ARMY LOGISTICIAN

Army Responds to Attack on America —see page 1—

NOVEMBER-DECEMBER 2001

Early Entry Operations

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ARTICLES

DEPARTMENTS

COVER

Transforming the Army to the Objective Force will require advances in science and technology and cooperation with industry. In the article beginning on page 4, the Quartermaster General of the Army discusses how transformation will affect the critical mission of supporting early entry operations. From improved sealift to satellite communications in the theater and radio communication with soldiers in the field, many new and improved technologies will create the basis for logistics transformation.

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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.

Disclaimer: Articles express opinions of authors, not the Department of Defense or any of its agencies, and do not change or supersede official Army publications. The masculine pronoun may refer to either gender.

Submissions: Articles and information on all facets of logistics operations and functions are solicited. Direct communication is authorized and should be addressed to: EDITOR ARMY LOGISTICIAN/ALMC/2401 QUARTERS RD/FT LEE VA 23801–1705. Phone numbers are: (804) 765–4761 or DSN 539–4761; Fax (804) 765–4463 or DSN 539–4463; e-mail alog@lee.army.mil.

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

By Order of the Secretary of the Army:

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0124102

ALOG NEWS

THE ARMY RESPONDS TO UNPRECEDENTED DOMESTIC ATTACK

As the staff of *Army Logistician* was completing this issue for shipment to the printer, we learned of the tragic terrorist attacks on the Pentagon and the World Trade Center on the morning of 11 September.

From the moment that the hijacked airliners crashed into their targets, Army units and individual soldiers responded to the crisis with characteristic professionalism and dedication. Among the initial Army contributions from all components were the following—

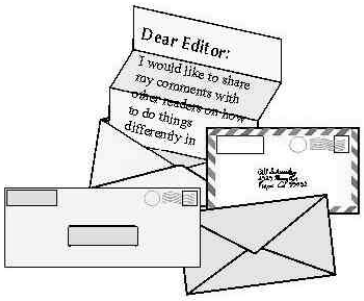
- The 54th Quartermaster Company (Mortuary Affairs), from Fort Lee, Virginia—the only active Army mortuary affairs unit—and the 311th Quartermaster Company (Mortuary Affairs), U.S. Army Reserve, from Ramey, Puerto Rico, deployed to assist in collecting and processing remains at the Pentagon.
- Approximately 10,000 Army and Air National Guard personnel from 29 states were called up to provide humanitarian relief, security, air defense, communications support, and a weapons of mass destruction civil support team (see following story).
- The Military District of Washington Engineer Company helped to remove the remains of the approximately 190 service members and civilians killed in the Pentagon attack. They also began shoring up the damaged sections of the Pentagon to guard against collapse. The 767th Ordnance Company from Fort McNair, D.C., and the 3d U.S. Infantry Regiment (the Old Guard) from Fort Myer, Virginia, also helped with rescue and recovery efforts.
- The Army Corps of Engineers deployed personnel to New York to provide technical assistance for debris removal, support emergency electric power generation, and assist in assessing the structural integrity of buildings near the World Trade Center.
- Chaplains and assistants from several activities helped in the initial rescue and recovery efforts at the Pentagon and then established a chaplain operations center to comfort and support both rescuers and the family members of victims.
- Special agents of the Army Criminal Investigation Command assisted Federal and local law enforcement agencies in recovering remains and gathering evidence at the Pentagon.
- The Army and Air Force Exchange Service shipped personal items and snacks to support rescue workers at the Pentagon.

As the armed services begin what could be a long campaign against terrorism, *Army Logistician* will endeavor to tell the Army logistics story and provide logistics information support.

(News continued on page 46)

Army Logistician sadly announces the death of our founder and long-time Editor in Chief, Thomas A. Johnson, on 5 September 2001. Mr. Johnson developed the proposal to create a magazine for Army logistics and then served as editor from *Army Logistician's* establishment in 1968 until his retirement in 1987. A combat veteran of World War II, where he earned the Bronze Star Medal and the Purple Heart, Mr. Johnson served in the Virginia Army National Guard and retired with the rank of brigadier general. He also served as Virginia state director of the Selective Service System. He held bachelor's and master's degrees from the University of Richmond. Mr. Johnson's contributions to *Army Logistician* cannot be summarized in a few words; the publication you hold was his creation.

"If you seek his monument, look around you."



LOG NOTES

Congressional Support Needed

I was pleased to see the coverage you gave to Homeland Security in your latest issue. At a March 2001 workshop conducted by the Military Operations Research Society, at least one of your authors (Larry Heystek) was a presenter. The agenda can be reviewed on their web site at http://www.mors.org.

As was made clear at that workshop, and as mentioned in your article on page 1 of the July-August issue, there are many Government agencies involved in security and protection. Despite their many contributions to U.S. preparedness, a national program will not be effective until the Congress reallocates the responsibilities of their committees to give support to a single leader.

Daniel Willard
Washington, DC

In Defense of Contractors

In the July-August 2001 issue, a reader responded to a letter titled "I Don't Understand Either," which appeared in the March-April issue. This reader commented that within a year after property is turned over to a private contractor for use during the period of the Government contract, Defense activities no longer have a clear view of what the contractor has on hand. He also stated that he believes all contractors should be put on the Defense Property Accountability System (DPAS).

Well, I am the Industrial Property Supply Supervisor (like an Army property book officer) for the Fort Rucker Division of DynCorp Technical Services, the helicopter maintenance contractor at Fort Rucker, Alabama, and I can tell you that contractors are held more accountable than most active duty units. We are required to maintain accountability for all property with a value of $50 or more as well as other property deemed pilferable by the property administrator. At the present, we are accounting for over 27,000 individual items ranging from $30 adding machines to $300,000 test sets.

The Army quit accounting for items such as furniture and appliances years ago, but we still are required to account for everything. The Aviation Logistics Management Division monitors and inspects us extensively throughout the year to ensure we meet the standards of the Federal Acquisition Regulations and the provisions of the contract. These standards require us to perform quarterly and annual inventories of all Government-owned, contractor-operated property. Maybe we are the exception; I don't know.

Your reader will be happy to know that we also account for all Government property on DPAS and have been doing so for the last year. Because our calibration system was tied to our industrial property program under our old computer system, we had to modify the maintenance module of DPAS to continue handling our calibration and inspection requirements.

During my military career I used numerous property accounting systems, but I find DPAS to be the best. It is an outstanding program, and I hope it continues to be the standard for all of the military.

William E. Hudson
Fort Rucker, Alabama

Solving MTOE Problems

I am writing in response to the letter from MSG Colon titled "MTOE Woes" in the July-August 2001 issue.

The Logistics Army Authorization Documents System (LOGTAADS)/modification table of organization and equipment (MTOE) war is one that I fight almost every day. By Army National Guard and Reserve standards, a new unit, or one receiving a new MTOE, is authorized to requisition against that MTOE 365 days in advance of the change in unit status (E-date). The reason for that is that the unit will be able to report at least C–3 for equipment on the unit status report on the E-date, rather than reporting C–5 when they must order things after the E-date. However,

LOGTAADS doesn't recognize the unit or new MTOE until the E-date. Combine that with normal human errors, changing MTOEs every 12 months, and the fact that LOGTAADS is at least one fiscal quarter behind even on the best days, and you get quite a mess. There are some "bandaids" you can apply at the state level.

The first way to hold on to your equipment is to request, through your chain of command, a Memorandum of Authorization from your state Force Integration and Readiness Officer. This will be sent to your USPFO (U.S. Property and Fiscal Office) and will authorize your unit to retain equipment on hand pending the new MTOE. For minor equipment, this can be handled in-state. For major end items or weapon systems, the memorandum will require approval at National Guard Bureau level.

The second way to retain this equipment is to submit a DA Form 4610–R, Equipment Changes in MTOE/TDA, or DA Form 2028, Recommended Changes to Publications and Blank Forms (depending on the specific situation), requesting that the equipment be added to your MTOE. This process can take from 12 to 24 months, during which time your unit is authorized by regulation to retain the equipment pending the resolution of the MTOE change request.

The first procedure is best used if you have a copy of the next MTOE on hand and know that the equipment will be authorized on that document. The second is best used if you are not sure that the equipment will be authorized in the future, but it is vital to your unit's mission and its omission seems to be in error.

Specialist Robb D. Shimp, CAARNG
Sacramento, California

It's an M3A1, Not an M1

Thank you for your very informative magazine. I always look forward to receiving and reading it.

In the interest of accuracy, however, I would like to point out a problem with a photo that accompanies the article, "APS-Afloat Ammunition Configuration Changes," in the May-June 2001 issue. While ammunition may be loaded onto an M1 flatrack or onto any of the family of flatracks, the item shown in the photo is an M3A1 container roll-in/out platform (CROP). It is a flatrack family member, but not an M1 as indicated in the text.

F.T. McLean
San Diego, California

Note: We checked with the Operations Support Command, and they confirmed that M1, M3, and M3A1 flatracks are used for strategic configured loads. For complete accuracy, we should have deleted "M1" on the second line in the second column of text on page 25 so as not to imply that the photograph illustrated that particular configuration.

—Editor

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

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I certify that the statements made above by me are correct and complete: Janice W. Heretick, 30 August 2001.

Better, Stronger, Faster: Army Transformation and Early Entry Operations

by Major General Terry E. Juskowiak

On 18 January 1974, The Six Million Dollar Man took America by storm. In that television show, an astronaut named Colonel Steve Austin had a catastrophic crash that left him barely alive. However, an innovative group of experts had a revolutionary idea: they sought to enhance Steve's abilities despite his injuries. One of them, Oscar Goldman, emphatically stated, "Gentlemen, we can rebuild him. We have the technology. We have the capability to make the world's first bionic man. Steve Austin will be that man. Better than he was before. Better . . . stronger . . . faster!"

As a logistician, I believe we have the technology, the capability, and the expertise to build a better Army—a transforming Army—an Army that is better, stronger, and faster than before. I would like to focus on Army Transformation and early entry operations and discuss some of the logistics challenges of rapid deployment and sustainment.

Like the futuristic concept in The Six Million Dollar Man, Army Transformation is a radical, revolutionary departure from our legacy Army. In light of Desert Storm and operations in the Balkans, Transformation builds on the "Reengineering of the Army" efforts begun by former Army Chief of Staff General Gordon R. Sullivan. The Transformation Campaign Plan continues the efforts to revamp our powerful but sluggish post-Cold War Army into a responsive, sustainable force capable of projecting, sustaining, and protecting our Nation's interest while fighting our wars well into the 21st century.

To do so, we must begin with that first military step—the introduction of early entry forces. Let me briefly discuss what early entry forces are and the three types of early entry operations that we frequently are called on to conduct.

Conducting Early Entry Operations

When I use the term "early entry forces," I am referring to operational deploying forces needed to support a commander in chief's or other joint force commander's concept of operations in a pre-crisis or crisis situation. The three types of early entry operations conducted by the Army are forcible, unopposed-under combat conditions, and unopposed-no combat.

Forcible entry is the most dangerous because combat is anticipated immediately upon arrival in the objective area. Consequently, either the deploying force must engage the enemy immediately and have a decisive effect by collapsing the enemy's center of gravity and accomplishing the overall mission, or the force initially must secure a lodgment (such as an airfield or port) for the subsequent arrival of larger, heavier forces that will conduct the decisive operations. Forcible entry operations usually are handled by the 82d Airborne Division and Special Operations Forces (SOF) such as the Rangers. Operation Just Cause in Panama was a vivid example of a forcible entry.

The second type of early entry operation, unopposed entry-combat conditions, entails entering a theater where combat is imminent or underway but the ports and airfields are not contested. The composition of the early entry force can vary widely depending on the situation. In other words, the entry element is tailored to adapt to escalating hostilities. Operation Uphold Democracy in Haiti was a classic example.

The final operation is unopposed entry-no combat imminent. Here, early entry forces usually deploy to serve as a deterrent or as an advance party for a larger follow-on force, or to conduct domestic operations such as disaster relief or humanitarian assistance. Hurricane Mitch relief in Central America serves as a good example.

U.S. early entry forces adhere to four basic imperatives to ensure combat or operational effectiveness. First, they must be rapidly deployable. This is essential for all units, whether combat, combat support, or combat service support. The deployability of early entry forces is based on their force design, equipment characteristics, training, readiness, and proximity to airports and seaports of embarkation.

The second imperative is lethality, which involves much more than just maneuver and applied firepower. Lethality is obtained from the synergy of force agility,

superior weapon systems, sound doctrine and realistic training, and an emphasis on integrating and synchronizing total force capabilities.

Third, units must be survivable. To ensure soldiers have required protection, we emphasize current and cutting-edge technology. To be effective, our forces must possess the capability to expand battlespace rapidly in all dimensions against an enemy. Rapid joint-force synchronization also is required to create and maintain aggressive operations against the enemy while achieving air superiority and quickly securing our own lines of communication.

The fourth imperative is the unit's sustainability. As General Douglas MacArthur said in remarks to the Joint Chiefs of Staff in 1950, "Nine times out of ten, an Army has been destroyed because its supply lines have been severed."

Focusing Logistics on Combat

Before an early entry operation, the joint force commander and his senior Army commanders conduct a logistics preparation of the battlefield to achieve an effective mix of military combat service support, host nation support, and contractor support (including contractor logistics support such as contractor technical representatives and the Logistics Civil Augmentation Program). The goal is to reduce demands on military lift and other resources. Our forces may be the quickest and the most efficient available, with "state of the art" equipment. However, if the sustaining base is inadequate, our capability to accomplish the mission is severely diminished.

Over the years, and through a host of wars, the need for responsive, sophisticated logistics support has been a mainstay of combat operations. Napoleon recognized that an Army marches on its stomach, and German Field Marshal Erwin Rommel often is quoted as saying that the battle is fought and won by the logistician before the first shot is fired. Indeed, logistics can change the outcome of battle. No Army well supplied is easily defeated.

Rear Admiral Henry E. Eccles said—

> The nature of modern war is such that its effective conduct requires the greatest economy in the provision and support of these combat forces . . . But if the wartime effectiveness of our combat forces is jeopardized by false economy, disaster may ensue. Therefore, all measures affecting the control and coordination of logistics must be judged by their effect on sustained combat effectiveness under war conditions rather than by the sole criteria of peacetime economy. An economy of a million dollars a year may be swept away in the first hour of a war . . .

We are wise to remember that the true measure of logistics is combat effectiveness. We measure logistics success in the readiness, deployabilty, and sustainability of our Army's combat power and in lives not lost, rather than in efficiencies and dollars saved.

Facing a Post-Cold War World

During the Cold War, we had some unique logistics challenges. In an effort characterized by Operation Plan 4102 and the Reforger (Return of Forces to Germany) series of annual exercises, the United States committed to our NATO allies to deploy 10 divisions within 10 days while exploiting the use of our Civil Reserve Air Fleet, pre-positioning of materiel configured to unit sets, and using countless iron mountains of supplies secured in numerous sites in Central Europe. It was a plan never fully resourced, and fortunately it never was tested by our adversary.

Our planning proved adequate for Europe, but it was too narrow for the changing world of the 1990s. With the Berlin Wall down and the Cold War ending, we found we could quickly and effectively engage and sustain a conflict only on the plains of Central Europe. If a larger crisis erupted in a distant location, the deployment and sustainment efforts would challenge the responsiveness and flexibility of our forces.

It was like having an expensive, fully loaded vehicle that handled well on interstate highways but was cumbersome and expensive to maintain on the secondary and dirt roads to which we were being detoured. Ten years ago, we fought a war with our Cold War force in the deserts of Southwest Asia. Our Army performed magnificently. For the campaign, we used the only doctrine available to us—the standards in place before the fall of the Berlin Wall.

Adjusting to New Realities

We, and all of our potential enemies, recognize that we will never again have the luxury of a 6–month buildup of forces and their sustainment before we have to conduct decisive ground operations. In light of our Southwest Asia experience, Force XXI evolved to manage change and advance the Army into the 21st century with the most capable Army in the world (even as we continue to move toward the Army After Next in meeting our long-term vision).

Force XXI aimed to provide a tailorable, sustainable corps. The lead brigade would be on the ground by C+4, and the lead division by C+12. Two heavy divisions would arrive by sealift from the continental United States by C+30. The full corps (five divisions and a corps support command) would close by C+75.

Fully supported heavy combat brigades are prepositioned afloat with sufficient supplies to sustain the corps until lines of communication are established. I recently visited the Army Materiel Command facility in Charleston, South Carolina, that is dedicated to this afloat

pre-positioning effort. The flexibility and responsiveness of the afloat capability, coupled with Army Strategic Mobility Program (ASMP) upgrades, is a testament to the foresight of our leaders over a decade ago.

But we have recognized that in this ever-changing, dynamic world, even the Force XXI timelines for early entry forces are not good enough. With the advent of interim brigade combat teams and the Objective Force concepts, Army leaders are creating early entry brigades with a capability "goal" of arriving within 96 hours prepared for combat. Following will be one division within 120 hours and five divisions within 30 days. We also are planning a follow-on program to ASMP, which will target power projection platforms for our rapidly deploying transformation forces.

These are impressive goals, considering the deployment timelines of just 10 years ago. As stated by Army Chief of Staff General Eric K. Shinseki at the winter Association of the United States Army Symposium—

> The Army of today looks, for the most part, like the Army that won the Gulf War. Our formations still carry the vestiges of the Cold War: 70–ton platforms, large static and vulnerable command posts, logistic tails with large footprints that are unwieldy, difficult to move . . .

With that thought in mind, what is Logistics Transformation from a warfighter's perspective? How do we get to Logistics Transformation? What vital links must we establish to ensure our success in rapid deployment and sustainment operations?

Improving Through Logistics Enablers

I believe that the warfighter wants logistics where he needs it, when he needs it, with the right quality and quantity, every time. He wants the process to get logistics there and sustain him, to consume less total obligational authority, and to have a smaller logistics footprint in the battlespace—and all without sacrificing combat capability or readiness. The warfighter wants confidence in his logistics. To paraphrase Zig Ziglar on confidence, "The warfighter wants the confidence to be able to go after Moby Dick in a rowboat and carry his tartar sauce."

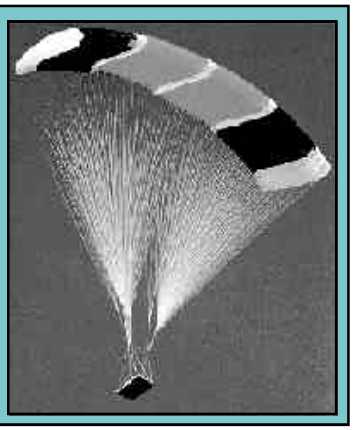
Over the past couple of years, we have developed various logistics enablers and initiatives as precursors to the transformation. These logistics enablers and initiatives will benefit not just our early entry forces but our transformed forces as well.

What do I mean by an enabler? An enabler is any sector of logistics that will help us achieve a new or enhanced capability. These sectors include materiel, automation, communications, business changes, and organizational redesigns. Currently, there are more than 200 enablers in the Army. Some are in use, some are in development, some are on the horizon—and many are unfunded. Among the enablers are—

- High-speed sealift for deployment enhancement. This enabler seeks the capability to build or field shallow-draft vessels to achieve the objectives of the Army Vision for deployment.

☐ High-speed sealift like this shallow-draft vessel will be used to enhance deployment capabilities.

- The Transportation Coordinator's Automation Information for Movement System II. Along with the Joint Forces Requirements Generator, this system will allow us to calculate time-phased force deployments in an hour. This will boost our ability to rapidly plan and quickly execute deployments.
- The Low Velocity Aerial Delivery System. When fielded, this system will increase U.S. Air Force aircraft survivability and safety significantly by allowing them to drop loads from an altitude of 500 feet to our warfighters on the ground. It also will help ensure accurate deliveries and aid in the receipt of critical warfighting equipment. The bottom line is that it will get the warfighter the right stuff, at the right place, at the right time, in the right condition.



☐ The low-velocity aerial delivery system will allow the Air Force to drop supplies to Army units from low altitudes.

- The Tactical Electrical Power Generator Program. This Department of Defense-wide program will modernize over 80,000 tactical quiet generators. It features reduced noise signature, a decrease in fuel consumption, onboard diagnostics and prognostics, and digital controls.

A decrease in fuel consumption on the battlefield is significant and has far-ranging positive effects on our

doctrine, training, leader development, organizations, materiel, and soldiers. A gallon of JP8 fuel weighs 6.65 pounds today. Under the laws of physics, it will still weigh 6.65 pounds in the Objective Force. But if we can decrease the amount we consume, we can decrease the amount we need to move and carry, and we then can decrease our logistics footprint in the battlespace. We become more combat effective by becoming more combat efficient. We become better, stronger, and faster.

Besides the enablers, we have more futuristic initiatives. These are unprogrammed concepts, modernization efforts, or experimental projects that we believe will be essential to fielding a future force. Some of these initiatives will be designated as enablers if they meet established requirements. Examples of initiatives include remote maintenance, oil analysis kits, maintenance support devices, and digital preventive maintenance checks and services.

Supporting the Future Battlefield

Transformation seeks an Army that thrives on speed and capability. Logistics transformation must sustain that speed and capability. We must constantly be a part of the operations-logistics continuum. How do we envision logistically supporting an early entry operation of the future in a battlespace possibly hundreds of miles wide, deep, and perhaps even high? The battlespace will be multidimensional, and the fight itself could last—from start to finish—a matter of minutes, hours, or at most days, rather than the weeks, months, or years we have had for previous engagements. Like the Minutemen of our history, we must have early entry forces that can respond quickly and effectively to any global crisis, so we do not become one of the 9 out of 10 armies destroyed because their supply lines were cut.

However, until transformation is complete, the Army still will consist of three distinct forces: legacy, interim, and objective. Each must be logistically supportable, and not as individual formations but as a common, integrated U.S. Army fighting force on a joint battlefield that is integrated with allies and multinational forces as well.

Supporting the Legacy Force

Our Legacy Force will ensure near-term warfighting readiness and will be the principal support to the National Military Strategy for the next 20 years. It will exploit the use of various current and near-term logistics programs, including contractor support on the battlefield, time-definite delivery, supply chain integration, and customer wait time. It also will exploit the Vehicle Readiness Enhancement Program, along with recapitalization.

Recapitalization is the key element in the sustainment of the Army's Legacy Force. Under recapitalization, the Army will rebuild systems and restore them to like-new condition or, with selected systems, will rebuild and improve them to address their capability shortcomings. Recapitalization of selected, currently fielded weapon systems and their major components and associated support items of equipment is critical to maintaining overall current and near-term readiness. Recapitalization is needed to slow the growth rate of operating and support (O&S) costs of aging weapon systems fleets.

Major General Jerry Sinn recently stated that weapon systems costs are driving us to a bit of distraction—

> For example, since 1996 the operating and support costs for the [M1] Abrams Tank are up 22 percent, the [AH–64] Apache [helicopter]'s are up 29 percent, and the [CH–47] Chinook [helicopter]'s have increased 27 percent. The [M2/3] Bradley Fighting Vehicle O&S [costs] have grown about 13 percent.

Weapon systems with improved system reliability, maintainability, and sustainability as key performance parameters will help the Army to overmatch the combat capabilities of adversaries and maintain a technological advantage that the Nation can afford.

The Legacy Force must be sustained with the right resources to ensure warfighter requirements are met until older systems are retired. There is no "time out for readiness."

Bridging With the Interim Force

In discussing the interim brigade combat team (IBCT), General John M. Keane, the Vice Chief of Staff of the Army, has stated—

> The interim force is not an experimentation force to be tested for development. We know the requirement. We need operational and warfighting capability now. As quickly as possible, we will make brigade combat teams ready to respond to immediate operational requirements, thus providing the National Command Authority enhanced strategic options that do not currently exist.

The Interim Force is bridging the capability gap between the Legacy Force and Objective Force. The two brigades being fielded at Fort Lewis, Washington, with commercial-off-the-shelf technology are designed to deploy rapidly overseas for early entry operations. The IBCTs—quicker than traditional heavy forces and with more combat power, ground mobility, armor protection, and intelligence-gathering capability than light forces—hold great promise as a better, stronger, faster tool in the National Command Authorities' toolbox of force options during this first decade of the millennium.

Transforming With the Objective Force

The Objective Force is the currently envisioned end-

state of the transforming Army. Strategically responsive and able to dominate at every point on the spectrum of military operations, it is designed with a rapid deployment capability projected to meet future world situations. However, we will not see the beginning of the fielding of the Objective Force until late in this decade.

Around 2008 to 2010, elements of the Future Combat Systems (FCS) will materialize. The FCS—a system of systems—is best described as the primary new weapon- and troop-carrying platform for the Objective Force. It probably will be more lethal than today's armored vehicle. The FCS ground vehicle must weigh less than 20 tons and must be 50 percent smaller than the Abrams tank so it can fit on a C–130-size intratheater transport. To meet a requirement for a 33- to 50-percent reduction in logistics support, FCS ground vehicles likely will feature a common, light-armored, wheeled chassis that can be configured to perform each of the primary functions. This will reduce the need for different spare parts and specially trained maintenance technicians. That will be a big boost to our ability to reduce not only the early entry logistics footprint but also the entire footprint in the future battlespace.

Relying on Science, Technology, and Industry

The very nature of early entry operations challenges logistics support of the concept of operations. Inevitably, logistics support will vary with the size of the early entry force, the maturity of the theater, and the availability of in-theater stockage and host nation support capabilities. Early entry operations of the future will require an increased ability to leverage space-based communications systems; to quickly develop and establish forward support bases, intermediate staging bases, or a lodgment in the theater through rapid over-the-shore operations in sea state 3 or higher; and to use rapid intratheater airflow to unimproved strips.

Current Transformation enablers and initiatives will help us become more effective and efficient. However, we continue to need science and technology support and industry support to find even better, faster, and more resilient ways of providing logistics support to the warfighter.

The science and technology program is the linchpin of a successful transformation. It does not merely affect the materiel and equipment currently being developed. It also must challenge current, deeply embedded paradigms. General Shinseki has noted that the Abrams "remains the best tank in the world today, and it will be a part of our Legacy Force for the next 15 or 20 years . . . but it's a tank that we have trouble getting to all the scenarios that we face today. So if we're going to break our tie to Cold War weight, we have to revisit those design principles." And as General Sullivan stated when he was the Chief of Staff, "Better is better."

☐ The future combat systems will be a system of systems that will serve as the primary new weapon- and troop-carrying platform for the Objective Force.

New systems must pack the same or greater punch as retiring systems, while weighing much less and consuming less, so that we can quickly deploy more of them into the theater of operations faster.

To counter the paradigm, "If you can be seen, you can be hit; if you can be hit, you can be killed," the Army leadership has broached the feasibility of systems that see farther than the enemy, have smaller-caliber weapons with increased or sustained lethality, and cannot be hit. We must "see first, understand first, and act first—decisively."

We logisticians must be able to sustain this capability on a dynamic battlefield by knowing the warfighter's requirements first, understanding them first, and acting decisively first. We must give the warfighter the confidence he deserves to go into battle, knowing that he will not have to look back over his shoulder for his "refill of tartar sauce."

Logistics Transformation technology must reduce operational costs through shrinking logistics requirements. Emerging technologies such as hybrid-electric engines, fuel cells, common smaller-caliber weapons, and advanced water production systems can make this reduction possible. Ultrareliability, new sustainment, and new maintenance technology also can help reduce the logistics footprint in the battlespace. To ensure that science and technology are leveraged fully, the Army leadership has restructured or cut approximately 16 programs to guarantee that resources are dedicated to the Transformation program.

However, as we transform our forces and our logistics systems, we also must transform our culture in line with our new capabilities. Otherwise, we will not get the most of our new capabilities, and we will end up with an old mindset operating in a new piece of equipment. New technology requires new mindsets.

Validating Logistics Transformation

So how does transformation theory translate into validated efforts? Does it pass muster? In April, Operation Vigilant Warrior was conducted by the Army War College. This wargame was designed to refine emerging

☐ The soldier integrated hygiene system (far left) and the load-handling system modular fuel farm (left) will enhance early-entry operations.

transformation data. It depicted a realistic scenario, featuring warfighting dilemmas posed to Blue Forces by active Red Forces. The wargame provided a dynamic forum for the Army's continued transformation to a more responsive, deployable, agile, versatile, lethal, survivable, and sustainable force. Both the Red and Blue Forces were composed of a diverse group of multiservice, interagency, and multinational players.

At the end of the exercise, a number of critical Objective Force issues were validated. The Blue Force was able to respond appropriately and give the National Command Authorities broader options. The Blue Force also demonstrated the mental and physical agility needed for rapid deployment and necessary combat operations over varying terrain with adequate combat power.

In a recent editorial on Vigilant Warrior, Richard Hart Sinnreich of the *Lawton* (Oklahoma) *Constitution*, commented, "Logistics capabilities might not be as sexy as new tanks, fighters, and destroyers, but they are equally essential. Without them, America's transformed armed forces might as well plan to stay at home."

Army Transformation is not a sprint;it is a marathon. Although organizational changes, coupled with science and technology enablers, will advance change, there will always be a need to sustain our Army. Early logistics overmatch of our adversaries is a hallmark of our Army. We cannot afford to lose it, now or in the future.

An Army without effective logistics is a parade in garrison, and a target on the battlefield. Logistics is a warfighter enabler, but it also easily can become a war stopper. To paraphrase a quote by an unknown author, "When you are upon your adversary and you level your weapon at him, the difference between a 'click' and a 'bang' is logistics."

Logistics transformation requires a constant team effort from the military, industrial, scientific, and technical communities. We must continue to partner, in the field, in laboratories, and in symposiums, to make logistics more effective and efficient and to ensure continued, uninterrupted support to the warfighter—especially over that last critical mile.

We must remain vigilant about the readiness of our Legacy Force while posturing for the future. There is no strategic pause for readiness. Logistics represents everything that is inconvenient in peace but is essential in war. We do not know when or where we will be called upon for rapid deployment. We just know we will be called.

No U.S. soldier should lose his life, nor should any U.S. operation fail, because of logistics. General Norman Schwarzkopf, in commenting on the Gulf War buildup, stated—

> Operation Desert Shield was the fastest buildup and movement of combat power across greater distances in less time than at any other time in history. It was an absolutely gigantic accomplishment, and I can't give credit enough to the logisticians and transporters who were able to pull this off.

We did it well 10 years ago in the desert. But with newer strides in science and technology, we can do it even better, stronger, and faster. **ALOG**

Major General Terry E. Juskowiak is the Quartermaster General of the Army and the Commanding General of the Army Quartermaster Center and School at Fort Lee, Virginia. He has a bachelor's degree in political science from The Citadel and a master's degree in contract and acquisition management from the Florida Institute of Technology. He is a graduate of the Infantry Officer Basic Course, the Quartermaster Officer Advanced Course, the Logistics Executive Development Course, the Army Command and General Staff College, and the Industrial College of the Armed Forces.

This article is based on remarks delivered by General Juskowiak at the Association of the United States Army Logistics Symposium in May in Richmond, Virginia.

Contingency Contracting in the Pacific Command

by Lieutenant Colonel Steven J. Minear

The Pacific Contingency Contracting Officers Working Group is increasing the effectiveness of contingency contracting for all services.

Contingency contracting can be an effective force multiplier for deployed forces by providing supplies, services, and construction support to augment their intrinsic capabilities. Each service component can award contracts for needed support. To ensure that service components are not bidding against each other for the same commodity or service, a commander in chief may elect to use a joint theater logistics management element or establish a contract clearinghouse. In the U.S. Pacific Command (PACOM), the Pacific Contingency Contracting Officers Working Group (PCCOWG) performs this function.

The PACOM area of responsibility (AOR) extends from the west coast of the United States to the east coast of Africa and from the Arctic Ocean to Antarctica and includes Alaska and Hawaii. Geographically, PACOM is the largest U.S. unified command. Its AOR equals about 50 percent of the Earth's surface, or more than 100 million square miles. It encompasses 45 countries and 10 territories of other countries.

> Reaching out to all players in the Department of Defense acquisition community . . . [PCCOWG] has established a framework and forum for effectively coordinating contingency contracting actions and issues. The PCCOWG's efforts have increased the effectiveness of contingency contracting for all the services by leveraging their resources across all services. This effort serves as a model for all of the regional commanders-in-chief
>
> —Lieutenant General E.P. Smith
> Commanding General
> U.S. Army Pacific

PACOM component commands include U.S. Army Pacific (USARPAC), U.S. Pacific Fleet (PACFLT), U.S. Pacific Air Forces (PACAF), U.S. Marine Forces Pacific (MARFORPAC), and Special Operations Command Pacific (SOCPAC). Subordinate unified commands include U.S. Forces Japan (USFJ), U.S. Forces Korea (USFK), and Alaskan Command (ALCOM).

More than 300,000 soldiers, sailors, airmen, and marines are assigned to PACOM. PACFLT and MARFORPAC execute their missions with nearly one-third of their services' total strength. Almost one-tenth of the total Air Force is assigned to PACAF, while about 3 percent of the Army's total strength is assigned to USARPAC.

PACOM Contingency Contracting

In PACOM, the commander in chief's (CINC's) Logistic Procurement Support Board (CLPSB) provides advice and assistance on contracting operations within PACOM. The PCCOWG is the CLPSB's working group. This group recommends standardized policies and procedures for contingency contracting during regional contingencies, joint theater exercises, and natural disaster relief in the PACOM AOR.

Each PACOM component command and subunified command appoints a member to the PCCOWG. Members are senior enlisted soldiers, majors and lieutenant colonels, and GS–12 and GS–13 civilians. A voting member is appointed as the chairperson. Current voting members are from USARPAC, PACAF, MARFORPAC, PACFLT, and USFK. Nonvoting members represent SOCPAC, USFJ,

ALCOM, the Defense Contract Management Agency, and the Army Corps of Engineers. Other representatives from Department of Defense (DOD) contracting entities often participate in PCCOWG meetings. Meetings take place every 6 months. One meeting each year usually is held in Hawaii, while the second meeting typically is held in conjunction with another event such as the annual Korea Finance and Contracting Conference.

Among the responsibilities assigned to the PCCOWG in its charter are—

- Developing a joint service standardized Deployable Contracting System.
- Developing and maintaining a contingency contracting source database.
- Coordinating contingency contracting warrants (authorizations to award contracts).
- Coordinating and recommending contingency contracting assignments.

Premier among these responsibilities is coordinating contingency contracting support among the services. This ability is the key strength of the organization and allows the PCCOWG to leverage each service's contingency contracting resources across PACOM. The PCCOWG coordinates the assignment of military contingency contracting officers (CCOs) and designates the exercise chief of contracting up to a year in advance. The work load is split equally among the service component commands. This process gives the requiring activity advance knowledge of which command is providing its contracting support and permits CCOs to be involved in the planning process from the beginning.

In the PACOM AOR, the PCCOWG coordinated a change in service policy that ensures that warrants from the service components are accepted and recognized by the other service components. This allows a joint contracting cell to begin work quickly without having to rewarrant everyone on the joint contracting team. Under the previous policy, each service would accept only its own warrants. If, for example, the Army was the lead service for an exercise, all contracting personnel would be required to have a warrant from the Army.

The PCCOWG also streamlined the use of procurement instrument identification numbers (PIINs), which are an alphanumeric way of identifying contracting actions. PIINs are assigned only to contracting activities, such as an Army directorate of contracting or an Air Force contracting squadron. Only one set of PIINs is used for each exercise or operation. Contracting authority flows from a head contracting activity (HCA) to a principal assistant responsible for contracting (PARC) to a CCO. For example, in Cambodia, contracting authority comes from a PACAF HCA and PARC (by way of the PIINs) to the Army contracting officer assigned to support the demining mission in Cambodia. When a CCO from another service arrives, he can continue to use existing contracts and PIINs and provide contract reports through PACAF. This eliminates the need to open and close the same contracts every time a contracting officer from a new service is assigned.

Standard Procurement System

To fulfill one of its key goals, the PCCOWG is now coordinating, under USARPAC's lead, the deployment of DOD's Standard Procurement System (SPS), which provides a standard procurement vehicle throughout DOD. The PCCOWG is developing and testing a deployable system to support CCOs in PACOM. The first test of the Deployable Contracting System in support of a major joint exercise occurred during Exercise Balikatan 2000 in the Philippines. The next program goal is to deploy the system to the largest joint exercise in PACOM, Exercise Cobra Gold, which is held annually in Thailand.

The Deployable Contracting System consists of notebook computers loaded with Version 4.1e of SPS and a wireless network. The system was tested during the final planning conference for Exercise Cobra Gold 2001. Improvements resulting from the test will be briefed to representatives from each of the services and to the Joint Requirements Review Board and integrated into future versions of the software.

The PCCOWG is increasing the effectiveness of contingency contracting for all services by jointly managing their resources. The group has established a framework and a forum for coordinating contingency contracting actions and issues effectively among the PACOM service components and subunified commands. The group's success is the result of its members working together to use contingency contracting resources and ideas throughout PACOM. **ALOG**

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Restructuring Engineer Support

by Captain William Judson, Major Richard J. Muraski, and Lieutenant Colonel Jeffrey A. Bedey

Among the organizational changes faced by the Army's first Force XXI division, the 4th Infantry Division at Fort Hood, Texas, has been the creation of an engineer support element (ESE) to provide combat service support (CSS) to the engineer battalion. As part of the reorganization, ESEs were to be outfitted with time- and labor-saving enhancements designed to support an engineer battalion with modern equipment. However, because ESEs and engineer battalions have not received the complete complement of those enhancements and must continue to maintain legacy equipment, the small size and the organizational structure of the ESE have proven inadequate to support Force XXI engineer battalions fully. The Army's decision to add M2/3 Bradley fighting vehicles to engineer battalions has only magnified the shortcomings of the ESE.

Our experiences in the 4th Infantry Division's 299th Engineer Battalion, both at Fort Hood and at the National Training Center (NTC) at Fort Irwin, California, have convinced us that the ESE should be upgraded to an engineer support company. This will create an engineer support organization that parallels the support model already established for infantry and armored battalions.

Support Under Force XXI

Under Force XXI, CSS is no longer organic to the engineer battalion. Instead, CSS has been reorganized under the command and control (C2) of the forward support battalion (FSB). CSS for maneuver battalions also was reorganized under the FSB's C2. However, there are significant differences in CSS support to maneuver battalions and to engineer battalions.

The reorganization established a forward support company (FSC) for each maneuver battalion, while the ESE (initially an engineer support platoon) was established to support the engineer battalion. The ESE is not a company and is subordinate to the FSB's base support company (BSC). This difference has had a significant impact on how CSS is provided to the engineer battalion.

According to Field Manual (FM) 5–71–3, Brigade Engineer Combat Operations (Armored)—

> The multifunctional ESE operates on a centralized CSS concept, providing all classes of supply, food service, distribution, and tactical field maintenance to the engineer battalion and to itself. The ESE leader is capable of cross-leveling his assets among the engineer repair sections and teams in order to structure the main effort as the mission dictates. The three forward engineer repair sections and three engineer combat repair teams (CRTs) provide the immediate capability and flexibility of task organization needed to support Force XXI engineer battalions.

The ESE headquarters section supervises the ESE and its assigned or attached personnel. Under the direction of higher headquarters, and with a logistics officer (a captain with functional area 90A, logistics) as the ESE leader and a noncommissioned officer (NCO) (at grade E7) as the ESE senior equipment maintenance NCO and operations sergeant, the headquarters section is designed to provide flexible C2.

The food service section is responsible for planning and providing subsistence support to the engineer battalion and food service support using its assigned mobile kitchen trailer. The section can be modularized to support attached companies. The distribution section provides petroleum, oils, and lubricants (POL) and supply point distribution to the engineer battalion and also can be modularized. It has an extremely limited distribution capability outside of bulk POL.

The forward engineer repair sections (FERSs) and engineer CRTs provide contact support for engineer equipment. Each FERS provides C2 of a CRT. Each CRT is organized with mechanics, recovery assets, contact trucks, cargo trucks, and the Forward Repair System Heavy (FRSH) and is supported with a surge capability available in the FERSs. Regardless of the task organization, each CRT always is collocated with an engineer company to provide it with immediate forward repairs; the team works for the engineer company first sergeant, even though its higher headquarters is the ESE.

Field Testing the ESE

In late January 2000, the 299th Engineer Battalion deployed to the field for 2½ months of continuous field training. The 1st Brigade Combat Team saw this as an opportunity to conduct NTC trainup and test the new CSS redesign. During this training, the battalion experienced less-than-satisfactory operational readiness (OR) rates. There were several reasons for such problems—

- Only one officer—the ESE leader—was responsible for the entire support system for the battalion.
- The CSS design placed a tremendous burden on the one maintenance technician warrant officer. The maintenance technician spent most of his time finding parts and attending maintenance meetings at the brigade support area when the battalion executive officer (XO) was not available. This pulled him from his job of providing technical direct-support expertise within the engineer forward support area (EFSA).

- The ESE had no enablers, such as a FRSH, to help with maintenance and limited lift and welding capabilities. But it still had the same amount of equipment to maintain as a maneuver battalion.
- The XO, along with the battalion S1 and S4, had to focus on maintenance so the ESE leader could focus on logistics support for the battalion.
- The motor sergeant spent most of his time going forward to bring parts to the CRTs as well as providing backup for the brigade maintenance team.
- The CRTs spent more time going back to the EFSA for parts and supplies than staying forward. This kept them from diagnosing problems and fixing forward. As a result, critical systems were evacuated and were returned to the fight only after a lengthy stay in the EFSA, if they were returned at all.
- Since most of the senior leaders were busy looking for parts and trying to manage maintenance operations, they placed little emphasis on mission-specific logistics planning for the battalion.

After 2½ months in the field, the 299th Engineer Battalion was able to complete an in-depth analysis of why providing CSS was so challenging. The analysis focused on three areas: personnel and equipment resources, senior leadership, and C2 within the ESE and the ESE's relationship with the engineer battalion.

Personnel and Equipment Resources

The ESE is authorized 78 soldiers, which makes it much smaller than the FSCs that support armored and infantry battalions (172 and 165 personnel, respectively). Armored and infantry battalions have 66 tracked vehicles each; an armored battalion has 40 wheeled vehicles, and an infantry battalion has 38. The engineer battalion has 66 tracked vehicles and 41 wheeled vehicles. Despite these comparable strengths, the armored and infantry battalions are supported with 67 maintenance personnel in the FSC maintenance sections (not counting turret mechanics), while the engineer battalion is supported by only 47 maintainers—70 percent of the maneuver battalions' strength. Similarly, eight Unit Level Logistics System (ULLS) clerks support each of the maneuver battalions, while the ESE has only four ULLS clerks.

During our training, our ESE had only one of three authorized common number-one tool sets. It had no FRSH or Palletized Load System (PLS) trucks (three trucks and six racks are authorized). Our ESE also was nursing three aged M88A1 recovery vehicles in its attempt to continue providing recovery and lift support to the battalion. This lack of tools had a direct impact on the ability of the ESE to provide responsive support. The FSC prescribed load list (PLL) sections operate out of expansible vans, have 12-ton van trailers to carry PLLs, and have Standard Army Maintenance System-1 computers to order direct-support parts. None of this equipment is authorized for the ESE PLL section.

The ESE has 70 percent of the mechanics, 50 percent of the PLL clerks, and less than 50 percent of the senior NCOs of the FSC. The ESE design does not posture the ESE to support an engineer battalion successfully. The shortage of both mechanics and PLL clerks, coupled with a very low number of senior NCOs, is a recipe for disaster. Class IX operations suffer; quality assurance and control for verifying faults, repair work, and scheduled services are sub-standard; and the requirement for NCOs to train junior enlisted soldiers exacerbates the problem.

Leadership

The ESE is authorized one officer, compared to five authorized in each FSC. The ESE is authorized 7 other maintenance leaders in the grade of staff sergeant or higher, including 1 warrant officer; each FSC is authorized 1 warrant officer and 13 or 14 NCOs. The leadership shortfall in the ESE constrains quality assurance and control; makes focusing on multiple missions more difficult; and reduces continued training of mechanics. When the 45-man engineer support platoon was reorganized in January 2000 as the 78-man ESE, much of the increased manning consisted of junior soldiers. This hurt training and quality assurance and control.

Command and Control

The modification table of organization and equipment (MTOE) does not provide clear guidance on command or management of all maintenance elements in the ESE. There are five mechanics in the ESE headquarters responsible for maintaining the vehicles of the engineer battalion headquarters and headquarters company. The remaining mechanics are located in the three FERSs and the three CRTs. This organization is intended to support each of three line engineer companies with one FERS and one CRT each. The warrant officer and one staff sergeant are identified by the MTOE to supervise the FERSs, while each CRT is led by a staff sergeant and falls under the control of the ESE headquarters.

This organization is flawed in two ways. If the three FERSs are consolidated as the MTOE calls for, their mechanics may not be responsive to the needs of the CRTs and their supported engineer companies. However if each FERS is under the control of a CRT team chief, the ESE forfeits the ability to mass mechanics for engineer battalion priorities.

While a captain leads the ESE, it is not a company command because the ESE is subordinate to the BSC of the FSB. The ESE leader does not have the same access to the parent battalion as the FSCs supporting the maneuver battalions. As a subordinate of the BSC, the ESE is subject to being tasked to support the brigade or the FSCs. The ESE also remains subject to supporting BSC taskings and training priorities. Regardless of their de-

sire to provide the best possible support to the engineer battalion, ESE personnel are bound by chains of command to support BSC ranges, formations, and inspections. This tie to a second chain of command, short-notice taskings, and required training make it difficult to make long-range plans for the ESE and to shield its mechanics from outside distracters.

Adjustments Within the Battalion and ESE

The 299th Engineer Battalion took the shortfalls within the ESE as an opportunity to fashion a feasible solution. With assistance from the 1st Brigade and the 4th Infantry Division, the battalion overcame the resource shortfalls by making the following adjustments—

- A captain was pulled from an authorized MTOE slot and moved into an unauthorized battalion motor officer (BMO) position to work alongside the ESE leader. The goal was to free the ESE leader to concentrate on logistics, while the new BMO would oversee battalion maintenance operations. The BMO was in a better position to set priorities for the battalion and provide better information to command channels.
- A consolidated battalion service team was created out of the FERSs to work on scheduled services for the entire battalion and not focus on one company. Before this change, services on some vehicles were severely behind schedule because the engineer support platoon had only 45 personnel and could barely keep up with unscheduled maintenance, let alone scheduled services. The battalion, with the support of the division, was able to contract out all wheeled vehicle services, while the consolidated service team focused on tracked vehicles.
- The battalion's PLL section was augmented with four clerks with military occupational specialty 12B, combat engineer. By augmenting the section, the PLL clerks were freed to concentrate on ordering parts and reestablishing the flow of class IX recoverable items to the FSB. With the BMO in place, this also allowed the maintenance technician and the motor sergeant to direct the priorities set by the BMO and mentor mechanics.

The battalion tested the adjustments made to the ESE during NTC rotation 00–10. While the operating tempo of the rotation was high, the M113 fleet averaged over 317 miles; M9 armored combat earthmovers (ACEs), over 302 miles; and M548 ammunition carriers and M1068 light, tracked command post vehicles, over 160 miles. Augmenting the structure and implementing different programs allowed the battalion to complete reception, staging, onward movement, and integration with a 100-percent OR rate on all combat systems from its home station. Throughout the rotation, the OR rate sometimes fell below 90 percent, but often this was on non-battle days. Faults were identified quickly and equipment repaired. This allowed the battalion to consistently cross the line of departure with an OR rate of 90 percent or better and to end the rotation on training day 14 with an OR rate exceeding 93 percent.

Transitioning From the ESE to an ESC

Despite our successes, the ESE remains inadequately resourced to support an engineer battalion either in garrison or during continuous operations. We believe that the only viable option is to convert the ESE into an engineer support company (ESC) and remedy the shortfalls in personnel, equipment, and leadership.

With the Army's recent decision to field the Bradley fighting vehicle to the Force XXI engineer battalions, it is imperative that we take the lessons learned from our experiences in fighting with the ESE. These lessons are vital to identifying a recommended design for an ESC that can sustain all logistics requirements of a Bradley-based engineer battalion. Our recommended organization of the ESC is based on several design considerations.

First, we used doctrine as a foundation for the proposed organization. According to FM 5–71–3, the ESC must be capable of—

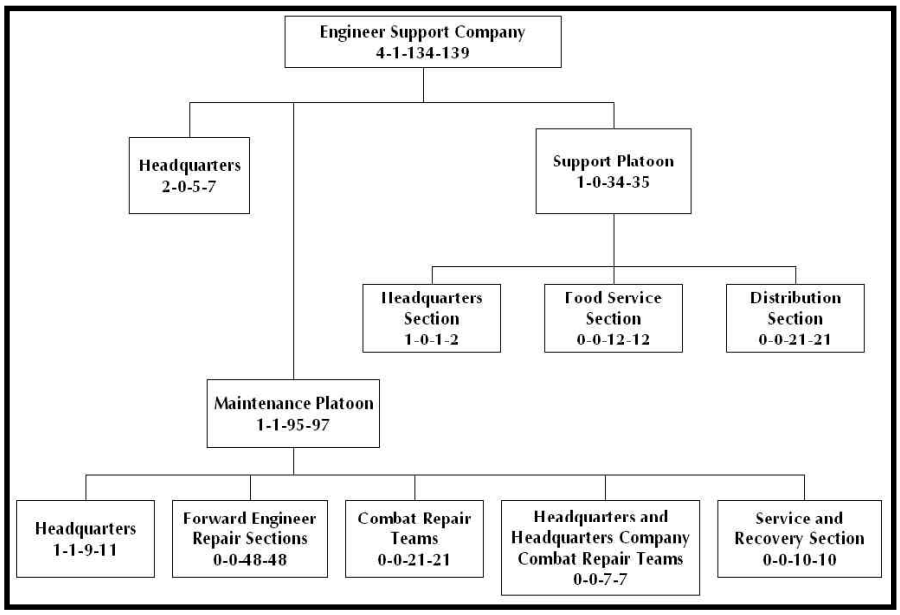
> . . . operating on a centralized CSS concept, providing all classes of supply, food service, distribution, and tactical field maintenance to the engineer battalion and to itself. The ESE [now the proposed ESC] must be capable of cross leveling between the engineer repair sections/teams to weight the main effort as mission dictates. The three forward-engineer repair sections and three engineer Combat Repair Teams (CRTs) provide the immediate capability and task organization flexibility to support our FXXI engineer battalions.

Second, we examined the logistics requirements for sustaining a Force XXI engineer battalion equipped with the ODS–E Bradley (the updated M2A3 Bradley configured for combat engineers) in place of the M113. We also accounted for the fielding of the Wolverine heavy assault bridge and an additional nine M9 ACEs.

Third, we incorporated our experiences fighting with the ESE over an extended period in a multitude of environments. These experiences included the inability to protect ULLS-Ground computers from environmental problems; the impact on maintenance operations of a low density of senior NCOs; the shortage of mechanics and PLL clerks; and the lack of recovery and lift assets.

Fourth, we used the structure of the FSC, which supports a Bradley-equipped infantry battalion, as the basis for our recommended organization. We had two reasons for this: the engineer battalion will be a Bradley-based organization; and, since the engineer battalion will be an organic member of the brigade, we felt that the CSS organizations that support all organic battalions should have the same fundamental structure.

The proposed ESC organization is shown above. This proposal would increase the number of personnel sup-



☐ This is the structure of the authors' proposed engineer support company. The numbers under each element (for example, 4–1–134–139) refer to the number of officers, warrant officers, enlisted personnel, and total personnel assigned to that element.

porting an engineer battalion from 78 to 139, a net increase of 61 personnel.

The headquarters platoon consists of the minimum personnel needed to operate a company. The addition of the XO, first sergeant, and operations NCOs creates the required level of leadership to run the company effectively. The support platoon, comprising the food service and distribution sections, now can coordinate its efforts under the command and control of a dedicated officer and NCO. This is especially critical in providing fuel to the 12 Wolverines. The addition of four load-handling systems (the heavy, expanded-mobility, tactical truck replacement) will provide the ability to haul 25-millimeter ammunition and critical engineer supplies.

The maintenance platoon requires the greatest change. The maintenance control officer and the maintenance technician can work in unison to command and control the maintenance effort and tackle critical issues. It is clear that the Bradley requires more mechanics: 57 man-hours are needed to service a Bradley, compared to 7.6 for an M113, 40 for a Wolverine, and 22.2 for an armored-vehicle-launched bridge. The complexity of the Wolverine, along with the increase of nine ACEs, also creates a need for more mechanics. Three additional M88A2s allow the fix forward concept to work. The service and recovery section can be the link between the CRTs and the FERSs and can be located either in the EFSA or the task force support area. This section can act as a not-mission-capable vehicle transfer point, allowing the original three M88A2s to remain forward with the supported company.

Transforming the ESE to an ESC will ensure for the first time that the FSB is resourced and structured properly to provide for the logistics requirements of fixing, arming, and fueling the engineer battalion. While we are sure that there will be many in the ranks who are critical of this change, we submit the following for consideration: No adjustments to the CSS structure that supports the engineer battalion will place either the logistician or the engineer in an untenable position.

Without changes such as we recommend, the battlefield functions of mobility, countermobility, and survivability at the very least will be degraded, putting at risk the mission and, more importantly, the lives of soldiers. An increase of 61 personnel with associated equipment is a small price to pay to ensure that our soldiers can win on the battlefields of the 21st century. **ALOG**

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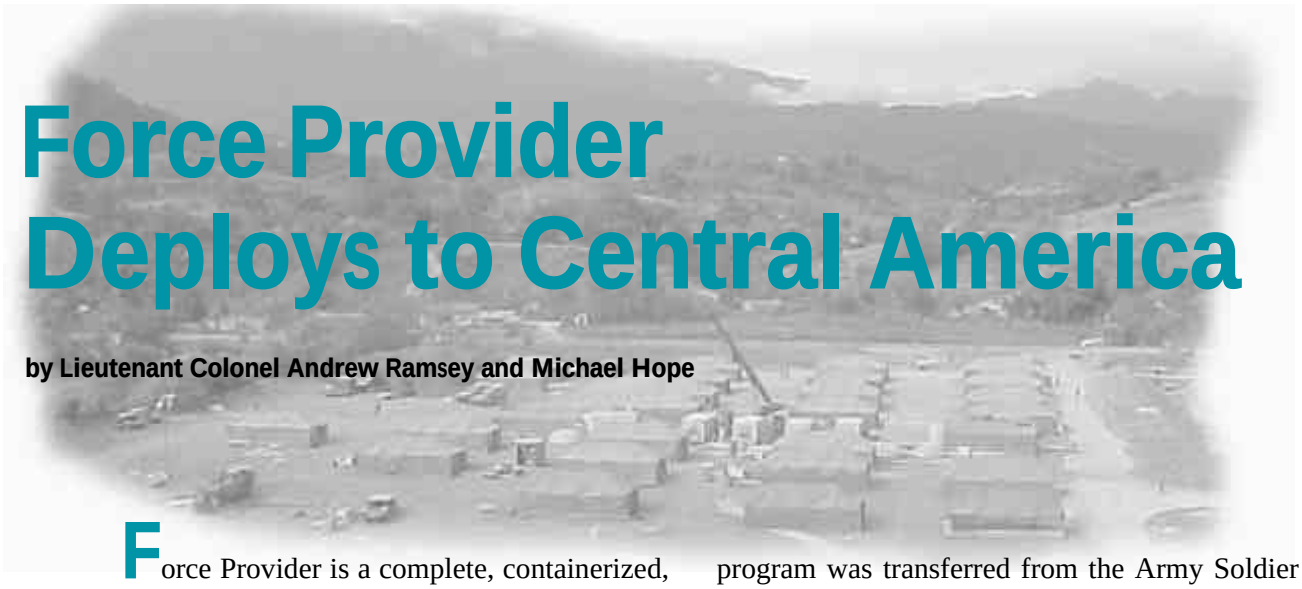
Lieutenant Colonel Jeffrey A. Bedey is Director of the Department of Instruction at the Army Engineer School at Fort Leonard Wood, Missouri. He was the commander of the 299th Engineer Battalion previously. He holds a B.S. degree in construction engineering from Montana State University and an M.S. degree in construction management from Colorado State University.

Force Provider Deploys to Central America



by Lieutenant Colonel Andrew Ramsey and Michael Hope

Force Provider is a complete, containerized, highly deployable, bare-base system that provides modern climate-controlled billeting; dining; shower; latrine; laundry; and morale, welfare, and recreation facilities for 550 soldiers. Each module contains an 80,000-gallon water storage and distribution system, a 40,000-gallon fuel storage and distribution system, wastewater storage, and continuous generation and distribution of 1.1 megawatts of power.

Force Provider's basic building block is the tent, extendable, modular, personnel (TEMPER), which is equipped with forced-air heating and cooling similar to the systems in the average home. Force Provider facilities can serve as rest and recuperation sites for combat-weary soldiers, support theater reception, and act as an intermediate staging base or as a base camp for humanitarian, disaster relief, and peacekeeping operations.

The Army already has 27 Force Provider modules ready for deployment and plans to acquire 9 more by fiscal year 2003. The approved fielding and distribution plan calls for the modules to be located as follows by fiscal year 2004: U.S. European Command, 6; U.S. Pacific Command, 6; U.S. Central Command, 3; prepositioned ships, 12; and continental United States, 9 (1 permanently set up at the Joint Readiness Training Center at Fort Polk, Louisiana, as the Force Provider Training and Test Facility).

The Army has created six Force Provider companies (one active duty and five Reserve component) to set up and operate the modules during deployments. In addition, a Logistics Civil Augmentation Program (LOGCAP) Force Provider support plan has been developed to ensure that civilian contractors are available when needed, either to augment the Force Provider companies or to operate Force Provider camps when an Army unit is not available.

New Home for Force Provider Mission

During the fourth quarter of 2001, the mission of supporting the operational aspects of the Force Provider program was transferred from the Army Soldier Systems Center at Natick, Massachusetts, to the Commanding General of the Army Field Support Command at Rock Island, Illinois. The Field Support Command is responsible for depot storage management, care of supplies in storage, deployment planning, and deployment support of overseas pre-positioned Force Provider modules. The Soldier and Biological Chemical Command Integrated Materiel Management Center is responsible for the same set of tasks for modules stored in the United States. The Assistant Product Manager (APM) for Force Provider retains responsibility for the continued production and assembly, configuration, and modernization of the modules.

New Horizons Exercises

In September 2000, the Deputy Chief of Staff for Logistics approved the loan of two Force Provider modules to U.S. Army South (USARSO) to support New Horizons 2001 in Honduras and Guatemala. Significantly, this was the first approved use of Force Provider modules for a noncontingency mission.

New Horizons exercises generally are engineer construction projects and medical readiness training exercises, during which engineers focus on building schools, clinics, and wells and on improving the existing road system. At the same time, they foster goodwill and improve relations between the United States and the host nations. From January to May 2001, more than 2,000 U.S. active duty and Reserve component personnel representing all services from units worldwide participated in Joint Task Force Lempira in Honduras and Joint Task Force Aurora in Guatemala.

Predeployment Planning

Force Provider predeployment planning started in earnest at the final planning conferences held at Fort Buchanan, Puerto Rico, and in Flores, Guatemala, in November and December 2000. The Force Provider Product Manager Team provided comprehensive in-

formation on the capabilities, characteristics, and composition of the Force Provider modules, along with detailed deployment, operation, and redeployment information and advice.

After a thorough analysis of the requirements and resources available for the two task forces, it was decided that the Honduran base camp would receive a "tailored" Force Provider package consisting of containerized showers, latrines, a batch laundry, a water distribution kit, wastewater vacuum trailers, floodlights, and four 60-kilowatt generators. The Guatemalan base camp would receive an entire 550-soldier module with generators.

Deployment and Shipping

The Force Provider modules for the Central America mission were stored at Sierra Army Depot (SIAD), California. The modules were uploaded and moved by commercial transport to Mobile, Alabama (the seaport of embarkation), during the last 2 weeks of December. From there, they moved by barge to the Port of Cortez, Honduras, and to the Port of Santo Tomas de Castilla, Guatemala (the seaports of debarkation). From the ports, commercial and military trucks moved the Force Provider components to the base camp locations near Gracias, Honduras, and Flores, Guatemala.

Building the Camps

A Force Provider Technical Assistance Team (TAT) arrived in Honduras on 5 January 2001 and began the arduous job of receiving, inventorying, and setting up the Force Provider equipment. The team, assisted by an Air Force RED HORSE (Rapid Engineer Deployable Heavy Operational Repair Squadron, Engineer) element, had to overcome many obstacles typical of a deployment, such as ensuring that the proper support equipment was on hand. The Force Provider assets had to be set up correctly and used to their best advantage to guarantee the best operation of the camp. The TAT trained the task force personnel on operating and maintaining the Force Provider equipment because no Force Provider Quartermaster Company personnel or contractors would be used to operate the camp.

The Force Provider TAT moved from Honduras to Guatemala on 18 January to help set up the base camp near Flores. The Guatemala site provided new challenges to the team. The terrain was partially wooded, and the memorandum of understanding with the Guatemalan Government did not allow the task force to remove any trees. Additionally, the camp had to be erected in an area of less than 3 acres (the optimal area is 10 to 15 acres). In spite of these challenges, the site was developed into a high-quality base camp for the task force.

Refurbishment and Redeployment Plan

USARSO decided to refurbish and repackage the equipment in Guatemala for long-term storage. This was the first time that a depot-level repackaging of a Force Provider module had been attempted in country. The decision was made not only to save time and money, but also to change the paradigm of refurbishing and repackaging only at depots. To accomplish the repackaging, a TAT deployed to Guatemala to oversee the refurbishing and repackaging efforts. A packaging specialist from the Army Materiel Command Logistics Support Activity Packaging, Storage, and Containerization Center at Tobyhanna, Pennsylvania, also was deployed to Guatemala to ensure that the equipment was properly packaged and preserved. USARSO sent the 542d Force Provider Quartermaster Company (Army Reserve) from Erie, Pennsylvania, to repackage the equipment in Guatemala. This was an outstanding opportunity for this unit to train and execute one of their mission-essential tasks in a real-world scenario.

The refurbishing and repackaging was a huge success, and the equipment was signed over to APM Force Provider and returned to storage at SIAD.

☐ In Guatemala, clothing repair and alteration personnel set up their equipment in the batch laundry tent.

☐Containerized shower in Honduras.

Lessons Learned

The Force Provider TAT learned a great deal about how to deploy and use Force Provider in a theater from their experiences in New Horizons 2001. We will include these lessons learned in a handbook that will be useful in future Force Provider deployments and redeployments.

Planning. Force Provider was approved for use just before the final planning conferences. This late approval triggered many changes to the existing base camp plans, some of which had negative effects, such as the unavailability of equipment and personnel needed during the site setup. For this type of exercise, the decision to use Force Provider should be made far enough in advance to allow time for proper planning and coordination (preferably before the initial planning conference).

Transportation and in-transit visibility. Using commercial trucks to move the Force Provider modules from SIAD to Mobile was effective. APM Force Provider representatives at SIAD and Mobile ensured proper accountability of the module components during movement in the United States, and LOGCAP personnel were in Central America to ensure accountability at the ports and during movement to the base camps. This was a lesson learned from previous deployments to Bosnia.

Site preparation and construction. This is probably the most critical stage in the operation. We learned that we must be careful not to underestimate the resources (time, money, personnel, and materiel) required for proper site preparation. Advanced site surveys and reconnaissance by engineers, logisticians, and the Force Provider TAT are vital in countries like Guatemala and Honduras, where terrain, climate, and limited infrastructure challenge such major undertakings. Having the proper equipment and personnel on hand early is critical to mission success.

We strongly recommend the continued use of the Air Force's RED HORSE squadrons or comparable Army assets to assist in planning the base camp, surveying the site, and designing and constructing future Force Provider facilities.

Full-time TATs. These teams are needed not only for Force Provider but also to support much of the unique equipment fielded by the Product Manager for Soldier Support. The deployment to Central America highlighted the need for full-time TATs, because more than half of the Force Provider office staff had to be diverted to form a TAT to support the deployment and redeployment. Only those persons who work with the Force Provider equipment daily or have past experience in deploying with the modules have the understanding and expertise needed to support Force Provider deployment and redeployment.

Personnel and equipment. The module can be

☐All-electric kitchen in Guatemala.

managed better and maintained more efficiently by trained operators. Using fully trained operators helps reduce the overall cost of operating, maintaining, and refurbishing the equipment. Personnel selected to deploy with a Force Provider module, either active duty or Reserve component, must deploy early to ensure proper setup of the base camp. They must have adequate materials-handling equipment, tools, and transportation in time to prepare the site and receive, unpack, and assemble the module.

Repackaging and refurbishing. The standard model for past deployments called for a field-level repackaging of the module on site, with actual refurbishing and repackaging of the module completed at a depot facility. This exercise proved that, with adequate time, manpower, facilities, and planning, a Force Provider module can be refurbished and repackaged in country. In-country refurbishing and repackaging not only saves the Army money but also reduces the turn-around time required to get the module ready for the next deployment.

The deployments of Force Provider modules to Central America during New Horizons 2001 provided high-quality living conditions and excellent training for soldiers while providing a test bed for improving the Army's premier base camp. Lessons learned from this operation will be used to improve future Force Provider deployments. **ALOG**

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Michael Hope is the Team Leader for the Combat Field Service Support Team in the office of the Product Manager for Soldier Support. He also leads a Technical Assistance Team. Mr. Hope has worked for the Government for 22 years. For the last 7 years, he has led the development and fielding of the Force Provider system.

Putting an End to Rear-View-Mirror Logistics

by Lieutenant Colonel Forrest B. Hendrick

> We will not have a Revolution in Military Affairs until we first have a Revolution in Military Logistics and Business Affairs. This is not an overstatement. I truly believe that the Army will not and cannot be prepared for the future unless we complete an unprecedented transformation of how we supply and sustain the Total Army.
>
> —General Dennis J. Reimer
> Chief of Staff of the Army, 1998

It has been almost 4 years since General Reimer made that statement. Since then, the Army has struggled to exploit emerging technology so it can embark on the Revolution in Military Logistics (RML). Funding constraints, program requirements, and higher priorities all have slowed progress toward achieving a 21st century Army logistics infrastructure.

Central to the RML are standardized information systems that will provide real-time data, diagnostic and prognostic information, weapon system identification, usage and reliability factors, performance data, technical information, repair data, and the location of weapon systems and key secondary systems. Weapon systems must be designed or modified during the Army Transformation to insert the technology required to capture this information from system production through retirement and disposal.

The nature of the Army logistics system is essentially reactive in compiling repair, service, and spare parts requirements data. This leaves the Army Materiel Command's (AMC's) major subordinate command (MSC) acquisition centers and program managers in the unenviable position of having to sustain the Army's systems using a retrospective, or "rear-view-mirror," approach. This approach was sufficient during the Cold War when budgets were robust. Today, evolving national security requirements, force design challenges, and constrained budgets require the rapid development of technology that will allow Army logisticians to anticipate maintenance, supply, distribution, and inventory management requirements. Weapon systems need standardized logistics information systems to collect the data necessary to assess system or secondary item lifecycle trends and repair, reliability, procurement, and distribution requirements before or when the requirements are generated. These systems will support business processes at every level—from the weapon system user to the national inventory control point and the original equipment manufacturer.

The AMC MSCs currently use the Commodity Command Standard System (CCSS) and the supporting Requirements Determination and Execution System. These systems also use a "rear-view-mirror" perspective to develop future logistics requirements and procurement profiles. The AMC Wholesale Logistics Modernization Program (WLMP) and the Global Combat Support System-Army offer the opportunity to change this perspective, streamline logistics, and improve the national-level Army logistics decision-making process by aiding the rapid distribution of information. The WLMP business process review and analysis is complete, and AMC is striving to complete the replacement of CCSS with WLMP by the end of fiscal year 2003. However, without advanced weapon system information collection and distribution technology to acquire necessary data, WLMP will operate using information that is days, weeks, or even months old.

The Way Ahead

Most of the Army's logistics infrastructure, assumptions, and capabilities have changed in the last 10 years. Government and commercial industrial bases have downsized, reducing the number of suppliers and increasing production times. These changes point toward a need for an objective logistics system that uses consumption and equipment performance data that are as close to real time as possible.

High-cost aircraft and their subsystems offer the greatest opportunity to exploit technology to improve readiness, reliability, and safety while saving money. From production to disposal, weapon system logistics information systems should embrace an open system architecture and integrate real-time data on factors such as end item and secondary item service life, performance, duty cycles, fatigue life (expected life considering factors such as excessive vibration), operating tempo, configuration, modification, repairs, usage hours or mileage, and safety and maintenance. To achieve this goal, the Army must develop a single vision and integrate this real-time capability into weapon systems.

Digital Logistics Information Elements

The agencies responsible for sustaining weapon systems must have a logistics information system that in-

corporates multifunctional health and usage monitoring systems, embedded microsensors, radio frequency identification, prognostics and diagnostics, open-system architecture, automated item tracking and records maintenance, multisystem applicability, and geopositioning. Once established, this standardized logistics information system will provide suppliers, transporters, and maintainers from the unit level up through AMC to the original equipment manufacturers with real-time prognostic, diagnostic, system health and usage monitoring, and logistics requirements data.

Health and Usage Monitoring

Health and usage monitoring systems (HUMS) can monitor utilization rates and critical cycles of temperature, pressure, vibration, duty, and environmental extremes of rotary-wing aircraft. A standardized package of lightweight, highly reliable microsensors can be installed on aircraft, ground vehicles, and support equipment to gather key information during required cycles. Technology is available that also will identify and monitor critical stress and fatigue points in aircraft structures.

Standardizing the HUMS sensor package and hardware and software across weapon systems will simplify equipment training and operation and minimize the logistics "footprint." The data provided by the HUMS can be collected through a central on- or off-system port. HUMS then can update required maintenance and supply record data fields automatically, ultimately providing data to national-level logistics information systems.

Other Programs Under Development

Digital source collector. The digital source collector will offer a potential data-collection point. The data it gathers will be used at the unit level through the MSC and original equipment manufacturer levels to assess reliability, failure trends, supply and repair requirements, and maintenance anomalies. Using the gathered information, engineers will be able to develop maintenance process and reliability reengineering solutions. In addition, stock managers will be able to address, in near real time, the potential impacts of changed item service-life expectancy or demand profiles. The digital source collector will make it easier to identify potential modernization-through-spares candidates early on and enhance configuration control and management at the user through MSC levels. Based on information provided by this technology, the acquisition community will be able to meet customer demands and ensure that manufacturers are accountable for item performance.

Vibration monitoring. This technology has proven its value in anticipating impending changes or failure in critical aviation systems. By continually monitoring the vibration characteristics of dynamic components, it is possible to forecast aviation system maintenance requirements and determine critical aspects of component or end-item service life. Embedding vibration-monitoring technology into aviation weapon systems will help improve their reliability and readiness.

Automatic identification technology (AIT). Incorporating AIT into the overall data-collection system on components that have important life, readiness, or safety considerations will greatly enhance the overall asset visibility effort. This evolutionary technology will provide near-real-time information on stock locations and life-limits for those items that require monitoring. Equipment distributors, users, and maintainers will be able to update their automated maintenance or supply records with minimal effort. Once automated, this information will assist with decision making on asset positioning, overall item service-life expectancy, repair needs, and procurement requirements.

To meet the challenges of Army XXI and the Objective Force, logistics planning and support systems must adapt to the imperatives dictated by our changed logistics infrastructure and security environment. New technologies must be combined to attain real-time life, supply, maintenance, repair, reliability, cost, location, safety, and prognostic data.

An integrated total life-cycle logistics information system is the starting point for achieving Army logistics goals and embarking on the RML. Software and hardware for this system must be standardized and designed to allow improvements to be inserted easily. Such a system will provide better readiness rates, improved manpower and equipment efficiency, enhanced safety, reliability, total asset visibility, improved operational flexibility and capability, cost reductions, and a reduced logistics footprint.

Weapon system program managers and program executive officers must be charged with implementing an integrated total life-cycle logistics information system using a common architecture that supports the soldier and minimizes the logistics tail. The operational requirements of weapon systems must include a standardized objective logistics information system. Without it, weapon system program managers will not have adequate funding to support this technology. The Army Transformation and recapitalization of weapon systems offer an opportunity to change logistics decision making while putting an end to "rear-view-mirror" logistics.

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Logistics Support Element Planning Model

by Daniel Cooper and Gary McPherson

The deployable arm of the Army Materiel Command (AMC) is the Logistics Support Element (LSE). It provides deployed Army units a wide range of logistics assistance that enhances both materiel readiness and soldier quality of life across the full spectrum of military operations. LSE draws from resources throughout AMC and the Army National Guard to provide tailored response teams designed to meet unique requirements and technical problems during contingency operations. It provides support in areas such as diagnostic training and troubleshooting, aviation and ground maintenance, automation and software maintenance, contracting, oil analysis, ammunition surveillance, chemical detection, test equipment calibration, equipment retrograde, and field services.

Logistics Support Teams

LSE is a multifaceted organization with specialized logistics support teams composed of military personnel, Department of the Army civilians, and contractors. These teams can be tailored to meet different requirements and deployed quickly at the request of the supported commanders in the field. LSE serves as a bridge between the strategic industrial support structure and the tactical commanders.

The logistics support provided by AMC to the service component commanders can be categorized into three major areas—

- Permanent support relations, such as the AMC Logistics Assistance Program and the test, measurement, and diagnostic equipment (TMDE) support programs.
- AMC-unique missions, such as the hand-off of Army pre-positioned stocks and the Army Oil Analysis Program.
- Readiness-oriented tasks, resulting in increased operational tempo of Army equipment, may require support such as materiel fielding teams and depot modification work order application teams.

In addition, LSE can fill gaps when theater logistics requirements exceed the capabilities of the combat service support (CSS) elements on the ground.

LSE Planning Model

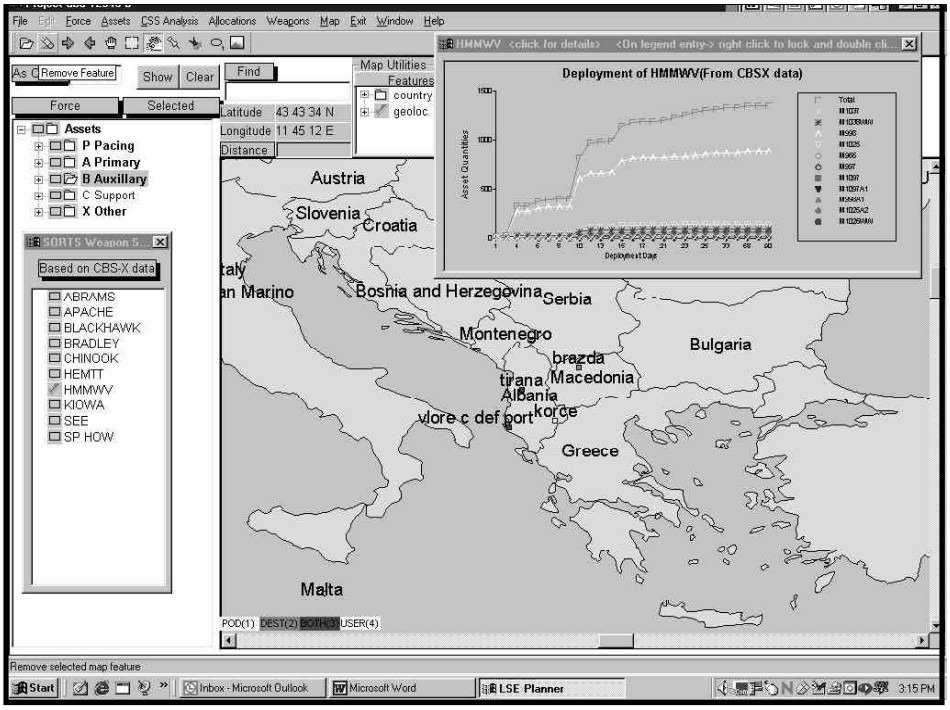
LSE planners have a real challenge. Whenever the Army deploys troops to one of the world's trouble spots, LSE must provide support to the deploying forces. The AMC logistics power-projection doctrine requires LSE to determine the type of support AMC will need to provide for the warfighting commander in chief (CINC) and the Army service component commander. LSE also must compare the capabilities of the deploying CSS units to the logistics support requirements and plan ways to offset any shortfalls it identifies.

In the past, planning and analysis was a manual exercise. Planners obtained maps, deployment lists, and spreadsheets containing pertinent data and calculated requirements using a "stubby pencil" technique. This was a lengthy process.

Planners now have the LSE Planning Model, a new productivity-enhancing tool. The LSE Planning Model is PC-based software designed to automate the LSE planning process and to help planners determine the proper composition and size of LSE teams to deploy to support an operation. It can be used for both deliberate and crisis action planning. The LSE Planning Model can generate input for the AMC LSE portion of the formal Total Army Analysis, which supports the CINC's priorities, and it can be used in a quick-reaction mode to plan support for a contingency not previously anticipated.

The LSE Planning Model presents LSE planners with a time-phased view of all the units deployed. This information is displayed geographically on a digital map with useful information about the units and the major end items that will accompany them. The information presented by the LSE Planning Model is based on data imported from the time-phased force deployment data (TPFDD) specified by the CINC and from various files automatically downloaded from both the Logistics Integrated Data Base and the Global Command and Control System. With this information, the LSE Planning Model can help identify potential CSS shortfalls and the LSE support that will be needed. Not only can this information be used to select specific LSE teams and time their deployment, but it also can be used to provide LSE planners with data needed for decision briefings to the theater force planners. The output of the LSE Planning Model includes easy-to-read charts, scalable map views, graphs, and printable, spreadsheet-style data tables.

The LSE Planning Model leads the user through the planning process, starting with receipt and review of the TPFDD. The software conducts several key edits of the TPFDD and displays errors found, so the user can make



☐ Example of a screen used in the LSE Planning Model.

corrections before performing LSE analysis. Next, the program provides data listings of the deploying units and major end items. The number of major end items selected—based on Continuing Balance System-Expanded records—is displayed on a graph. Even unit cargo records such as weight and cube can be shown. The planned geographical locations of all units on any given day of the deployment can be displayed on a map.

The LSE Planning Model also provides general information on the missions, assignments, and capabilities of CSS units. The planning model also can compare the capabilities reflected in the TPFDD to the estimated requirements to determine if additional LSE support should be readied to meet CSS shortfalls. Based on the force and asset information, along with algorithms built into the software, the LSE Planning Model performs many of the calculations needed to generate recommendations to deploy LSE teams. The user is free to accept the recommended allocation of LSE support or change the recommendation to better meet the need, based on other information or decision factors not considered by the software.

The LSE Planning Model provides AMC with an automated capability to better support the warfighter. With the help of this software, plans for allocating LSE teams can be generated in a matter of hours. One of the most important benefits of this new software tool is that the proper timing for insertion and extraction of LSE support can be determined with greater precision than in the past. This helps meet the Army Transformation goal of a reduced logistics footprint and translates into support cost savings.

Future Improvements

AMC forward planners in the continental United States, the Far East, and Europe have provided positive feedback and endorsed the tool. However, there is more to come. Work has begun on software enhancements, such as a capability to link with other databases to obtain more complete estimates of supply and maintenance requirements, a capability to overlay more detailed maps with a wider range of map features, and an option to consolidate LSE teams based on area coverage. The ultimate goal, pending funding and budget approval, is "one-stop" logistics planning that will accurately anticipate and help fill the Army's logistics requirements for operations anywhere in the world.

The LSE Planning Model is proving to be an effective productivity enhancer for LSE planners as they strive to provide the right AMC-unique services and CSS augmentation to deployed forces at the right time and place.

For more information on the LSE Planning Model, write to U.S. Army Operations Support Command, ATTN: SOSFS–COE, Building 5307, Redstone Arsenal, Alabama 35898–7466; or call (256) 955–0779/9886 or DSN 645–0779/9886. **ALOG**

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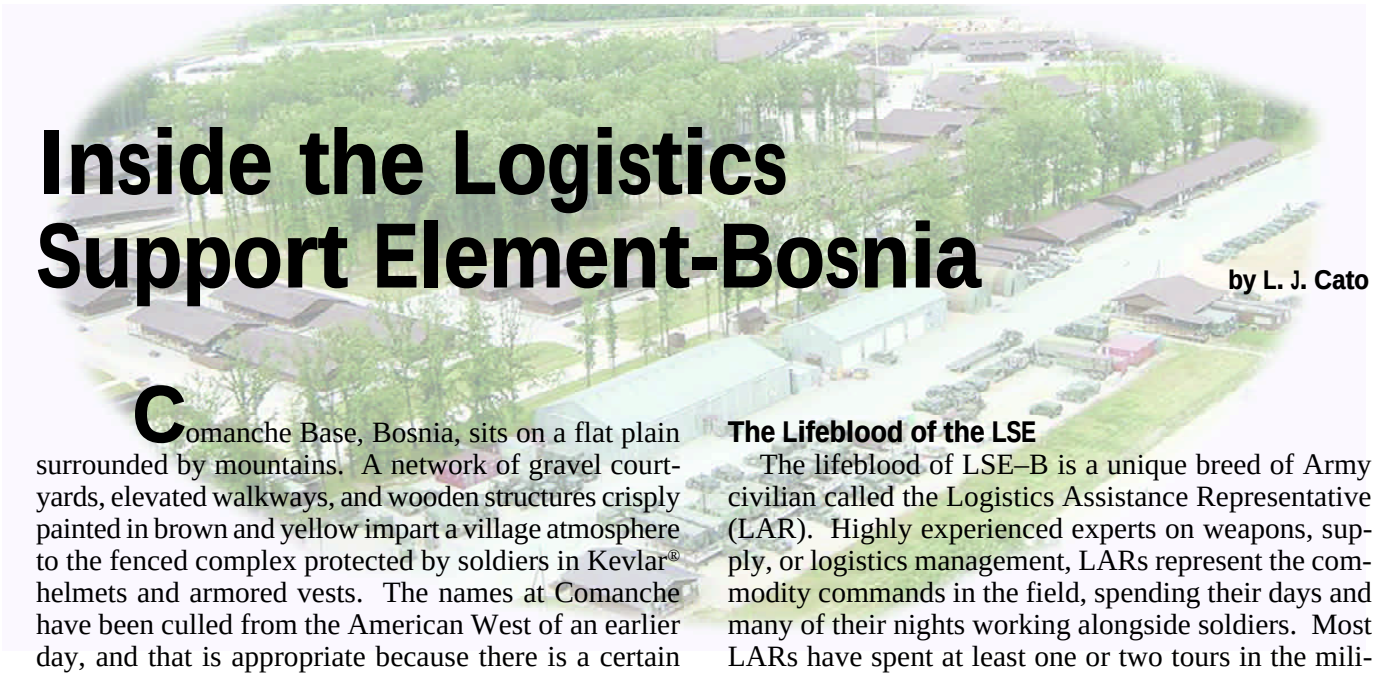


Inside the Logistics Support Element-Bosnia

by L. J. Cato

Comanche Base, Bosnia, sits on a flat plain surrounded by mountains. A network of gravel courtyards, elevated walkways, and wooden structures crisply painted in brown and yellow impart a village atmosphere to the fenced complex protected by soldiers in Kevlar® helmets and armored vests. The names at Comanche have been culled from the American West of an earlier day, and that is appropriate because there is a certain frontier look and feel to the base. This has to do partly with the stark beauty and violent history of Bosnia, partly with the simplicity and uniformity of the base, and partly with the spectacle of so much human energy and purpose.

One of these centers of energy and purpose is the Army Materiel Command's Logistics Support Element-Bosnia (AMC LSE–B). The small headquarters sits at the camp's western edge behind U.S. and AMC flags. There, the activities of some 50 soldiers, Department of the Army civilians, and Government contractors are coordinated and directed. Consistent with the tenets of emerging military doctrine, the logistics footprint there is small. LSE–B's logistics muscle, however, is enormous.

More Than Your Traditional LAO

"This is the place where soldiers and their leaders can come for immediate help when confronted by any type of materiel readiness problem," says Lieutenant Colonel Marty Utzig, Commander of LSE–B. "Like any AMC Logistics Assistance Office [LAO], we expedite requisitions, accelerate equipment repair, and train soldiers at all levels of supply and maintenance. But LSE–B offers more than the traditional LAO."

Undergirding the power of the LSE–B, says Utzig, are the logistics and technical reservoirs of the AMC commodity commands. "Should a problem arise which the LSE is unable to handle, we leverage the power of AMC by contacting the subject matter expert and, if necessary, having him dispatched [to us]." The AMC commands most active in Bosnia are the Army Tank-automotive and Armaments Command (TACOM), the Army Aviation and Missile Command (AMCOM), the Army Communications-Electronics Command (CECOM), and the Operations Support Command (OSC).

The Lifeblood of the LSE

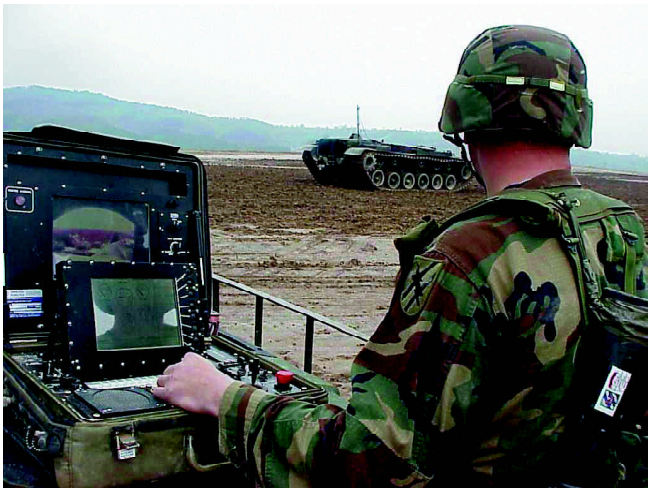
The lifeblood of LSE–B is a unique breed of Army civilian called the Logistics Assistance Representative (LAR). Highly experienced experts on weapons, supply, or logistics management, LARs represent the commodity commands in the field, spending their days and many of their nights working alongside soldiers. Most LARs have spent at least one or two tours in the military; many have retired from a 20- or 30-year military career. All are ready on short notice to deploy to contingency operations or training exercises, and most have had professional experience in some of the more remote and desolate areas of the world. LARs are renowned for their repertoire of techniques for dealing with the kaleidoscopic array of problems and difficulties presented by the Army's machines. They also are flexible. Changing requirements do not rile them, and shifting priorities do not dispirit them.

For example, one AMCOM LAR, whose specialty was the tube-launched, optically tracked, wire-guided missile, responded to the needs of the day by shifting his attention to the Panther and Mini Flail—remotely controlled antitank and antipersonnel mine-clearing systems employed throughout the Tuzla sector. Similarly, a TACOM armament LAR ensured that unit weapons were ready for an upcoming gunnery exercise while determining the requirements for turning in 12 unneeded M1 Abrams tanks and 20 M2/3 Bradley fighting vehicles. She also cleared a bureaucratic logjam that was preventing the unit from obtaining Bradley test-set gun simulators that must be turned in with Bradleys. "LARs not only fill a skill vacuum caused by shortages in experienced warrant officers and senior NCOs [noncommissioned officers]," says Utzig. "They have a knack of making things happen, especially at crunch time."

Training Mechanics

Two TACOM automotive LARs remember the days that one of them calls "the era of busted knuckles and wiring schematics." Between them, they have more than three decades of automotive experience. Today, they teach a class to direct support mechanics on troubleshooting the 4L80E transmission. They developed this training and have taught classes throughout Bosnia.

☐ A TACOM automotive LAR teaches a class on the 4L80E transmission.



☐ A soldier trains on the Panther, a remote-controlled antitank mine clearer used in noncombat environments.

The Army introduced M1114 up-armored high-mobility, multipurpose, wheeled vehicles (HMMWVs) to Bosnian-based units in 1996. While the armor plating and bulletproof windows on up-armored HMMWVs make patrols less vulnerable to hostile action, the extra 10,000 pounds of vehicle weight caused by the armor plating made modifications to the brakes, axles, suspension, and transmission necessary. The up-armored HMMWV's 4L80E transmission is specially designed to handle the vehicle's heavy weight. However, few mechanics who rotate through Bosnia have had previous training or experience on the 4L80E transmission, so the tendency has been to replace transmissions instead of repairing them, which wastes both time and money. Since the troubleshooting classes began, demand for new 4L80Es on the unit readiness report has gradually fallen from around 10 transmissions per report to 0.

Chasing Parts

Another reason that equipment readiness rates have remained high in Bosnia is the efforts of the supply LAR. The supply LAR begins each day by scrutinizing the daily 026, Equipment Deadlined Over XX Days by Battalion Report, which shows the unit equipment that is down, the parts that are on order, and the date each part is estimated to arrive. Parts with long estimated supply dates and those that have a major impact on the unit's mission receive the LAR's immediate attention.

"Chasing parts" is somewhat like a sporting challenge. To find the parts, the supply LAR uses strategy, experience, perseverance, and a network of people around the world who will go out of their way to help. Using the various supply reporting systems at his disposal, the supply LAR researches the possible locations of parts the unit needs. He then consults a well-thumbed deck of 3- by 5-inch cards on which he has recorded the addresses of weapon system managers, item managers, supply technicians, and other key contacts and begins firing off messages.

Getting a part can be cause for a quick celebration, such as when a $13,000 helicopter part arrived at Comanche. The LAR had good reason to celebrate because an OH–58D Kiowa Warrior helicopter would come off aircraft-on-the-ground status.

Apart from expediting the flow of hundreds of parts each week, the supply LAR also works with the Task Force Eagle Logistics Task Force materiel management center at Camp Comanche to eliminate several thousand requisitions submitted earlier but no longer valid. The cancellation of 62 radiator requisitions, for example, saved $62,000. In 6 weeks, his efforts returned hundreds of thousands of dollars to the contingency operations account.

Saving Money by Fixing Forward

Nothing gets the LARs' adrenalin pumping faster than

readiness problems. However, they also understand the connection between readiness and the economics of an Army supported by taxpayers. LSE operations generate millions of dollars in savings each year. One source of savings is the LARs' abilities to diagnose and correct the root causes of materiel problems instead of merely replacing components. Another is close coordination between LARs and their commodity commands, which results in depot-level repairs being performed locally.

The AMCOM LAR and an AMCOM engineer saved more than $2 million in the first half of this year by fixing forward. In one instance, when a void in the honeycomb panel on the top of an OH–58D helicopter was discovered, the LAR and engineer developed an AMCOM-approved procedure that enabled the unit mechanics to make the repair for $6,000. Normally, the aircraft would have been evacuated on a lowboy trailer to Germany, then flown on a cargo aircraft to Corpus Christi Army Depot, Texas, for repair—a lengthy process that would have cost an additional $184,000, not counting transportation and manpower costs. In another instance, the LAR and the engineer developed a procedure to replace locally the beaded panels (crash-absorbing airframe structures) on two UH–60L Black Hawk helicopters. This saved more than $500,000 and increased aircraft readiness.

☐ **A ManTech contractor boresights a Nightstalker, which is a video intelligence prototype being tested in Bosnia.**

The CECOM avionics LAR's efforts in repairing parts locally saved more than $500,000 in the first half of this year. The training he has presented on the UH–60L helicopter stabilator control system, which keeps the aircraft flying level at different speeds, has provided young soldiers the skills and confidence to make the critical and delicate electrical and mechanical adjustments that must be performed on the stabilator whenever any part associated with flight control on the aircraft is replaced.

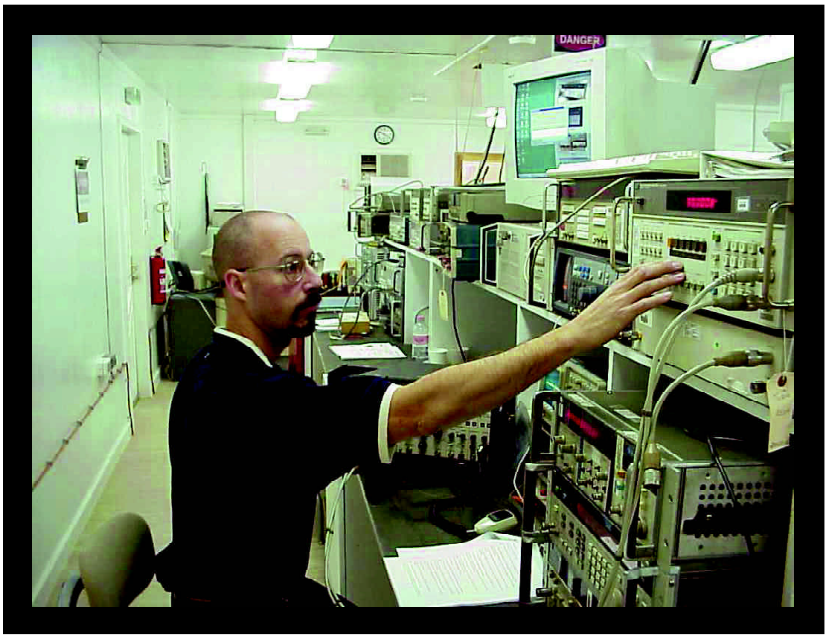
The Vital Role of Contractors

Several contractors over which LSE–B has command and control have saved the Army money this year. The Army Oil Analysis Program (AOAP), run in Bosnia by DynCorp, a Government contractor, is another LSE–B money saver. In addition to regulating the frequency of aircraft oil changes, AOAP analyzes the metallic content of oil samples from ground vehicles to determine when oil changes actually are needed. Of about 13,000 samples analyzed in Bosnia this year, only 150 ground vehicles required an oil change. Relying exclusively on the vehicles' lubrication orders would have resulted in 13,000 oil changes. At a minimum of $150 per oil change (the cost for a HMMWV oil change), the resulting savings from AOAP this year reached almost $2 million by midyear. [An article on AOAP can be found in the September-October 2000 issue of *Army Logistician.*]

DynCorp contractors also operate the test, measurement, and diagnostic equipment lab that calibrates all tools and equipment—from the most basic to the most advanced—used in Bosnia. They also make sure the equipment is repaired and functioning.

In a small office on Eagle Base, the contracting officer's representative (COR) for CECOM manages the activities of about two dozen ManTech International Corporation contractors who run the Division Automation Management Office (DAMO) and the Intelligence Electronic Warfare Regional Support Center. This mission presents a complex montage of both technical and human challenges every day.

Take, for example, a call the COR received late one



☐ A DynCorp contractor sets up calibration equipment at the AMC LSE–B test, measurement, and diagnostic equipment laboratory.

afternoon asking her to install satellite communications on a HMMWV for a mission scheduled for midnight. When she asked the caller about the system, there was a pause at the end of the line. In fact, no one in Bosnia seemed to know much about the system, and it was not until later that the COR learned she was dealing with one of seven Army prototypes.

Alerted by the COR, the Intelligence Electronic Warfare Regional Support Center site manager and his team of ManTech technicians dropped what they were doing and began their race against the clock to get the system installed in time. Since the disassembled prototype had neither instructions nor tools, the team relied on their technical experience and intuition along with an assortment of personal tools that the site manager had carried with him to Bosnia. Before midnight, the satellite communications were ready.

Nearby, another team of ManTech contractors in the DAMO keeps the day-to-day operations of the local area network in the Tuzla sector running smoothly. This ManTech site processes about 150 accounts each week and safeguards security through a vigorous information assurance program. This DAMO section recently helped construct Task Force Eagle's tactical web site, which it now maintains, and currently is developing a new life-cycle management plan.

The DAMO help desk handles user software problems. Hard drives, monitors, and printers are taken nearby to the LSE's forward repair activity, which is staffed by computer repair technicians from Tobyhanna Army Depot, Pennsylvania. Most hardware is repaired on site at Eagle Base, and there usually is no interruption in the unit mission because the forward repair activity maintains an equipment float (a stock of repaired equipment ready to be swapped out for broken equipment).

The 140 Balkans Digitization Initiative-Enhanced Information Systems in Bosnia provide communications for patrols, operations centers, and unit commanders and a real-time operational picture, along with specific status information such as location, course, elevation, and speed of patrols. The systems operate much as laptop computers, receiving input from global positioning satellites.

More than 1,500 soldiers, Department of the Army civilians, and contractors have served in LSE–B since the historic bridging of the Sava River in December 1995. Apart from their technical knowledge, an integral part of the LSE–B experience has been hard work. Providing this service requires 14-hour days, 7 days a week. Nobody seems to mind the long hours. An AMCOM LAR who is on his fifth tour speaks for most of those who have served at LSE–B. "It may not be politically correct," he says, "but I see myself as working for these soldiers. They're the ones who are putting in the really long hours." Utzig echoes the thought: "Not a day goes by that I'm not amazed by the things our folks do to support this task force and take care of our young soldiers." **ALOG**

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Army Transporters Part the Black Sea

by Major Earl Kennedy

For most of the 20th century, the Black Sea was a Soviet-dominated body of water that linked the sunny Mediterranean to places with names right out of a spy thriller—names like Odessa, Constantza, and Burgas. Now, however, Army transporters have broken through yet another wall and opened the Black Sea and its ports to movement of U.S. Army units deploying to and from Kosovo. The story of how U.S. equipment came to be loaded at a port once in the iron grip of the Warsaw Pact is a shining example of the negotiation skills, flexibility, perseverance, and determination of Army transporters to "Keep 'em moving!"

> By the time people read this article, 1st TMCA planners probably will be working on the next step already, continually improving theater transportation.
>
> —Colonel Charles Sumpter, Commander, 1st TMCA

Previous Logistics Leaps

The 1st Transportation Movement Control Agency (TMCA), the executive agent for all movement in U.S. Army Europe and the U.S. European Command (EUCOM), first cracked the eastern European transportation system in 1995. In support of movement to the Implementation Force in Hungary and Bosnia, the 21st Theater Army Area Command (now the Theater Support Command [TSC]) opened rail and commercial truck traffic carrying U.S. equipment and sustainment supplies through the former Warsaw Pact nations of Czechoslovakia and Hungary. Gaining approval for the new route was a major undertaking that required unprecedented cooperation among the logisticians of the 21st TSC, host nation governments, and commercial partners.

In 1999 and 2000, 1st TMCA took an even bolder logistics leap. The unit researched, negotiated, and opened Pan-European Rail Corridor No. 4 to U.S. Army traffic, thereby allowing U.S. forces to deploy strategically by rail from central Germany through eight nations directly to the Kosovo Force (KFOR) in Macedonia and Kosovo. The new route was an exciting step forward that streamlined the deployment process.

Until that time, supplies had been moved by rail from the host nation, uploaded at the port of Bremerhaven in northern Germany, shipped around and into the Mediterranean Sea, offloaded at the Greek port of Thessoloniki, and moved onward to the KFOR area of operation. That costly and time-consuming process was complicated further by ongoing hostility with the local population in Greece. (For the story of those efforts, read "Forging an Alliance" in the September-October 2000 issue of *Army Logistician*.)

The 21st TSC and 1st TMCA worked to improve the reception, staging, and onward movement (RSO) of units, equipment, and personnel. Ultimately, we were paid big dividends in the form of reduced costs and increased transport speed.

Thinking "Out of the Box"

With each new success, the options for deploying, reinforcing, and redeploying our forces in the Balkans multiplied. However, 1st TMCA still was not content with those options, so we again looked at a map of Eastern Europe to see if even better possibilities existed.

There, on the eastern edge of the Balkans, lay the Black Sea. Could we use its ports? What benefit could opening the Black Sea offer our leaders, and, despite all the cultural and administrative challenges, could those ports be opened safely and reliably to support the biannual rotation of forces to and from Kosovo? These questions, and hundreds more, arose during our efforts to deploy through a Black Sea port.

"We couldn't be satisfied with past glory," said Colonel Charles Sumpter, 1st TMCA's commander. "I challenged my guys to think out of the box, and they did just that."

Narrowing the Search

First, 1st TMCA researched potential ports. Clearly, being closer to the KFOR area of operation was an ad-

☐ Burgas, a deepwater port on the Black Sea, provides the necessary facilities for both roll-on-roll-off and lift-on-lift-off operations.

vantage, so the search was restricted to ports along the western coast of the Black Sea. The three most likely candidates were the Romanian port of Constantza and the Bulgarian ports of Varna and Burgas. After a thorough check of published information on the ports and the national infrastructures that would have to be tapped to support the RSO of equipment, TMCA planners were able to verify that each of the three ports justified an initial reconnaissance.

The first port we surveyed was the port of Constantza in Romania, the northernmost of our three candidates. We found it to be one of Europe's largest, most capable ports. Constantza was capable of berthing our largest ships, offloading, and, with some modifications, uploading to railcars for onward movement. Staging areas were plentiful, and port services were modern and available. There was, however, a catch.

The rail infrastructure in Romania, like that of the rest of the Balkans, was a concern. The railcars simply were inadequate, both in numbers and types, to support a substantial movement. Railcars would have to be brought to the port from other contributing member nations of the European commercial rail community. The heavily industrialized countries of Western Europe, such as Germany, France, the Netherlands, and Austria, have more robust fleets. However, they are understandably reluctant to ask their commercial customers to send empty railcars on unproven missions with questionable profit potential.

The TMCA's second concern with Constantza was the distance from its port to the final destination in Kosovo. That distance and the additional border crossing we would incur between Romania and Bulgaria could increase the overall transit time required to deploy unit equipment. Despite the cooperative relationship we had with officials in the Romanian Government and Ministry of Defense and with port officials, Constantza appeared to hold the least potential for KFOR support.

Eliminating the Romanian port allowed us to focus our search on Bulgaria. Initial research showed that using a Bulgarian port south of Romania would reduce the sea leg and, because it was closer to KFOR, also would reduce the final leg of the onward movement to the destination. Less distance equates to less time and quicker deployments—important factors in choosing a port. While railcar availability remained a concern, the indicators looked extremely promising, and a team led by 1st TMCA moved on to Bulgaria to conduct an initial reconnaissance.

Because of experience with previous operations in Bulgaria, 1st TMCA was comfortable with the host nation's commitment to the success of its mission. During earlier operations in the western Bulgarian town of Radomir, we had offloaded M1 Abrams tanks and uploaded them to heavy equipment transports for movement to Camp Able Sentry in Macedonia. Support of those operations by both the Bulgarian Government and commercial businesses had been outstanding. They provided security, rail services, medical care, billeting, and a wide variety of life support that allowed our task force to concentrate on deploying the tanks to their final destination safely.

Once again, we were greeted with open arms of absolute cooperation upon our arrival in Bulgaria. Our colleagues at the National Logistics Coordination Center (NLCC), the Bulgarian Ministry of Defense executive agent for logistics support to international partners, sponsored our visit and facilitated our reconnaissance.

☐ A joint U.S.-Bulgarian survey team, made up of 1st TMCA soldiers and officials and representatives of the Bulgarian National Logistics Coordination Center, verifies the capacity of one of the main piers in Burgas.

Colonel Slavcho Uzunov, Deputy Director of the NLCC, met us in Burgas with interpreters. Over the next 3 days, Colonel Uzunov assisted us on visits to three ports. At Varna, near the Romanian border, we visited both Varna East and the newer Varna West, located 18 miles up a deepwater channel. On the final day, the team visited the southern port of Burgas.

Conquering Obstacles

Once the reconnaissance group returned to Germany, the real work began. The question was not just which Black Sea port was best, but also if we should choose any port on the Black Sea over established ports in Greece and northern Germany. In cooperation with the staff of the 21st TSC, 1st TMCA completed a comprehensive transportability analysis that contrasted the three Black Sea ports with both Thessoloniki and Bremerhaven. That analysis revealed several challenges.

Nearly 70 years ago, several nations signed an agreement that came to be called the Montreux Convention. This agreement, designed to limit and restrict warships entering the Black Sea, bestowed on Turkey the power to veto any warship transiting the Bosporus and Dardanelles straits separating the Black Sea from the Mediterranean. Those two narrow waterways are the only ways in and out of the Black Sea. Without Turkish approval to transit those straits, any decision to use a Black Sea port would be out of the question.

TMCA planners, working with the International Law and International Relations divisions at EUCOM and the staffs of the 21st TSC G5 and the Military Sealift Command, concluded that the Montreux Convention presented no appreciable challenge, because we were not likely to use "gray-bottom" (Navy) vessels for our mission. The scorecard thus far read: one challenge down, more to come.

The Cargo Preference Act of 1904 requires ocean movement of U.S. cargo to be offered first to any reasonably available U.S.-flagged vessel before it can be booked aboard a foreign-flagged ship. Unfortunately, U.S.-flagged carriers had virtually no regular service into the Black Sea.

Working through the Military Sealift Command-Europe, we were able to secure shipping that met the requirements of the 1904 act. However, questions about the availability of a vessel that could pick up cargo in

the continental United States and deliver it to the Black Sea took months to resolve.

With the terrorist bombing of the *USS Cole* still weighing heavily on everyone's mind, force protection became a paramount consideration in deciding whether or not to use the Black Sea. An exhaustive analysis by the 21st TSC Provost Marshal's Office, counterintelligence officers from the 66th Military Intelligence Group, and host nation security experts outlined the necessary modifications needed to ensure that the RSO mission could be completed safely.

Perhaps the most important factor in favor of using Burgas was its proximity to several Bulgarian military billeting facilities. One, at Sarafovo, served as a military-only summer resort for the Bulgarians. The camp was enclosed in a fence, guarded by military police, and located a discreet distance from the road, so it provided a relatively secure environment to set up a task force logistics support area. With a few modifications to the camp, we could ensure the security of our deployed soldiers and civilians.

Our analysis, presented as a decision briefing to Major General Richard A. Hack, commanding general of the 21st TSC, eliminated Constantza and both ports in Varna from contention. Burgas, Thessoloniki, and Bremerhaven then were compared and contrasted.

And the Winner Is

The winner was Burgas, because it offered a relatively safe, fast option. Burgas compensated for its shortcomings by having a new port that supported the Theater Engagement Plan and offered a variety of options that would make it useful for KFOR, Partnership for Peace, North Atlantic Treaty Organization, and bilateral operations and exercises. With his decision to use Burgas, General Hack put into motion the considerable power of the 21st TSC and its subordinate brigades to execute a most daring logistics plan.

General Hack tasked the 29th Support Group, commanded by Colonel Thomas Newman, to provide command and control of a controlled test of the port and an unprecedented, full-scale deployment of forces through Burgas. Colonel Newman assembled a task force under the command of Lieutenant Colonel Tom Boyle, the Support Operations Officer for the 29th Support Group, bringing together the parts needed to execute the mission. That task force grew to encompass communications, security, food service, port operations, and movement control personnel. All were dedicated to the success of the mission—redeploying a light infantry battalion from KFOR through Burgas at the end of its 6-month rotation in February 2001.

Testing the Waters

Rehearsals, rock drills, more reconnaissance visits, contracts, in-process reviews, and long negotiation sessions with Bulgarian Government officials, port authorities, and port service providers all led up to the departure of the task force for Burgas. With the 9 February departure from Kosovo of four trains of equipment belonging to the 3d Battalion, 27th Infantry Regiment, everything in Burgas was ready—the operation was a "go."

Overcoming the inevitable barriers of language and culture and the challenges of unfamiliar documentation and procedures, the trains were offloaded and the equipment uploaded to the ship successfully, safely, and ahead of schedule. On 16 February, the task force left Burgas for Germany.

Of the operation, Colonel Sumpter said, "It is rare to see anything through from conception to execution. I am so proud of the teamwork of every one of our soldiers and civilians, not just the ones who actually went to Burgas, but also all the folks behind the scenes who made this first use of Burgas such a tremendous success. Now, it's back to the shop to make the changes we need to make a full-scale rotation go as smoothly as this test."

The next step was a full rotation that would include as much as 10 times the 250 pieces of equipment moved during the test. That rotation, which began in late April 2001, included the complex mission of processing helicopters for shipment. Again the operation was a tremendous success. Burgas proved to be a robust RSO environment that can provide continued support not only to KFOR but also to all movements of U.S. cargo into the Black Sea.

A lot of work is ahead for 1st TMCA and the 21st TSC as they continue to improve the Burgas port operation. Considering the enthusiasm and professionalism focused on this unprecedented move of U.S. forces through the Black Sea, the smart money is on a long and successful relationship. **ALOG**

Major Earl Kennedy is the Brigade S2/3 for the 1st Transportation Movement Control Agency in Kaiserslautern, Germany. He has a bachelor's degree in education from the University of Georgia and a master's degree in administration from Central Michigan University. He is a graduate of the Transportation Officer Basic and Advanced Courses, the Combined Arms and Services Staff School, and the Army Command and General Staff College.

The CAISI Connection: A Wireless Solution for the Digitized Battlefield

by Captain Joseph M. Colacicco

The Army's move toward a digitized force is giving warfighters increased situational awareness and better tools for planning and executing operations. For logisticians, this creates a greater need for real-time information, faster reporting, and a smaller logistics footprint. All three of these requirements involve improved connectivity to the Standard Army Management Information Systems (STAMIS) used to provide logistics support to our soldiers. The logistics community has reached another significant step in accessing information with the development of the wireless Combat Service Support Automated Information System Interface (CAISI).

Some people undoubtedly will ask, "Why do we need this new technology? Our information flow is just fine in garrison." The answer is twofold. First, the information flow in garrison typically uses the garrison local area network (LAN) and is radically different from the information flow in a field environment. The second reason we need the CAISI is that systems in the field need a network architecture in order to interact with each other and pass information. Unfortunately, no practical solution has been found to replicate the garrison capability in a field environment—until now.

The Road to CAISI

The Army first realized its need for a network solution while reviewing lessons learned from Operation Desert Storm. There, connectivity was provided by soldiers carrying disks from one computer to another. Though effective, this method obviously was not the most efficient. The Army began to look at newly developed technologies and rapidly evolving network systems for a new way to connect its logistics systems.

In 1992, the Army demonstrated one connectivity solution in the 1st Corps Support Command at Fort Bragg, North Carolina. It was called "near-term fix" (NTF), and it eliminated the need to transfer disks. The NTF consisted of Sun computer workstations that consolidated the data transferred from STAMIS and used the "send mail" function to send it over the tactical network.

This solution had several flaws. The biggest problem was that a concentrator was required at each end of all network communications links among various STAMIS, even if one of those systems was network capable. Another problem was the sheer size of the NTF. The Sun workstation consisted of 17 separate components and associated cables and connectors, which made it difficult to move quickly in a high operating tempo environment. The NTF also had a complex user interface, but there was no formal training available on its use in Army Training and Doctrine Command schools. The final problem was that the "store and forward" e-mail function did not support the real-time data communications required by the Objective Supply Capability, Total Asset Visibility, and Total Distribution System programs.

Technology Moves Forward

In 1995, the CAISI Mid-Term (CAISI–MT) replaced the NTF. CAISI–MT allowed users to make direct file transfers instead of having to use "send mail," thus providing a great first step toward creating a functional logistics field network. CAISI–MT provided LAN technology to units in the field, enabling continuous network connections without using modems. It consisted of a ruggedized transit case containing a Cabletron MMAC–8 modular hub (eight-slot chassis), a terminal server, and a management module. The keyboard and monitor were separate. Although this system was effective, STAMIS users considered it bulky and extremely heavy at over 148 pounds. It was demonstrated successfully at Fort Bragg, but a better model—a smaller Cabletron MMAC–3 modular hub (three-slot chassis)—was developed before its actual fielding. The MMAC–3 weighed only 84 pounds and used a laptop computer that could connect 82 users.

The Cabletron MMAC–3 modular hub represented a huge leap forward in network technology for the Army.

Fielding of the CAISI–MT began in October 1996, and the 46th Corps Support Group (CSG) (Airborne) at Fort Bragg, North Carolina, used it with great success during a field training exercise in early 1997. It enabled the supply support activities to transmit data between the field site and the 2d Corps Materiel Management Center (CMMC) in the garrison. This proved the ability of CAISI–MT to facilitate data transmission over the tactical network to a garrison. The 46th CSG could send data to the CMMC as well as "telnet" to various sites at Fort Campbell, Kentucky, and to the CAISI-MT contractor in Fairfax, Virginia. The CAISI–MT went on to have operational successes in Haiti and Bosnia.

A supplement to the introduction of CAISI–MT was the development of Transmission Control Protocol/Internet Protocol (TCP/IP) technology. CAISI–MT, coupled with TCP/IP, enabled logisticians to pass information to multiple users anywhere in the world in a matter of seconds by taking advantage of the Internet. This was the beginning of web-based logistics.

Tethered Technology

CAISI–MT provided new capabilities to the logistics world, but it was limited to the capabilities of its thin coaxial cable. This meant it had to be located within a 185-meter radius of a mobile subscriber equipment small extension node switch. STAMIS users beyond that distance connected to the system with field wire that weighed 95 pounds for every mile and transmitted data at extremely slow speeds.

Although CAISI–MT was easier to transport than the NTF, its dependence on coaxial cable and field wire made it extremely difficult to jump locations without abandoning the cable and wire. The wire had to be reconnected every time the system was moved to a new location, which added considerable time to set-up operations. Therefore, CAISI–MT served as a functional system for units that remained in one location. Units that moved continuously found its wire requirements and set-up times prohibitive. As a result, CAISI–MT was ignored in training environments.

Connectivity Gone Wrong

The difficulty of setting up and operating CAISI–MT caused units to find other ways to pass data in the field. For example, STAMIS users in a brigade participating in a rotation at the Combat Maneuver Training Center at Hohenfels, Germany, had to connect to the data network to pass requisitions and receive status information. However, the existing phone lines in the brigade support area (BSA) were substandard and could not support large transfers without losing data. The solution to the problem seemed obvious: the brigade would write its data to disks. With that decision, the brigade immediately fell back to the system that had proven cumbersome during Desert Storm in 1991.

Here's how the information flowed in that brigade using the Unit Level Logistics System-Ground (ULLS–G). Units prepared their requisitions and maintenance updates once a day and wrote those files to disks. This took two disks per company—one for requisitions, which went to the warehouse, and one for maintenance updates, which went to the maintenance shop office. The shop office input the information on the maintenance disks into the Standard Army Maintenance System-Level 1 (SAMS–1), and those files were stored on a consolidated maintenance disk. The requisition disks were passed to the supply organization to input the information into the Standard Army Retail Supply System-Level 1 (SARSS–1). Unfortunately, if the SARSS–1 was located in the garrison because of field connectivity difficulties, the consolidated maintenance disk had to be sent to garrison for input into the SAMS–2 and transmission to the division support command. A truck driver returning to home station would carry the disks in a "weatherproof container" (Ziploc® bag) to the warehouse and to the support operations representative in garrison. The data then would be loaded into the respective STAMIS. For status information to flow back down to the customer, the new disks then had to be placed into the same weatherproof containers and sent back to the field with the next day's deliveries for distribution to the customers.

The Wireless Solution

This clearly was not an effective way to use our logistics technologies. The Army needed a way to replicate garrison networks in the field. Enter the wireless CAISI. The CAISI project engineers took full advantage of available technologies and developed a wireless CAISI. The new system is flexible, easy to use, and connects an entire brigade's STAMIS without wires. It transports easily and links unclassified logistics systems together through a wireless network.

CAISI consists of commercial, off-the-shelf technologies in a modular system, which permits components to be replaced without difficulty and will allow easy upgrades in the future. The system can function in garrison to extend the LAN to units without connectivity and to tactical environments without changing network addresses. The same system is used in the field and in garrison without changing anything. In a forward support battalion, the CAISI can establish a wireless LAN that can connect up to 294 systems that are widely dispersed throughout a support area and rapidly transmit the information through the tactical network.

The CAISI for division and below consists of a service support representative kit, 9 CAISI bridge modules,

and 30 CAISI client modules. A CAISI will be assigned to each support battalion headquarters and will be used to set up wireless combat service support LANs from the brigade, through the division and corps, to the echelons above corps. It will connect all logistics STAMIS, including those used by maneuver units. The CAISI will provide industry-standard connectivity for all computer users in the BSA. This means that any unit in the BSA will be able to use the Internet or any other network system to support its operations.

The client module, which weighs only 9 pounds, is the actual user level of CAISI. It consists of a base unit that can connect seven computers and allow them to transfer information via line-of-sight radio to the bridge module. The actual user interface with the client module is simple to operate: plug a computer into it, set up the antenna, and turn on the switch. The system can transmit information securely up to 2 kilometers with a data transfer rate of 11 million bytes per second.

The bridge module serves as a relay station for the client module. This component weighs 25 pounds, including the antenna. It can transmit data at speeds of 11 million bytes per second to a distance of 6 kilometers. In addition to relaying signals from client modules, it can support up to 14 computers wired directly into it. The bridge module is maintained by the support battalion S6 (automation officer) and monitored by the STAMIS user. One bridge module is located with the signal section in the BSA. There, CAISI interfaces with the network encryption system and enters data into the tactical packet network (TPN). The data move through the TPN to other LAN locations and systems, providing a theater logistics network. This permits real-time data transfer and assists with meeting the Army's goals for Velocity Management, Total Asset Visibility, and just-in-time logistics. This digital network upgrade increases transmission speeds and enables the use of web-based logistics.

The Brigade Revisited

Here's how information would flow in that same brigade at Hohenfels using CAISI. The ULLS–G computer would connect to a client module located in the BSA. When the operator ran the requisition and maintenance processes, the signal would transmit data to the bridge module. The information for the maintenance update would travel through the BSA to the SAMS–1 computer and enter the system. The supply data would move through the base bridge module, through the signal node, and into the TPN, where it would connect with the SARSS–1 computer at home station. The SAMS–1 computer would conduct a maintenance update, and its data then would be transmitted to the SAMS–2 computer at home station. The updates would pass back through the TPN to the ULLS–G system in the BSA. The entire process would take just a few minutes, and no one would have to get up from his chair!

Other Benefits and Limitations

CAISI also supports garrison logistics operations. The system can be used to transmit data without using the Directorate of Information Management's LAN. This will greatly enhance capabilities in areas like Germany, where many installations do not have networks and still use modems to interact. A major benefit of CAISI is that the network addresses used in garrison remain the same when the unit goes to the field or deploys. This prevents blackout periods while the systems are reconfigured or wire is put in place.

The new CAISI does have some limitations. The first is that it is a line-of-sight transmission system. This means that transmission distances are dependent on terrain features and manmade obstacles. Increasing the number of bridge modules in the support areas minimizes this problem. However, each bridge module can relay the signal of any client or bridge module; there is no one path for a client module to reach the root bridge module. Instead, the signal automatically follows the quickest path from the client module to the root bridge module into the mobile subscriber equipment network.

Another limitation is supporting bridge modules that do not have a small extension node (SEN) switch operating in the area. (An SEN switch consists of an S–250/E shelter mounted on a high-mobility, multipurpose, wheeled vehicle. The SEN switch contains switching, multiplexing, and communications security equipment that supports the secure digital communications of a command post.) This problem can be alleviated somewhat by limiting the distance from the bridge module to the forward support area and eventually will be overcome by more advanced signal technologies.

The wireless CAISI fills a critical role in logistics support and advancement. By providing wireless communications, CAISI reduces set-up and tear-down time, covers a broader area, and supports more users in a given area with data speeds high enough to support web-based logistics. It puts the logistics community on the path to providing real-time logistics data and enabling faster requisitions. This makes CAISI an important tool in providing responsive and efficient support to our combat operations. **ALOG**

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The Inland Petroleum Distribution System: Can It Fuel the Force?

by Lieutenant Colonel Kimberly A. Weaver, USAR

> The transformation of the force that is at the heart of the Army Vision is fundamentally a logistics process. This is because achieving the agility that will be required by the transformed Army will depend greatly on creating an agile logistics structure.
>
> —General Eric K. Shinseki
> Chief of Staff of the Army

Transformation is sweeping like a tidal wave across the Army. It is the Army Vision. Modern, agile logistics support capabilities are the cornerstones to the success of the Army Transformation Strategy. The dynamics of developing logistics support structures and systems that meet the requirements of the legacy force, the interim brigade combat team, and the Objective Force of the future are staggering. Simultaneously fielding a force of tomorrow and maintaining the force of today require logistics support systems that encompass the full spectrum of innovative technologies of the future while embracing existing capabilities.

Under the Army Strategic Logistics Plan, current logistics systems must be transformed to meet the demands and challenges of the Army Transformation Strategy. Successful implementation of the plan requires technological and systemic changes in every facet of current logistics operational capabilities. An important requirement of the plan is an enhanced ability to fuel the force with bulk petroleum.

Service Responsibilities

Department of Defense (DOD) Directive 4140.25M, DOD Policy for Energy Commodities and Related Services, and Joint Publication 4–03, Joint Petroleum Doctrine, charge the Army with supporting all U.S. land-based forces, including Air Force, Marine Corps, and Navy forces ashore. The Army is responsible for moving and distributing fuel forward using pipelines, hose lines, barges, rail tank cars, tank trucks, and aircraft.

In an undeveloped theater, the Army transports bulk petroleum inland from the high-water mark. The Army also funds and maintains tactical storage and distribution systems that supplement existing facilities during wartime. The Navy provides bulk petroleum support to the high-water mark and bulk petroleum support to its own vessels at sea or in port.

If combat service support is to be agile and responsive, it must economize strategic lift requirements. Mobility, rapid response, and control are key considerations in determining how bulk petroleum will be supplied in a theater of operations. A fixed pipeline is the preferred method of inland distribution in a developed theater, because infrastructure such as refineries, storage tanks, and industrial pipelines may be in place already and can support supply and distribution of bulk petroleum.

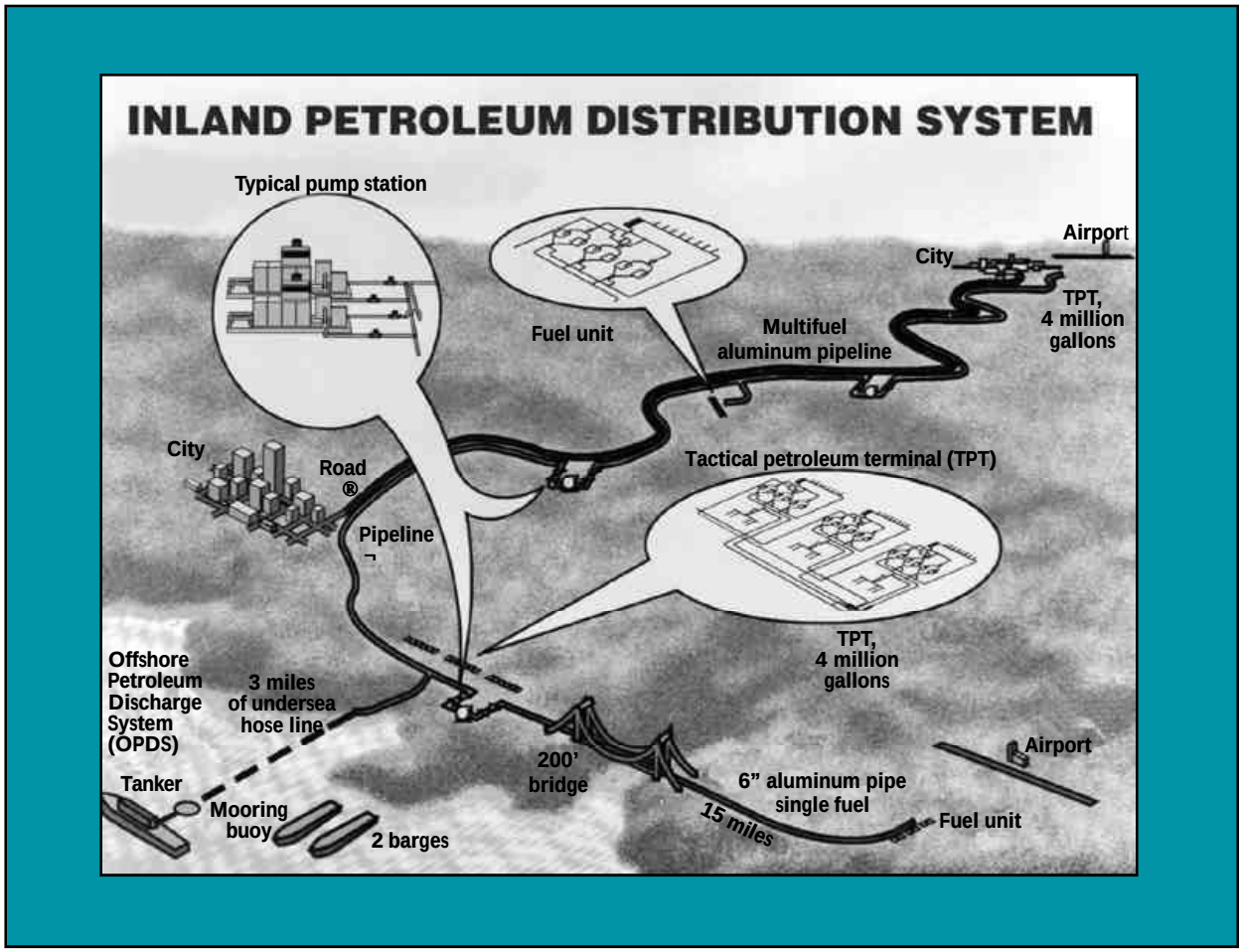
Fuel Requirements in an Undeveloped Theater

In the mid-1970s, the Army recognized that there was no bulk petroleum system to support fuel requirements in an undeveloped theater of operations. In 1977, the Army Quartermaster School at Fort Lee, Virginia, published a study entitled "Bulk Petroleum Fuels Distribution in a Theater of Operations." Three significant conclusions were drawn from the study. First, pipelines are the most efficient means of transporting large quantities of bulk fuels. Second, pipelines should be extended as far forward into the combat zone as possible. Third, a requirement exists for a pipeline system and an over-the-beach ability to resupply fuel from ocean tankers to forces deployed ashore.

As a result of that study, the Inland Petroleum Distribution System (IPDS) was developed in the mid-1980s to provide bulk fuel support to deployed military forces. The IPDS consists of tactical petroleum pipelines, tactical storage systems, mainline pump stations, and associated support items.

Offshore Petroleum Discharge System

The Navy supports bulk petroleum requirements in theater with joint logistics over-the-shore operations using the Offshore Petroleum Discharge System (OPDS). An OPDS usually is used to deliver fuel to storage ter-



☐ The IPDS can be tailored to a variety of locations and transport distances and can be used in developed or undeveloped theaters of operations.

minals on the shore in undeveloped theaters where pierside petroleum discharge facilities are unavailable. There are five OPDS tankers, three of which are pre-positioned afloat—the *USNS Henry J. Kaiser* in the Mediterranean, the *SS Chesapeake* in the Indian Ocean, and the *SS Petersburg* in the Guam-Saipan area.

Situated up to 4 nautical miles from shore, an OPDS tanker can provide bulk petroleum to military forces on shore for a sustained period, delivering up to 1.2 million gallons of fuel per 20-hour pumping day. It can dispense two products at the same time, but doing so reduces ship standoff distance from 4 to 2 nautical miles. The OPDS pumps fuel through a hose line to a shore-based petroleum terminal. Two beach termination units are carried aboard an OPDS tanker, and, depending on the requirement, one or both may be installed. The beach termination unit acts as an interface between the OPDS hose line and the IPDS and represents the high-water mark for the OPDS. Installed and operational within 7 days, the OPDS does not limit beach access, and other tankers can deliver fuel to it by pulling alongside.

Tactical Petroleum Terminals

Fuel is pumped inland through the IPDS to storage terminals configured into fuel units. These fuel units, consisting of six 210,000-gallon bulk fuel tank assemblies (BFTAs), have a total storage capacity of approximately 1.2 million gallons. Three fuel units used together form a tactical petroleum terminal (TPT). A typical TPT, with optional 50,000-gallon tanks, has a storage capacity of approximately 4 million gallons. In an undeveloped theater, the BFTAs and TPTs may comprise the entire bulk petroleum storage capability. Developed theaters may use additional industrial bulk storage tanks, thereby reducing the TPT storage requirements.

Logistics Fundamentals Versus the IPDS

To determine future logistics procedures and systems for handling bulk petroleum, logistics planners should consider eight fundamental characteristics of effective and efficient logistics support. They are responsiveness, simplicity, economy, flexibility, attainability, sustainability, survivability, and integration. I will dis-

cuss here only those characteristics that best illustrate the effectiveness of the IPDS in complementing the Army Strategic Logistics Plan and meeting bulk petroleum requirements.

Responsiveness. The IPDS was designed to be a lightweight, rapidly deployable, bulk fuel storage and distribution system that could interface with host nation refineries or the OPDS. It is part of the operational project stocks managed by the Army Materiel Command and stored at Sierra Army Depot, California; Sagami Army Depot in Japan; and aboard two Military Sealift Command pre-positioned ships.

Headquarters, Department of the Army, directs the release of IPDSs to meet mission requirements. Each system is configured in a 5-mile set and packaged in a 20-foot International Organization for Standardization (ISO) container that can be deployed rapidly to support a wide range of scenarios.

Though the IPDS is the most economical means of distributing bulk petroleum, significant lift assets are required to deploy it to a theater of operations. Significant time and manpower also are required to install, operate, and monitor the system. Once operational, each pump station must be manned 24 hours a day. The fact that the IPDS cannot be recovered quickly for redeployment or movement on the battlefield raises concern over its ability to support two nearly simultaneous major regional conflicts.

Economy. One of the most compelling arguments for using the IPDS is its ability to bypass intermediate nodes and move huge quantities of bulk petroleum far forward. Strategic lift requirements are reduced because fewer fuel tanker trucks are required to move fuel. Use of the IPDS produces several beneficial byproducts: main supply routes are less congested; fewer fuel tankers in operation mean fewer maintenance requirements and not-mission-capable days; fewer drivers are required; and fuel consumption rates are reduced.

Flexibility. The IPDS can dispatch different fuels into TPTs through single or multiple pipelines. It can be tailored to a variety of locations and transport distances and can be used in developed or undeveloped theaters of operations. Although the IPDS cannot be recovered and redeployed quickly, it is extremely effective in areas where rapid construction is not required and a stable, long-term operation is anticipated.

Sustainability. Storage capacity and stockage policies are critical elements of sustainment. The IPDS can distribute huge quantities of petroleum throughout the theater using industrial pipelines and the OPDS as a source of bulk fuel. However, even these systems have their limitations, as was demonstrated during the Persian Gulf War.

An April 1992 DOD report entitled "Conduct of the Persian Gulf War" reads—

> When force levels were increased, in-theater requirements increased proportionately. Even though the 30 days of supply (DOS) theater stockage policy did not change with the increase in force levels, the ability to stock the larger quantities required by the increased number of users became more of a challenge . . . [Although] an additional 10 DOS were held in reserve in each country at various depots, bases, and refineries, and 15 DOS were maintained by the Defense Fuel Supply Center in Bahrain, United Arab Emirates, Oman, Djibouti, Somalia, and aboard tankers underway in the Arabian Sea and Red Sea . . . the fuel storage was inadequate.

The October 2000 IPDS Overview indicates that 600 miles of pipeline and 16 TPTs are required by the U.S. Central Command and that 190 miles of pipeline and 16 TPTs are required by the U.S. Pacific Command. There are 815 miles of pipeline and 17.3 TPTs on hand in operational project stocks. On the surface, these stocks appear adequate.

Force Structure

Responsibility for the construction and operation of the IPDS pipeline rests with the Engineer pipeline construction companies and the Quartermaster pipeline and terminal operating companies (QPTOCs). There are five Engineer pipeline construction companies, all in the Reserve components. These companies survey the pipeline trace (route), lay up to 90 miles of pipeline, install the pump stations, and prepare the fuel storage sites.

There are 18 QPTOCs; 3 are in the active Army and 15 are in the Reserve components. The QPTOCs install the fuel unit and dispatch fuel to other storage points down the pipeline. While the Engineer pipeline construction companies and the QPTOCs are trained and capable of surveying, installing, and operating the IPDS, they are limited in their ability to project into the theater rapidly. Forces in theater initially will have to rely on military and contract tanker trucks for bulk fuel until the Engineer pipeline construction companies and QPTOCs place the IPDS into operation.

The Future of Petroleum Distribution

Petroleum-based fuels will continue to be the primary fuel for the military for many years. Advancements in fuel efficiency and alternative fuels will have an impact on the quantity of fuel required in the next 20 to 25 years, but indications are that petroleum will continue to be the largest class of supply by volume for the military force. The projected size of the battlefield, the distance

☐ The IPDS in use during a joint logistics-over-the-shore exercise at Marine Corps Base Camp Pendleton, California.

between the fuel source and the customer, and the quantity of fuel needed to sustain the force require a pipeline system that is more responsive, flexible, attainable, sustainable, survivable, and easier to operate than the current system.

Beyond IPDS

The Rapidly Installed Fuel Transfer System (RIFTS), currently under development, will help alleviate the shortcomings of the IPDS. If it is approved for production, the RIFTS will have many of the fundamental characteristics of effective and efficient logistics support.

Responsiveness. The Operational Requirements Document (ORD) for the proposed RIFTS states that it will consist of a rapidly installed, rapidly recovered conduit that can be deployed across all types of terrain. It will be possible to install the RIFTS pipeline at a rate of 20 miles (30 miles objective) per 20-hour operational day and recover it at a rate of 10 miles per 20-hour operational day. This means that 100 miles of pipeline could be installed and operational at any location in the world in 5 days to support troops that arrive within 120 hours of the onset of a conflict. The proposed RIFTS will be capable of crossing roads, trails, additional pipelines, or other obstacles without damage to the system itself or to the obstacles. Improved methods of recovery will allow the RIFTS to be recovered and relocated quickly based on mission need. The system will be able to move as the battlefield moves. Components of the RIFTS are to be stored and transported in standard 20-foot ISO containers by rail, highway, and both fixed- and rotary-wing aircraft.

Simplicity. The RIFTS sensors, motor controls, and electronics will be designed to direct limited attended operations around the clock, and its command and control module will control 50 miles of conduit. The control module, which will require only one operator, will have a leak-detection system that can detect small leaks anywhere along the line. Although significantly less trace preparation will be required with the RIFTS, engineer support may be required to remove large obstacles from the trace.

Economy. One of the RIFTS goals is to reduce strategic lift requirements by at least 20 percent over the existing IPDS. Like the IPDS, the RIFTS will be designed to reduce the requirement for ground tanker trucks. As a result, strategic lift requirements will be reduced, main supply routes will be less congested, the demand for drivers will be less, and fuel consumption rates will be reduced. Unlike the IPDS, the RIFTS will be able to move with the battlefield, enhancing its value exponentially.

Flexibility. The proposed RIFTS design will integrate existing and future hose-line material technology to produce a system that is complete and supportable. It will be tailorable to meet mission requirements in any location or on any terrain. Two RIFTSs could be deployed parallel to each other to provide an even greater quantity of fuel, and the system could be joined in series to support distances in excess of several hundred miles. Its flexibility will allow petroleum managers to plan and conduct petroleum operations more efficiently.

Attainability. The RIFTS is not through the milestone A decision stage (concept phase) yet and faces at least four more decision milestones and funding outlays before it can be fielded, a process that could take as long as 5 years. Initial operating capability will be attained when the first RIFTSs are in operational stocks, training sets are available, and they are logistically supportable. The initial procurement of 100 miles of RIFTS pipeline

is expected to occur between fiscal years 2004 and 2008. Considering that the IPDS currently consists of nearly 900 miles of pipeline, this initial RIFTS procurement will be only enough to augment IPDS in cases when speed and mobility are required in a theater.

Sustainability. The proposed RIFTS will move in excess of 875,000 gallons of fuel in 24 hours. The system will be mobile enough to recover rapidly and move within the battlefield to provide optimal support to the force.

Survivability. RIFTS will be designed to have a minimum shelf life of 20 years for training stocks and 15 years for operational stocks. Once wetted with fuel, it will have a useful life of 15 years and 10 years, respectively. The system will be able to operate in temperatures ranging from –25 to 120 degrees Fahrenheit. Two soldiers will be able to repair leaks in the system, including replacing conduit sections, in 30 minutes or less. The proposed RIFTS also must be designed to withstand nuclear, biological, or chemical decontamination.

Integration. It will be possible to integrate the RIFTS fully with the IPDS and the storage and distribution systems of other services, allied nations, and commercial enterprises. It will transport bulk petroleum from any military or commercial source to storage locations throughout the theater and use commercial pipelines as an additional source of supply.

Force Structure Redesign

As long as the IPDS performs most of the bulk petroleum mission, both the Engineer pipeline construction company and QPTOC are required to support it. However, unlike the IPDS, the RIFTS will not require the Engineer pipeline construction company to install or recover it, because installation does not require extensive preparation of the pipeline trace. Therefore, the company's organizational equipment and manpower requirements are eliminated from RIFTS operations and strategic lift requirements. The QPTOC can install and operate the RIFTS. An Engineer officer or noncommissioned officer authorized on the QPTOC table of organization and equipment could help determine the trace locations and direct the construction of small obstacle crossings. The fielding of the RIFTS should reduce personnel requirements since it requires less labor to install.

The IPDS is clearly an effective means of providing bulk petroleum to the total force. Its capacity for transporting huge quantities of fuel is unmatched by any system currently in the DOD inventory, and its ability to interface with industrial pipelines and the OPDS enhances its relevance. However, it is quickly becoming a cumbersome system because it is not responsive enough or flexible enough to react to fast-paced changes on the battlefield. Its relevance lies in its ability to transport bulk petroleum to fixed facilities in a static environment to support stable, long-term operations.

The RIFTS could provide bulk petroleum support in a fraction of the time required to set up and operate the IPDS. It would have all of the advantages of the IPDS, but be responsive enough and flexible enough to move with the battlefield and operate in any terrain or location where speed in installing a fuel distribution pipeline is essential. Its proposed operational capabilities make it attractive to petroleum planners and warfighting forces at the theater level. However, because its initial operating capability is estimated to occur in fiscal year 2005 and only 100 miles of conduit will be available at that time, the RIFTS cannot replace the IPDS in the near term. Until several hundred miles of RIFTS pipeline are procured, it only will enhance the system already in place.

There is currently no faster, more feasible means of petroleum distribution, and no other system comes closer to meeting the force projection or mobility requirements for the Army's lighter, more agile force than the RIFTS. The capabilities of the RIFTS will be essential to the success of the Army until it transitions to another type of fuel.

By the year 2025, Army modernization plans call for a more fuel-efficient force whose fossil-fuel-powered vehicles are up to 75 percent more efficient. Alternative fuel research is being conducted in the use of biofuels, boron, electric motors, hydrogen, hybrid-electric vehicles, and liquid nitrogen. These revolutionary technologies will reduce theater bulk fuel distribution and storage requirements greatly. However, bulk petroleum still will be required until a common alternative fuel for all DOD vehicles and aircraft is developed. The question logisticians and combat developers must ask themselves is, "Can we fuel the force of tomorrow with what we're developing today?" The leap toward transformation starts with change and innovation now. **ALOG**

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Combat Health Support

by Captain Kays Al-Ali

As the combat trains command post and the medical platoon leader track the progress of the battle, they realize that the combat health support (CHS) plan developed during the military decision-making process will not work. The worst fears of the battalion S4 and the medical platoon leader have come to pass. A medical and casualty evacuation (MEDEVAC/CASEVAC) and treatment disaster rapidly is becoming a major crisis. The CHS plan is not working to collect, treat, or evacuate casualties from the battlefield. The medical platoon's aid stations are outside of the doctrinal support distances. Nonstandard evacuation platforms have not been sequenced with the task force's mission. The combat service support (CSS) and CHS battle command, including casualty-reporting procedures, have broken down completely. Time is ticking away; soldiers are in dire need of medical care. The S4 and platoon leader look at each other and think that it is going to be a long, hard day. Nothing has gone right.

Only through teamwork, heroism, initiative, and flexibility do they make it through the day. As the last casualty is airlifted from the battalion aid station at the end of the day, members of the platoon finally breathe a sigh of relief as they wipe off blood and sweat.

At the after-action review (AAR), the battalion leaders ask, "What will avert another day like today?" They divide the lessons learned into three categories: planning, preparing, and executing.

Determined to avoid another MEDEVAC/CASEVAC situation like the one they had just faced, the S4 and the medical platoon leader take the lessons learned identified in the AAR and, during the military decision-making process, develop a CHS plan that will work.

Terminology

The battlefield framework establishes an area of geographical and operational responsibility for the commander and provides a way to visualize how to array and employ forces against the enemy.

Battlefield visualization is to see the terrain, the enemy, and yourself. Battlefield visualization is an integral and essential part of casualty estimates, CHS planning, preparation, and execution.

The CHS battlefield framework helps medical planners blend medical treatment teams and evacuation teams with one another, as well as with anticipated casualties, in a three-dimensional battlefield visualization of time, space, resources, and purpose. When the medical planners establish geographical and operational responsibilities within the battlefield framework, they then can visualize how medical treatment and evacuation teams will be employed within a given area of operations.

CHS battlespace expands and contracts in relation to the medical platoon's ability to find, stabilize, treat, and evacuate battlefield casualties. Within a given battlespace, CHS planners must understand the effects of geography and terrain and then apply CHS assets appropriately to remove the casualties from the battlefield.

During the past 12 rotations at the National Training Center at Fort Irwin, California, I have observed many successful CHS planners and units. Their ability to clear the battlefield and save lives is based on three principles that I call "foundation principles." (These principles are not found in current Army Medical Department Doctrine.)

My first CHS foundation principle is initiative. For a CHS planner, initiative is a dynamic condition that allows him to dictate MEDEVAC/CASEVAC and treatment according to the unit's capabilities and the ever-changing engagements within the asymmetrical battlefield framework. As more units are fitted with digital capabilities, the CHS leaders' situational understanding of the battlefield framework should improve.

My second CHS foundation principle is depth. This requires CHS leaders to examine how the spectrum of battlefield developments affects to treatment and evacuation resources. As battles become more mobile and asymmetrical, the CHS planner must use depth to conceptualize the physical dimension of operations. The CHS platoon can gain a decisive edge and negate the effects of disrupted lines of communication by deploying treatment teams laterally and in depth across the area of operations.

My third CHS foundation principle is agility. CHS leaders must have the balance and insight to move and shift treatment and evacuation teams as casualty densities shift in the area of operations. They must be aware of the dynamics of current and future engagements unfolding within the battlespace. Agility is tied closely to the art of knowing how and when to adjust the CHS system during and after the fight. CHS leaders also may need to merge treatment and evacuation teams to mass their capabilities at critical times and places within the area of operations. Conversely, merged teams should

This article expresses views of the author that are not necessarily based on Army doctrine.

disperse throughout the area of operations once a critical situation is under control.

Planning

During the mission analysis phase of planning, the medical platoon leader and battalion S1 and S4 produce a casualty estimate for each phase of the operation. Developing a casualty estimate for the operation will determine litter-CASEVAC capabilities versus requirements. Another critical element of the mission analysis process is the logistics planners' visualization of how intelligence preparation will affect battlefield casualty treatment and evacuation. The medical platoon leader must clearly understand the relationships among the battlefield environment, the battlefield effects, the doctrinal enemy template, and the enemy course of action (COA). The interrelationship between the environment and enemy COA will determine the types of casualties the platoon will see in its sector.

The battalion S4 and the medical platoon leader develop their CHS template before they join the military decision-making process. This approach is based on experiences that integrate professional knowledge, doctrine, leadership, training, ethics, and values. As they find their places within the battalion planning tent, they pull out a laminated planning cue card that addresses doctrine, the battlefield framework, a visualization of needed CHS, and CHS foundation principles. This cue card is the result of the last AAR; both the medical platoon leader and S4 want to ensure that, this time, the base CHS plan will be grounded in doctrine and be suitable, feasible, acceptable, and complete.

During COA development, the medical platoon leader and S4 focus on developing a deployment sequence for the battalion treatment teams that is suitable, feasible, acceptable, distinguishable, complete, and supportable, as prescribed in Field Manual (FM) 101–5, Staff Organization and Operations. The Army Medical Department imperatives that the COA should include are forward presence, clearance and evacuation of wounded from the battlefield, and far forward treatment, as prescribed in FM 8–10–1, Tactics, Techniques, and Procedures for the Medical Company.

Wargaming is the final phase of the military decision-making process. It allows the medical platoon leader to validate evacuation requirements against capabilities and match those requirements with the sequencing of treatment teams. As the S2 and S3 use the action, reaction, and counteraction method during the wargame, the medical platoon leader should use a litter-versus-walking-wounded tally.

During and following the wargaming process, the CHS battlefield framework and visualization should become a vivid three-dimensional picture. It is within this framework that the medical platoon leader can relate medical treatment and evacuation teams to one another and to anticipated casualties.

Having published the CSS annex to the operation plan as a product of the planning process, the medical platoon leader and the S4 are confident that the planning cue cards and the lessons learned from the AAR have set the task force CHS system up for success. Knowing that the CSS annex incorporates a CHS plan that relates medical treatment and evacuation teams to one another and to expected casualties increases their confidence. Armed with a doctrinally sound plan, they are ready to enter the preparation phase of the operation.

Preparing

Casualties will occur within the context of direct fire and indirect fire engagements. Where contact is made on the task force's battlespace will determine the type and number of casualties. FM 101–5 says that "rehearsal ensures a common visualization of the enemy, their own forces, and the terrain, and the relationship between them." Rehearsing will provide the opportunity to prepare for proper MEDEVAC/CASEVAC.

The CSS rehearsal should validate the CHS plan throughout each phase of the unit operation order. This validation process demonstrates that the CHS plan integrates into the maneuver plan the logistics imperatives and the CHS principles of anticipation, integration, continuity, responsiveness, clear the battlefield, and forward and en route treatment.

Appendix G of FM 101–5 must serve as a template for the CSS rehearsal. It provides the requirements for planning, preparing, and executing a rehearsal. In preparing to execute a CSS rehearsal, the following should occur—

- If time constraints exist, the S4 and medical platoon leader should use the decision support template before the rehearsal to identify essential events to be rehearsed.
- The S4 and medical platoon leader should verify the time and place of the rehearsal and create a script and agenda to keep the attendees focused on the essential events.
- All attendees should read and understand the operation order to ensure that the participants have a common visualization. They should study the maneuver, fire support, engineer, and CSS graphics before the rehearsal.
- The attendees should bring their troop support plans, including graphics, to the rehearsal.

In the execution phase of the rehearsal, the battalion

staff leader should—

- Conduct roll call.
- Validate task organization.
- Begin the rehearsal by going through the first phase of the task force scheme of maneuver.
- Deploy the enemy (S2 or his representative).
- Deploy the task force (S3 or his representative).
- Advance the task force and enemy forces in accordance with the wargaming sequence of action, reaction, and counteraction found on the wargaming worksheet.
- Determine, upon completion of the enemy action, if conditions have been set for a decision point in accordance with the decision support template.
- Proceed to the next event if the task force has not reached a decision point. If they have reached a decision point, then examine and rehearse the branch and sequels to the support plan.

The most critical juncture during the rehearsal occurs when our forces are brought in contact with the enemy. When our forces come into contact, CHS leaders should ensure that the CHS plan is synchronized and integrated with the maneuver plan. For example, when a unit is at that point of contact and how the contact unfolds in terms of actions, reactions, and counteractions determine the decisive event in terms of CASEVAC.

The first sergeant of the unit that will make contact with the enemy first should talk about the point of contact and the ensuing consequences in terms of the combat systems sustaining casualties. At a minimum, he should address—

- His expectations for this particular action, such as 8 litter casualties and 12 walking wounded.
- Actions of the walking wounded within a particular combat vehicle.
- Actions of the walking wounded in extracting the litter patients from the combat vehicle that has been hit.
- Actions of the wingman, who will provide suppressive fires while the walking wounded and litter patients mount up on the wing vehicle.
- Actions of the wingman, who will report both contact and casualties, deploy with the wounded soldiers, and develop COAs.
- Reports of litter casualties on the A&L net and what the retransmission frequency is beyond FM range.
- Location and number of evacuation platforms within the unit. This is the time and place to determine if the medical platoon has met the evacuation platform requirements.
- Location of the company's casualty collection points. Does the company need to adjust them based on where the contact has occurred?
- Location of the nearest aid station. Does the company need to adjust its location based on enemy contact?
- Location of the ambulance exchange point.
- Main and alternate supply routes the company will use.

Using Appendix G of FM 101–5 as the rehearsal template, the medical platoon rehearses having "a common visualization of the enemy, their own forces, and the terrain, and the relationship between them." The CSS rehearsal validates the CHS plan throughout each phase of the task force operation order.

At the end of the rehearsal, the medical platoon should be confident that the CHS plan is integrated and synchronized with the maneuver plan. In fact, participants should walk away from the rehearsal knowing that the CHS plan is supportable, feasible, suitable, acceptable, and complete.

Executing

Following the rehearsal, the medical platoon leader and other logistics operators within the task force listen to the battalion commander's words of praise. The unit has come far since the last battle. They are now much better prepared than they were for the previous CASEVAC and treatment. The days of scrambling to evacuate the wounded are gone. There will be no more crisis planning and no more trying to regain the initiative because the aid stations were too far back or the evacuation platforms were not located to meet casualty densities. In fact, as the unit crosses the line of departure this time, the company casualty collection points are linked, synchronized, and integrated with the CHS plan.

As the task force's fight is progressing, the combat trains command post and medical platoon leader are able to adjust the CHS system because of their ability to exercise CSS battle command. The A&L net is beginning to provide situation reports as the battalion is making contact with the enemy.

The CHS system is postured to evacuate and treat casualties because the S4 and medical platoon leader have learned their craft. The two of them can analyze information, control the CHS action, react to changes, and, finally, keep the logistics operators within the task force focused on CASEVAC and treatment. **ALOG**

Captain Kays Al-Ali is the medical trainer for the Armor Task Force and Cavalry Squadron Training Team at the National Training Center, Fort Irwin, California. He is a graduate of the Army Medical Department Officer Basic Course, the Battalion Motor Officer Course, the Combined Logistics Officers Advanced Course, and the Combined Arms and Services Staff School.

Commentary

Mechanic Training and Experience

by Chief Warrant Officer (W–3) Al Smith

As the support automotive maintenance officer of the Army's first initial brigade combat team (IBCT) at Fort Lewis, Washington, I face the challenges of providing maintenance support with 36 military operational specialty (MOS) 63-series maintenance personnel. We provide organizational and direct support to the brigade's support battalion and separate companies as well as backup support to six maneuver battalions. One of my greatest challenges is overcoming the mechanics' lack of experience. Our mechanics are usually 18- to 26-year-old E–1s to E–4s with 1 to 5 years of experience. Often, a soldier will spend 3 years at his first duty station working on a particular type of equipment. Then, upon change of station, he will be assigned to a unit with different models of equipment than he has worked with in the past. This causes his proficiency to drop until he is fully trained on new equipment.

I think the Army needs to reconsider how it manages the careers of its mechanics. In the Army, when a soldier does his job well, he is promoted. Of course, once we promote mechanics and they become shop foremen, motor sergeants, or platoon sergeants, they start performing fewer "wrench turning" tasks and more management tasks. While their experience may remain in the motorpool, seldom do any of the mechanics on the floor have more than 5 years of experience. In comparison, the mechanics who work for the installation directorate of logistics, the Ford dealer, or Freightliner usually have 10 to 15 or more years of experience. The Army gives soldiers a few weeks of training on maintenance during advanced individual training (AIT) and sends them into the field to work on equipment ranging in value from $50,000 to $2 million.

I am not trying to take anything away from our mechanics. All of the soldiers supporting the IBCT, regardless of experience, want to "turn wrenches" and like doing it. Some of them are much better at it than I am.

One thing we are told as we go through the IBCT transformation is to "think outside the box." I have done that and have come to the conclusion that we should do a couple things differently. First, we should not discourage mechanics from wanting only to "turn wrenches." If they are good mechanics and want to stay on the floor and work, we should let them. We should not punish them just because they do not want to become leaders but want to work on vehicles full time.

Second, the Army should invest in these soldiers by sending them to places like Oshkosh Corporation and AM General for training. Another option would be to send them to a vocational technical school for a 2-year degree in a maintenance-related field similar to their MOS and Automotive Service Excellence (ASE) certification. Finally, the Army needs to pay mechanics what they are worth. This could be accomplished by giving our professional mechanics professional-level pay.

The time between the professional schools mechanics attend is too long; technology is changing more rapidly than the mechanics are being trained. As I discuss this issue with other maintenance personnel (officer and enlisted), I find that most of them seem to agree. We are told that soldiers coming out of AIT are given just the fundamentals and that they really will learn the job in their units. I can tell you that as more BCTs turn into IBCTs, the units lose the ability to train as they should. For example, under this new configuration, we do not perform routine services on the vehicles; these services are contracted out. One of the benefits that we lose when we contract out is the ability to have our new mechanics, or other mechanics not familiar with the equipment, perform scheduled services. In the past, I had new mechanics perform services for 8 to 10 months to learn about their equipment. I no longer can do this.

Most mechanics will agree that we become good mechanics through repetition. To have mechanics with at least 10 years of experience out on the floor daily, whose only job is to work on equipment, would be an incredible asset for a maintenance officer.

I do not have all the answers, but something needs to change. We have been doing more with less since the drawdown after the Gulf War, and maintenance has become more reactive than proactive. Under the IBCT modification table of organization and equipment, we have even fewer people to accomplish the job. To do more with less, we need more experienced floor mechanics. This can happen only if the Army changes the way it manages its mechanics' careers.

Chief Warrant Officer (W–3) Al Smith is the automotive maintenance officer for the 296th Base Support Battalion, 3d Initial Brigade Combat Team, 2d Infantry Division, at Fort Lewis, Washington.

Commentary

Maintenance: Are We Missing the Mark?

by Chief Warrant Officer (W–3) Addison C. Allen

Army Regulation 750–1, Army Materiel Maintenance Policy and Retail Maintenance Operations, states that operator or crew preventive maintenance checks and services (PMCS) are the foundation of the Army's maintenance program. Having a strong, solid foundation enables the development of a long-lasting maintenance structure.

Is the foundation of the Army's maintenance program solid enough to extend its development into the 21st century? In view of the more complex systems entering the Army's inventory and the transformation strategies introduced by our national leaders, it is imperative that the Army strengthen its operator or crew PMCS program.

When performing maintenance checks, an operator or crew must follow maintenance standards published in the PMCS tables of the –10 technical manuals. The preventive maintenance checks in these manuals are designed specifically to identify potential failures of subcomponents that can cause the main system to fail. These technical manuals also define procedures for troubleshooting and for operating equipment under unusual conditions. However, these procedures are not followed consistently.

Division commanders understand the importance of PMCS, and most of them view it as a force multiplier. They understand that poor maintenance can adversely affect troop morale and safety. They often direct their staffs to develop systems to accurately capture the maintenance posture of their divisions. However, daily monitoring of these systems often does not capture the lack of operator or crew maintenance within subordinate units. Unfortunately, subordinate commanders focus on returning failed systems to operational status rather than on performing regular PMCS, therefore missing many opportunities to strengthen their maintenance foundation.

PMCS Training

Soldiers are trained at various levels of their military education to conduct PMCS. A commentary in the May-June 2000 issue of *Army Logistician*, written by James A. Barrante, stresses the significance of implementing and sustaining an effective PMCS training program. Mr. Barrante wrote that leaders at all levels must ensure that their soldiers receive training and supervision in maintaining their equipment. This concept has been around for a very long time. I remember listening 21 years ago to commanders talking about the importance of implementing and sustaining PMCS training programs.

If this concept has been emphasized for over 20 years, why do combat systems still fail because of a lack of PMCS? Are our soldiers trained properly? Are the Army's PMCS training programs adequate? Could it be that our operating tempo is too high to conduct PMCS? Maybe the units' training calendars do not allow time for PMCS. On the other hand, could it be a conscious decision to skip PMCS and focus our energy on repairing failed systems? Does it save time and money to skip the sometimes lengthy checks in the PMCS table?

Most advanced individual training courses teach how to conduct PMCS. Those soldiers encounter more PMCS training when they reach their permanent duty stations. In most cases, it is a prerequisite for acquiring a military driver's license. The Basic Noncommissioned Officer Course also usually covers the topic of PMCS. Deductive reasoning tells me that Army training on PMCS is adequate.

Skipping PMCS

Many junior leaders imply that the pace of deployment prevents their soldiers from performing PMCS. Equipment should not be used without a dispatch, and PMCS is part of the dispatch process. PMCS also could be performed as part of precombat inspections. Normally, a precombat inspection is included on the unit's training calendar.

Let's explore the possibility that junior leaders consciously skip preventive checks. Some junior leaders complain that PMCS checks take too long to complete. They prefer to use the equipment without thoroughly inspecting it, and if a component fails, they will get it

repaired. They instruct their soldiers simply to walk around the equipment to detect any noticeable, glaring deficiencies—mainly cosmetic. This process surely will lead to early equipment failure. Today's equipment consists of highly complex systems built with strict precision. Because of the complexity and precision of the systems, they need frequent inspections.

PMCS tables are written to address the maintenance needs of equipment at proper intervals. When followed, the PMCS standards allow users to detect early discrepancies within the components. Correcting discrepancies early not only allows the equipment to operate properly but also ensures that it will be available for crew training. On the other hand, if the equipment is not inspected carefully at the proper intervals, it will fail. These failures can result in very costly repairs and a shortage of equipment available for training, which leads to untrained combat crews.

Results of Skipping PMCS

On one recent deployment to the Grafenworh Training Area in Germany, a tank battalion experienced failure in more than 14 M1A1 Abrams tank systems. More than 90 percent of the failures were attributed directly to lack of PMCS. These failures were costly not only in terms of money but also in terms of training time. The soldiers lost valuable training time while they awaited the repair of their equipment. This was compounded by the fact that the unit had a small window in which to conduct its training. During that deployment, one crew lost control of its tank when the engine failed. Equipment failure, coupled with missed training opportunities, also can result in a combat crew losing confidence in their assigned equipment, thus further affecting the unit's readiness posture.

Recently, in an armor battalion, a crew operating one of the Army's premier weapon systems during a training exercise failed to perform a PMCS inspection properly. The crew failed to observe that a part that prevents dirt from entering the engine was missing. The result was a catastrophic engine failure. The $500,000 engine had to be replaced, and the crew lost valuable training time, invalidating the time-cost saving concept.

Enforcing PMCS

How can we ensure that our soldiers are performing PMCS properly? How can a commander verify that the equipment supervisor consistently supervises the PMCS process? Can a division commander who implements systems to track equipment readiness within the division enhance these systems to capture shortcomings within the PMCS process? Is the personnel structure in the modification table of organization and equipment adequate to accomplish the proper oversight of equipment maintenance?

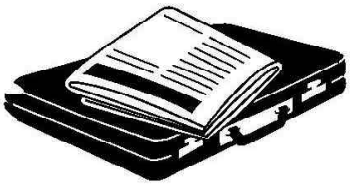
Today's Army is composed of highly disciplined soldiers. I believe that soldiers are committed to doing the right thing. Given guidance, proper resources, and unyielding supervision, soldiers can and will perform proper PMCS.

Company commanders should get more involved in the PMCS process by spot-checking to ensure PMCS is being conducted properly. The division staff should implement a system to record the number of PMCS a commander inspects monthly. Such a system could include outside verification—perhaps from the brigade staff—and reporting of the results at a monthly division maintenance readiness review.

Most modification tables of organization and equipment authorize a company-level executive officer. They also authorize a platoon leader for each platoon. The company-level executive officer and the respective platoon leaders could provide sufficient oversight of operator or crew maintenance. Company commanders feel they must take on the responsibility of organizational maintenance; however, organizational mechanics are assigned at battalion level. The battalion is staffed with a maintenance technician and a maintenance officer to execute organization maintenance within the battalion. Company commanders should leave the organizational maintenance oversight to the battalion and establish a viable PMCS program at the company level.

The 21st century Army must have a strong maintenance base. I believe that to achieve this, company commanders must focus their energies, influence, and resources to establishing strong operator or crew maintenance programs.

Chief Warrant Officer (W–3) Addison C. Allen is the battalion maintenance technician for the 1st Battalion, 37th Armor (Tank), 1st Brigade, 1st Armored Division, in Friedberg, Germany. He has an associate's degree in automotive technology from Chipola Junior College in Florida and a bachelor's degree in computer science from Columbus College in Georgia.



NEWS

(News continued from page 1)

CIVIL SUPPORT TEAM PROVIDES ASSISTANCE IN WORLD TRADE CENTER AFTERMATH

The Weapons of Mass Destruction Civil Support Team (WMD–CST) from Scotia, New York, was called to state active duty immediately after two hijacked planes crashed into the twin towers of New York City's World Trade Center (WTC) on 11 September. The team, which is composed of 22 full-time Army and Air National Guard members in 14 different military occupational specialties, is one of the first three certified by the Department of Defense and the first to participate in an operational employment.

At the request of the New York Department of Environmental Conservation, the team initially sampled air in the area of the collapsed WTC buildings to ensure that no biological or chemical contaminants were present. They then provided communications support to Federal Bureau of Investigation agents in the area.

A total of nine WMD–CSTs have been certified as having the skills, training, and equipment necessary to support incident commanders responding to terrorist use of weapons of mass destruction. The other eight teams are located in Los Alamitos, California; Aurora, Colorado; Bartonville, Illinois; Natick, Massachusetts; Fort Leonard Wood, Missouri; Annville, Pennsylvania; Austin, Texas; and Tacoma, Washington. The Congress has authorized a total of 32 WMD–CSTs nationwide.

OBJECTIVE FORCE WARRIOR PROGRAM TAPS REVOLUTIONARY TECHNOLOGIES

In fiscal year 2002, the Army will initiate a science and technology program to build upon the Land Warrior program scheduled for fielding in fiscal year 2004 and transform the individual soldier still further for the Objective Force. The Objective Force Warrior (OFW) program will complement other major initiatives, such as the Future Combat Systems program, to form the basis for the Army's Transformation to the Objective Force beginning early in the next decade. With the soon-to-be-fielded Land Warrior program as a point of departure, OFW will tap the power of emerging technologies to revolutionize warfighting at the small unit level in concert with the broader transformed Army.

The Army Soldier and Biological Chemical Command Natick Soldier Center (NSC) will lead and manage the OFW program to develop revolutionary advances in soldier team lethality, survivability, networked communications, power sources, soldier and robotic mobility, sustainability, and human performance. Early and iterative integration of key technologies will be vital to the success of the OFW program.

By using a contracting approach similar to that being used for Future Combat Systems, the Army plans to enter into system development agreements with up to four competing industry teams. These teams will be charged with developing Objective Force Warrior concepts and prototype systems that take advantage of ongoing Army, Defense Advanced Research Projects Agency, and other Department of Defense science and technology investments and with introducing the latest commercial technologies.

The Army will encourage industry developers who normally do not conduct business with the Federal Government to compete for the program. To attract these industries, NSC will employ "Other Transaction Agreements" in lieu of traditional Federal contracting rules. This will allow the Army to waive many Federal contracting regulations and make the process easier and more flexible. The Army also may consider incentives for traditional Government contractors who bid on the program to include "nontraditional" partners on their industry teams.

"There is an awful lot of great technology being developed out there," said Pete Wallace, a project engineer with the OFW team. "The question is how to tap into those sources that, for one reason or another, stay away from Government contracting,"

The OFW Program is scheduled to begin in October and will culminate with field experiments and demonstrations by up to two competing teams. OFW will transition to Product Manager-Soldier Systems in fiscal year 2008 for completion of the system development and demonstration phase of the program and follow-on production and deployment.. A solicitation package is projected for release in December.

AREA SUPPORT GROUP ACTIVATED IN BOSNIA

The improved local security environment has allowed the Army to move its main area support organization for Task Force Eagle (TFE) into Bosnia. TFE had been supported by Army Support Element, Taszar, in Hun-

gary. The element moved to Eagle Base, Bosnia, where it was inactivated and reactivated as Area Support Group (ASG) Eagle on 2 August.

The ASG is a new asset for Multinational Division (North). During the activation ceremony for ASG Eagle, Major Geneneral Walter Sharp, the division commander, said, "The addition of the ASG will allow the TFE troops to focus more completely on our patrolling, compliance inspections, and engagement tasks. [Its] presence will allow us to more efficiently accomplish SFOR's [Stabilization Force's] mission in Bosnia."

The ASG will take over activities that the units previously had performed for themselves, such as providing command and control for the guard force, assigning and maintaining billets, and coordinating international transportation within the area of operations. The ASG also is responsible for the soldiers' welfare, which includes overseeing dining facilities, providing mail service, and coordinating with the Morale, Welfare, and Recreation Office for services.

Area Support Teams at Camps Comanche and McGovern serve as remote links to the ASG. These teams allow the ASG to serve these bases as well. An ASG was activated in Kosovo earlier this year.

MEDICAL LOGISTICS PROGRAM USES BEST BUSINESS PRACTICES

An effort known as the Defense Medical Logistics Standard Support (DMLSS) program is helping to reduce the costs of medical supplies while providing a high-quality, automated medical logistics system for use by all Services in both peace and war. The system, which is a partnership of the Department of Defense (DOD), Military Health System, the Services, and commercial companies, applies best business practices to medical logistics.

Through business process reengineering, DOD has eliminated the large inventories that military hospitals and clinics used to keep on hand. Also, DOD now pays the lowest prices for supplies and drugs of any large U.S. healthcare organization. By partnering with commercial systems, the whole process of contracting, ordering, and paying is totally electronic.

Like their civilian counterparts, when military providers see patients, medical supplies (to include prescription medications) are used and need to be replenished. Under the DMLSS program, a medical logistics technician inventories supplies using a wireless bar-code terminal that automatically triggers orders for needed resupply. About 80 percent of all medical supplies and prescription drugs will arrive within 24 hours and the rest within 72.

The logistics system gives DOD medical beneficiaries quality products and guaranteed delivery. By reducing supply costs, local officials also can include more healthcare providers in the system and buy new equipment.

The next phase of the program, which adds medical equipment procurement, management, and maintenance to the system, is in testing. It will be phased in throughout DOD in 2002 and 2003.

SUPPLY AWARDS ANNOUNCED

Army Chief of Staff General Eric K. Shinseki announced the following first-place winners of the 2001 Army Supply Excellence Award on 11 July—

Active Army

Table of Distribution and Allowances (TDA) (Small). Aviation Technical Test Center, Fort Rucker, Alabama.
TDA (Large). 527th Military Intelligence Battalion, Camp Humphreys, Korea.
Direct Support Unit (DSU) (Small). Supply Point #60, 20th Area Support Group, Camp Carroll, Korea.
DSU (Medium). 98th Maintenance Company, Special Troops Battalion, Fort Richardson, Alaska.
DSU (Large). D Company, 701st Main Support Battalion, 1st Infantry Division (Mechanized), Kitzingen, Germany.
Modification Table of Organization and Equipment MTOE) Company With Property Book. Headquarters and Headquarters Battery, 18th Field Artillery Brigade, Fort Bragg, North Carolina.
MTOE Company Without Property Book. B Company, 15th Military Intelligence Battalion (AE), Fort Hood, Texas.
MTOE Battalion With Property Book. 205th Military Intelligence Battalion, Fort Shafter, Hawaii
MTOE Battalion Without Property Book. 725th Main Support Battalion, 25th Infantry Division (Light), Schofield Barracks, Hawaii.

Army National Guard

TDA (Small). Headquarters, 90th Troop Command, Oklahoma City, Oklahoma.
DSU (Small). B Company, 193d Aviation Regiment (Aviation Intermediate Maintenance), Wheeler Army Airfield, Hawaii.
DSU (Medium). U.S. Property and Fiscal Office Nebraska Supply Center, Lincoln, Nebraska.
DSU (Large). U.S. Property and Fiscal Office Louisiana, Pineville, Louisiana.

MTOE Company With Property Book. 1157th Transportation Company, Oshkosh, Wisconsin.
MTOE Company Without Property Book. Headquarters and Headquarters Company, 1st Battalion, 150th Aviation, West Trenton, New Jersey.
MTOE Battalion With Property Book. 1st Battalion, 221st Cavalry Squadron, Las Vegas, Nevada.
MTOE Battalion Without Property Book. 2d Battalion, 127th Infantry, Appleton, Wisconsin.

Army Reserve

TDA (Small). Detachment 1, Southern European Task Force Augmentation Unit, Vicenza, Italy.
TDA (Large). Area Maintenance Support Activity 157 (Ground), Springfield, Missouri.
DSU (Small). 854th Quartermaster Company, 96th Reserve Support Command, Logan, Utah.
MTOE Company With Property Book. 179th Transportation Company, 89th Reserve Support Command, Belton, Missouri.
MTOE Company Without Property Book. Headquarters and Headquarters Company, 489th Engineer Battalion (Combat) (Mechanized), 90th Reserve Support Command, North Little Rock, Arkansas.
MTOE Battalion With Property Book. 325th Field Hospital, 89th Reserve Support Command, Independence, Missouri.
MTOE Battalion Without Property Book. 243d Quartermaster Battalion, 89th Reserve Support Command, Parsons, Kansas.

SUPPORT CENTER FOR FMTVs OPENS

Stewart & Stevenson Vehicle Services, Inc. (SSVSI), has opened its first contractor logistics support (CLS) center at Fort Bragg, North Carolina, to support the Army's Family of Medium Tactical Vehicles (FMTV). Stewart & Stevenson is the first tactical vehicle original equipment manufacturer to establish a CLS center at an Army installation.

SSVSI plans to establish its second FMTV CLS center at Fort Campbell, Kentucky, and, in the future, at Fort Hood, Texas, and Fort Lewis, Washington.

The FMTV CLS centers will—

- Provide additional resources to the military that can help commanders allocate soldiers' time more effectively.
- Deliver scheduled FMTV maintenance and unscheduled repairs.
- Stock FMTV truck and trailer parts.
- Provide on-post training to soldiers and mechanics on FMTV maintenance, service, and repair.
- Provide jobs to local service technicians, including retired military personnel and service family members.

"Our contract logistics support centers will further solidify our commitment to providing the highest level of customer service to the soldiers in the field," said Richard M. Wiater, Senior Vice President of SSVSI, and head of the Specialty Wheeled Vehicle Division. "The CLS center at Fort Bragg, and all future SSVSI FMTV CLS centers, will provide convenient on-site or close-by service and maintenance for the Army's medium truck fleet as well as follow-on training to soldiers and mechanics."

USTRANSCOM IMPLEMENTS NEW PATIENT EVACUATION SYSTEM

The U.S. Transportation Command (USTRANSCOM) has improved its ability to manage patient movement and in-transit visibility worldwide as the result of an innovative reorganization. This reorganization included the adoption of a new automated management tool and the merger of the Armed Services Medical Regulating Office and the Patient Airlift Center into the Global Patient Movement Requirements Center (GPMRC). GPMRC has two sister theater patient movement requirements centers (TPMRCs) in Germany and Japan.

The new automated management tool—the TRANSCOM Regulating and Command and Control Evacuation System (TRAC2ES)—combines transportation, logistics, and clinical decision support elements into a seamless patient-movement "infosphere." It can visualize, assess, and prioritize patient movement requirements; assign proper resources; and distribute relevant data to ensure that patients are transported efficiently during peace, war, and contingency operations. It replaces the Defense Medical Regulating Information System and the Automated Patient Evacuation System.

TRAC2ES allows the GPMRC and TPMRCs to offer a one-stop-shop approach to requesting, validating, planning, and managing global patient movement and to providing in-transit visibility for all patients in the global patient movement process.

UMATILLA DISPOSAL FACILITY COMPLETED

Construction of the new Umatilla Chemical Agent Disposal Facility in Oregon has been completed as part of the Army's Chemical Stockpile Disposal Program.

The facility will safely dispose of a stockpile of dangerous chemical munitions that has been stored at the Umatilla Chemical Depot for 40 years.

A period of testing began last March and will continue until the disposal process gets underway in early 2003.

Construction of the facility began in June 1997. It includes a dozen buildings totaling about 200,000 square feet. The facility is expected to dispose of 3,717 tons of chemical agents, or 11.6 percent of the nation's original stockpile, according to the Umatilla Outreach Office. The process is expected to last more than 4 years, after which the facility will be dismantled.

Washington Demilitarization Company of Boise, Idaho, which built the Umatilla facility for the Army, also will test, operate, and close it after all of the munitions have been destroyed. The company has similar contracts for stockpiles at Anniston, Alabama, Pine Bluff, Arkansas, and Johnston Atoll, southwest of Hawaii.

For more information, visit the Program Manager for Chemical Demilitarization web site at http://www-pmcd.apgea.army.mil or call the Umatilla Outreach Office at (541) 564–9339.

RIGID-WALL SHELTER COULD IMPROVE LONG-TERM DEPLOYMENTS

In the future, soldiers on long-term deployments may not have to use wooden beams and plywood to reinforce their modular tents with flooring, walls, and doors. The Soldier Systems Center at Natick, Massachusetts, is collaborating with KaZak Composites Incorporated in Woburn, Massachusetts, and AAR Corporation in Cadillac, Michigan, to develop a rigid-wall, high expansion ratio shelter.

The shelter will be composed of 13 modules that are stored and carried in an International Organization for Standardization (ISO) container measuring 8 feet by 8 feet by 20 feet. Each folded 500-pound module will be stored vertically and slide out of the ISO container. Panels connected by hinges will unfold on each side to form walls and a peaked roof. Modules will be connected with gasketed aluminum closeouts to seal the roof and walls. Adjustable steel jacks at each end and in the middle of the module will support the shelter and lift it off the ground for a level floor in uneven terrain, eliminating the need to bulldoze the earth for plywood floors. A shelter made using the modules will be 19 feet wide and up to 96 feet long. Adding or removing modules will allow the users to adjust the size of the shelter to meet their needs.

Shelter panels are made using a wide-panel pultrusion process developed by KaZak Composites. This creates a stable, insulated, low-maintenance panel that will not corrode or rot.

A prototype shelter will be ready for display by the end of this year. If the Army decides to field the shelter, a formal requirement document will be written and funding will be requested to improve the prototype and conduct field tests.

Coming in Future Issues—

- Critical Logistics Information and the Commander's Decisions
- Munitions Logistics Readiness Support Plan
- An Estimation Technique for Transport Missions
- Building Roads on Soft and Sandy Soils
- Forming Europe's EAC Logistics Backbone
- Incoming Commanders and Property Accountability
- Logistics Simulation Exercise
- Insensitive Munitions and the Army
- Training Ammunition Units in Peacetime
- Weapons of Mass Destruction and the Joint Rear Area
- Continuous Change Management
- Modeling Ammunition Logistics
- Commander's Critical Information Requirements
- Flight-Safety Parts: Local Procurement Not Allowed

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