrika Korps quartermasters could become only too familiar.

On the other hand, the problems of intratheater distribution experienced by the Afrika Korps are directly applicable today. The challenges that U.S. logisticians faced during the Persian Gulf War illustrate the enduring validity of this problem. The officer responsible for overall coordination of I Marine Expeditionary Force logistics functions during that campaign, Major General James Brabham, identified intratheater distribution as the "long pole in the tent" of desert warfare.—

> Producing potable water was never a problem in DESERT SHIELD and DESERT STORM . . . moving the water to rapidly maneuvering Marine forces was a problem, however, requiring constant attention . . . Although ample fuel was sourced by the host nation in DESERT SHIELD and DESERT STORM, its movement was a constant issue . . . the third and perhaps toughest of the 'big three' is ammunition. [There is] little doubt about its source, the beach or port, but the challenge is storage and line haul.

It is safe to assume that U. S. Army and other Allied logisticians faced even greater line-haul challenges moving water, fuel, and ammunition to support the maneuvers of the XVIII Airborne Corps and VII Corps. In the end, U.S. logisticians relied on host nation vehicles and drivers to line-haul the bulk of their materiel from the air and sea ports of debarkation to the forward resupply points. The availability of thousands of host nation vehicles to support this endeavor was a luxury equaled only by the immensely capable and readily available air and sea throughput facilities in its impact on the Allied sustainment effort. Despite these advantages, the Allied intratheater distribution network was strained to capacity over relatively short lines of communication during a ground war that was shorter than most peacetime combined arms exercises.

Much has been written about the shortcomings in strategic, or intertheater, lift experienced in the Gulf War, and many millions of dollars have been expended to alleviate that problem. While the pace of the buildup for the Gulf War was dangerously slow, much of the blame can be attributed to poor management controls and inadequate use of automated tracking systems and technologies, which led to the movement of much redundant or unnecessary materiel. The conclusions of the oft-quoted Rand Corporation report on the subject, which described how 20,000 of the 40,000 containers transported to the theater were never opened because no one knew what was in them, provides the most striking evidence of the problem.

Meanwhile, the intratheater problem has gotten little attention. In fact, the Army has transferred much of its line-haul capability to the reserve components, and the Marine Corps continues to disavow the mission entirely. While it is unlikely that U.S. logistics trains will be "cherries on a cake" to opposing fliers in the foreseeable future, intratheater lift nonetheless emerges as a significant vulnerability of U.S. ground forces and, consequently, of U.S.-led coalitions and joint task forces. Rather than improving the situation, the ongoing push in both the Army and the Marine Corps to slash the theater logistics footprint on the ground to a bare minimum will require ground forces to rely even more on an already inadequate theater distribution capability—a conundrum any Afrika Korps quartermaster would have readily understood. **ALOG**

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