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JULY-AUGUST 2000

Joint, Combined, and Contractor Support in East Timor

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COVER

U.S. support of the United Nations intervention in East Timor showcased what may become an important aspect of logistics in the future—the use of contractors in the theater. This issue features a special section describing the U.S. experience in East Timor, beginning on page 30. In the photo on the cover, military and contractor personnel review the construction of helipads at the airport in Dili, East Timor's capital.

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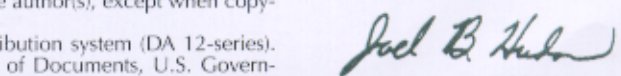
By Order of the Secretary of the Army:

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

Official:



JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
0011011

Coming in Future Issues—

- Buying Spare Parts for the Last Time
- Collapsible Petroleum Tanks
- Logistician Leadership Requirements
- Developing a Joint Medical Asset Repository
- Class VIII Prepacks for Joint Distribution
- Technologies for Patient Tracking and Treating Far Forward
- Integrating Medical Logistics Assets
- Contractors on the Battlefield–Part II
- The Friction Index Revisited
- AOAP–Powerful Maintenance and Environmental Tool
- Rail Locks for Strategic Brigade Airdrop
- Most Decorated Ammunition Company in Vietnam
- Combined Rear Area Operations in the Korean Theater

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ALOG NEWS

FORT LEWIS BRIGADES BEGIN CONVERSION TO IBCT'S

Transformation of the first two brigades at Fort Lewis, Washington, to initial brigade combat teams (IBCT's) is underway.

"This action is a milestone on the road to transforming the entire Army into a force that is strategically responsive and dominant at every point on the spectrum of operations," said General Eric K. Shinseki, Chief of Staff of the Army. "The transformation of these two brigades at Fort Lewis, using current off-the-shelf technology, will give us an interim capability as we move toward our long-term goal of the Objective Force."

The new interim design will enable the Army to deploy brigades anywhere in the world in 96 hours and in a configuration that is ready to fight upon arrival. The first IBCT to transform to the new design, the 3d Brigade, 2d Infantry Division, is scheduled to achieve initial operating capability (IOC) by December 2001. IOC is the point at which the Army certifies that the unit is capable of accomplishing brigade-level operations. The second IBCT, the 1st Brigade, 25th Infantry Division (Light), will achieve IOC by December 2002. Soldiers and units at Fort Lewis are training to develop the tactics, techniques, and procedures for the new IBCT's. Currently, soldiers are training with light armored vehicles on loan from Canada pending selection and fielding of the interim armored vehicle in the fourth quarter of this fiscal year.

The first two IBCT's will feature organizations significantly different from the Army's current brigades. Each will include three infantry battalions; an artillery battalion; a reconnaissance, surveillance, targeting, and acquisition battalion (known as the RiSTA squadron), which will increase the intelligence-gathering capability of the brigade significantly; and organic engineer, military intelligence, and signal companies.

The companies of the infantry battalions will be combined arms teams consisting primarily of medium armored gun systems, infantry, and mortars. Previously, Army companies and battalions were organized as pure tank or infantry units, then task-organized based on mission requirements.

Establishing the IBCT's is the first phase of the Army's three-phase strategy for transforming the current force. The IBCT's will provide an initial capability currently not available in the force and will serve to identify changes that are needed in doctrine, organization, equipment, training, and leader development in the second phase, the interim force.

The interim force will consist of the two IBCT's at Fort Lewis and other IBCT's yet to be named. The interim force will be fielded largely with off-the-shelf equipment and technology insertions. It will provide immediate deployability and breakthrough maneuver capabilities to bridge the gap between the Army's existing heavy and light forces until technology developments make fielding of the objective force possible.

The final phase of the transformation, the objective force, will begin with fielding of future combat systems currently being studied by the Army.

FM PUBLISHED ON CONTRACTOR SUPPORT

To ensure that commanders, staffs, and soldiers are able to use contractor personnel effectively on the future battlefield, the Army Training and Doctrine Command has published Field Manual (FM) 100–21, Contractors on the Battlefield, dated 26 March 2000. The new FM addresses the use of contractors as an added resource for commanders to consider when planning support for an operation. The manual is intended for commanders and their staffs at all echelons and for program managers and others involved in planning for, managing, and using contractors in a theater of operations. It also will help Army contracting professionals and contractors to understand how contractors will be managed and supported by the military forces they assist. The Army Combined Arms Support Command at Fort Lee, Virginia, was the lead agency in developing the new FM. (See related story on page 12.)

AMC RESTRUCTURES TO SUPPORT ARMY VISION

The Army Materiel Command (AMC), headquartered in Alexandria, Virginia, has realigned its field structure provisionally to support warfighters better. As part of the 31 March realignment, the Industrial Operations

Command and its subordinate, the Army War Reserve Support Command, both at Rock Island Arsenal, Illinois, assumed new names and responsibilities. The Industrial Operations Command (IOC) was renamed the Operations Support Command (OSC) and will stand up permanently on 1 October.

The Army Field Support Command (FSC) will build on the mission of the former Army War Reserve Support Command. With its stand-up, FSC gained operational control of the Army's logistics support elements, which provide field sustainment support during times of crisis.

FSC will have a formal presence at sites in Europe, Southwest Asia, and Northeast Asia, as well as at sites within the continental United States, and provide Army field commanders with a single point of entry for all AMC activities. As a result, AMC Forward-Europe, AMC Forward-Far East, AMC Forward-Southwest Asia, and AMC-Continental United States will report to FSC. Those portions of the Logistics Support Activity in Huntsville, Alabama, that manage the forward elements and the logistics assistance offices also have become a part of FSC.

At the same time, management of the Logistics Civil Augmentation Program (LOGCAP) has been moved to Headquarters, FSC. Additional AMC realignments are expected over the next 2 years.

FORT KNOX TOPS OST STANDARD

In February, Fort Knox, Kentucky, became the first installation in the Army to average under 5 days in order ship time (OST). During that month, the installation averaged a 4.9-day wait on delivering all tank and vehicle repair parts to its customer units.

The Army's velocity management (VM) program, established in 1995, has revolutionized military logistics by using modern management programs to eliminate or simplify inefficient operations, saving time and money and improving quality. Before Fort Knox began participating in the VM program in 1997, the average wait time for units to receive supplies was 24.4 days.

"It was just a slow, slow process of supplies being received and ordered, especially in supply and maintenance. The [VM] program was designed to relook how we do business," said program coordinator Bobby Loyall. "Before we started this up, we always had mechanics sitting out there waiting on parts. And it would take that much longer to get the vehicles back in service. Now parts are usually waiting on the mechanics."

Loyall said that, with the 74 percent decrease in wait time, unit operational readiness has increased. "[VM] made people look at business and how they operate things on a whole," he said. "Things that you do every day, that you didn't think were bad business practices, you find that you can do better."

Improvements made under the VM program include consolidating Fort Knox's five supply warehouses into a single unit, thereby reducing required warehouse space by 101,319 square feet and saving an estimated $235,000; having supplies delivered directly to Fort Knox in dedicated trucks from the supply depot instead of using trucks that had to make multiple supply stops along the way; and using a computerized ordering system to order directly from the Army's supply depots.

DOD ESTABLISHES SEPARATE CONTRACT MANAGEMENT AGENCY

The Department of Defense (DOD) has established the Defense Contract Management Agency (DCMA) under the direction and authority of the Under Secretary of Defense for Acquisition, Technology, and Logistics.

DCMA was formerly the Defense Contract Management Command (DCMC), a major subordinate command of the Defense Logistics Agency (DLA). All of the employees and resources of the former DCMC, including 12,539 full-time positions, will be transferred from DLA to DCMA. With the creation of DCMA, DLA's other major subordinate command, the Defense Logistics Support Command, will be abolished and its components, such as the Defense Distribution Center, will report directly to DLA headquarters.

DCMA supervises and manages contracts with the suppliers who deliver goods and services to the military each year. The new agency also is charged with streamlining and standardizing the contracting process.

DOD CONSIDERS FOREIGN EQUIPMENT PURCHASES

The Department of Defense (DOD) has selected seven projects for fiscal year (FY) 2000 out-of-cycle funding under the Foreign Comparative Testing (FCT) Program. Under the program, which is administered by the Under Secretary of Defense for Acquisition, Technology, and Logistics, the selected items will be considered for procurement to meet identified U.S. defense requirements.

The FCT Program supports the U.S. warfighter by identifying nondevelopmental items of allied and other friendly nations that will satisfy U.S. defense requirements quickly and economically. The FCT process depends on the availability of a world-class foreign item in which a U.S. user is interested and has a valid requirement for and that has good procurement potential. The goal is to reduce the acquisition cycle time and the expense of research, development, test, and evaluation

while enhancing standardization and interoperability and improving international cooperation.

The armed services and U.S. Special Operations Command nominate FCT projects to the Office of the Secretary of Defense annually. Each proposed project is screened to ensure that the item is non-developmental and addresses a valid requirement, that a thorough market investigation has been conducted to identify all potential contenders, and that the sponsoring organization has developed a viable strategy to purchase the foreign item if it tests successfully and offers best value.

Of the seven projects selected for FY 2000 out-of-cycle FCT funding, two are sponsored by the Army, two by the Navy and Marine Corps, and two by the Air Force. The Navy and the Air Force sponsor one project jointly.

AORS SCHEDULED

The 39th annual Army Operations Research Symposium (AORS) will be held 10 through 12 October at the Army Logistics Management College, Fort Lee, Virginia. Over 200 Government, academic, and industrial leaders are expected to attend.

The Army Test and Evaluation Command is sponsoring this year's event. The theme is "Shaping the Transformation Force." The Army Combined Arms Support Command and the Army Logistics Management College will co-host the symposium.

The Army Test and Evaluation Command is responsible for the overall planning and conduct of AORS. General conference information can be obtained by visiting the AORS website, http://www.atec.army.mil/aors, or by calling (703) 681–9887 or –9835 (DSN prefix: 761).

HIGH-TECH MODELING TECHNIQUES AVAILABLE AT ROCK ISLAND ARSENAL

Rock Island Arsenal, Illinois, has upgraded its modeling capabilities to include production of scaled down or actual-size solid plastic models of items to be manufactured. The machine that produces the models is called a "3D printer," and it automatically shapes hot plastic into models detailed to a resolution of .013 inch. Process planners, engineers, designers, and others involved in manufacturing everything from spare parts to weapon systems can study the models to find ways to produce items faster, better, and cheaper. High-quality models make rapid prototyping possible by putting what is conceived in the mind into solid form.

Modeling information can be fed into the 3D printer from any workstation on Rock Island's computer-aided design network. Information is transformed into solid reality with a few clicks of a mouse. Simple models can be produced in an hour or less, while the most detailed models can take up to 40 hours. Because the 3D printer can operate unattended, complicated jobs can be run overnight or over a weekend.

Plastic models of already-manufactured items can be made by using a separate digitizer arm available at the arsenal. As the tip of the digitizer arm moves over the surface of the item, it plots all of the points that it crosses and converts the data into a computer-aided design drawing. This drawing then is used to make a solid model.

For more information on Rock Island Arsenal's modeling capabilities, visit their website at http://www.ria.army.mil.

☐ Rock Island Arsenal's 3D printer produces models that are detailed to a resolution of .013 inch.

LOGISTICS AWARDS PRESENTED

Each year, the Deputy Chief of Staff for Logistics (DCSLOG), Department of the Army, recognizes individuals and teams that have excelled in the different areas of integrated logistics support (ILS). Each Government civilian winner is awarded a $1,000 prize. Individual winners and a representative of each of the winning teams also receive a plaque from the DCSLOG.

The winners of the 1999 ILS achievement awards for excellence in the various areas are—

- ***Logistics Support Improvement for Materiel/ Information Systems***. Team: Battlefield Mobility/ Target Acquisition Life Cycle Contractor Support Integrated Product Team at the Army Simulation, Training, and Instrumentation Command in Orlando, Florida, for their application of acquisition reform principles to prepare a request for proposal, conduct proposal evaluations, and award the life cycle contractor support contract within the approved acquisition program baseline schedule without industry protests.

Individual: Michael Linkletter of the Army Communications-Electronics Command (CECOM) at Fort Monmouth, New Jersey, for his efforts to develop and implement improvements to the ILS management and maintenance concept of the Doppler Navigation System that resulted in an initial savings to CECOM of $850,000 and a cost avoidance of $3 million annually.

- ***ILS Execution/Process Improvement***. Team:

Knowledge Asset Management Network Team in the office of the Project Manager, Utility Helicopters, for their efforts to apply ILS and weapon systems management techniques to the management of knowledge and information management technology.

Individual (two awards): Gary McPherson of the Army Materiel Command Logistics Support Activity at Redstone Arsenal, Alabama, for his development of a milestone schedule capability for the Logistics Planning and Requirements System; and Charles J. Kopack, Sr., of the Army Medical Materiel Agency at Fort Detrick, Maryland, for his work in the design and development of the Materiel Acquisition Review Process, which is a means of prioritizing products, projects, and systems for funding.

- ***ILS Management***. Team: Future Scout Cavalry System/Tactical Reconnaissance Armored Combat Equipment Requirement Team, composed of personnel from the Army Tank-automotive and Armaments Command Army Armor Center, Fort Knox, Kentucky; the TRADOC Combat Development Engineering Center, Fort Knox, Kentucky; and Royal Electrical and Mechanical Engineering, Support Planning (Land), Headquarters Quartermaster General, Bristol, United Kingdom, for their innovative work in developing user needs and program strategies for achieving those needs and assisting their separate project offices in activities leading to the award of advanced technology demonstration contracts to two international consortia.

Individual: Helen Clover Wakefield of the Sentinel Program Office at Redstone Arsenal, Alabama, for her direction and leadership in fielding Sentinel radars to four Army divisions under budget and on time.

ARMY ACCEPTING FY 2002 SEP PROPOSALS

The Army is accepting proposals for the fiscal year (FY) 2002 Soldier Enhancement Program (SEP). The SEP endeavors to enhance the survivability, lethality, mobility, command and control, and sustainability of soldiers in combat situations by speeding the process of adding commercial, off-the-shelf items to the Army inventory.

The SEP is not an incentive award program. No monetary awards are given for proposals that are adopted for use and result in a cost saving to the Government. Of the 116 new proposals submitted for the FY 2000 program, 8 were accepted. They are: An integrated laser white-light pointer that provides soldiers, in a single device, a night-invisible laser, a day-visible laser, and a white light that can be used in military operations on urbanized terrain; a biocular eyepiece for the AN/TVS–5 night-vision sight that allows soldiers to retain their sight picture throughout the firing sequence, thereby improving weapon accuracy; a pattern generator that produces a variety of laser-pointer patterns for signaling, fire control, and identification purposes; a close-combat mission-rehearsal capability that permits soldiers to rehearse near-transparent, realistic close combat; an M84 reloadable fuse that can be removed and replaced, which permits reuse of the M84 stun grenade; a double hearing protection and communication device that protects soldiers' hearing from noise and blast pressure while allowing them to hear normal voices; a neck protector that shields the back of the neck during civil disturbance or peacekeeping operations; and a law enforcement patrol bag in which special reaction team members can carry, store, and protect mission-related equipment.

For information on how to submit a proposal, send an e-mail to suttonk@benning.army.mil, or call (706) 545–6047 or DSN 835–6047. The deadline for submissions is 15 August 2000.

LIFT OF GPS SCRAMBLING NO THREAT TO MILITARY

President Clinton's 1 May decision to stop intentional degradation (or selective availability [SA]) of global positioning system (GPS) signals available to the public will not impinge on continuing efforts to upgrade military application of GPS. Threat assessments made in advance of the decision concluded that setting SA to zero would have minimal impact on national security. It remains possible to deny GPS signals selectively on a regional basis if national security is threatened.

The President's decision was based on a recommendation by the Secretary of Defense, in coordination with the Secretaries of State, Commerce, and Transportation, the Director of Central Intelligence, and other Executive Branch departments and agencies, who believed that worldwide transportation safety, scientific, and commercial interests could best be served by discontinuing SA. Originally developed by the Department of Defense, GPS is a dual-use, satellite-based system that provides accurate location and timing data to military and civilian users worldwide. With the lifting of SA, civilian users of GPS now can pinpoint locations up to 10 times more accurately than before.

In addition to its use by the military, GPS benefits users around the world in many different applications, including air, road, marine, and rail navigation, telecommunications, emergency response, oil exploration, and mining. Increased GPS accuracy will allow new applications to emerge and continue to enhance the lives of people around the world.

MORE THAN ONE WAY TO FLY A HELICOPTER

Two CH–47 Chinooks, the Army's largest helicopters, were squeezed into the Air Force's largest aircraft, the C–5A Galaxy transport, for a flight to Korea last March. Helicopters in Korea were grounded several months earlier by a safety of flight message on flaws in helicopter transmissions. In the meantime, units in Korea needed two Chinooks for their missions.

Two helicopters, which had been reworked at Corpus Christi Army Depot (CCAD) and test flown and accepted by both CCAD- and Korea-based pilots, were scheduled to make the flight to Korea aboard a C–5A. It took about a week to prepare the Chinooks for the trans-Pacific flight. "We disassembled the back pylons, removed the transmissions, blades, and other parts," said Richard Caballero, quality assurance representative at CCAD. "The transmissions and blades were put inside the aircraft and the pylons were wheeled into the C5A on dollies. As you can see by the photos, it was a tight fit . . . This is the first time that CCAD has airlifted Chinooks, packed like this, to the customer."

☐ In the top photo, a CH–47 Chinook helicopter and the C–5A Galaxy sit on the tarmac before loading. Above, there is little room to spare as the Chinook is rolled into the C–5A. At left, CCAD workers roll a helicopter pylon into the aircraft.

ARMY'S TOP MAINTAINERS SELECTED

The Army has named the winners of the 18th Annual Army Awards for Maintenance Excellence (AAME) for fiscal year 1999. A total of 54 units competed. The executive agent for AAME is the Army Ordnance Center and School at Aberdeen Proving Ground, Maryland.

"The most rewarding thing to see generated as a result of the . . . [awards] is the interest and involvement of the entire chain of command," said Jerry Macon, program manager. "Just the effort of taking a close look at your maintenance programs and procedures as you prepare for the competition pays dividends for some time. This includes improved readiness, waste reduction, and improved efficiency in daily operations." Winners of this year's competition are–

Active Army Modification Table of Organization and Equipment (MTOE) Units

Light. A Company, 202d Military Intelligence Battalion, Fort Gordon, Georgia.
Intermediate. 268th Signal Company, Mannheim, Germany.
Heavy. 230th Military Police Company, Kaiserslautern, Germany.

Active Army Table of Distribution and Allowances (TDA) Units

Light. Ground Mobility Division, 1st Battalion, 81st Armor, Fort Knox, Kentucky.
Intermediate. 58th Transportation Battalion, Fort Leonard Wood, Missouri.
Heavy. 751st Military Intelligence Battalion, Camp Humphries, Korea.

Army National Guard MTOE Units

Light. 540th Quartermaster Battalion, Lenoir, North Carolina.
Intermediate. Headquarters and Headquarters Battery, 113th Field Artillery Brigade, Greensboro, North Carolina.
Heavy. 842d Engineer Company, Spearfish, South Dakota.

Army Reserve MTOE Units

Light. Headquarters and Headquarters Detachment, 349th Support Battalion, Ames, Iowa.
Intermediate. 737th Transportation Company, Yakima, Washington.
Heavy. 1007th Maintenance Company, Hagerstown, Maryland.

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Army Log Summit 2000: Logistics in the Army's Transformation

The Army Logistics Summit 2000 brought the Chief of Staff of the Army, General Eric K. Shinseki, to Fort Lee, Virginia, in April to present the Army Vision to the collected logistics leadership. Speaking before about 80 percent of the Army's logistics leaders at and above the colonel and GS–15 civilian levels, the Chief emphasized that 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. The Chief noted that about 80 percent of what the Army must move when deploying is not soldiers but "stuff"—the weapons, equipment, and supplies that are the domain of the logistician. Therefore, "agility in our logistics structure makes force agility."

To drive home his point about the criticality of logistics agility, the Chief compared the Army to a rattlesnake. A rattlesnake is always lethal, but his ability to strike and inflict damage on his target depends on his posture. If he is coiled, he has maximum spring and thus striking power. But if he is stretched out, there is no striking power behind his still deadly fangs; he has lost his ability to project his lethality. Similarly, when the Army's support structure is stretched out, the Army remains lethal but loses striking power. But when that support structure is compact ("coiled"), the Army attains maximum ability to bring its combat power to bear on its chosen target.

The Chief reemphasized the importance of science and technology developments to transforming the Army. The Defense Advanced Research Projects Agency has pledged to spend $406 million over 3 years to help the Army reach its technological objectives—money that will supplement the Army's own planned spending. The Chief stated that it is his goal to have the first unit of the objective force equipped by 2008.

The theme of logistics in the transformation of the Army was continued in a presentation by the Assistant Secretary of the Army for Acquisition, Logistics, and Technology, the Honorable Paul J. Hoeper. He emphasized the importance of recapitalization in transforming the force and noted that recapitalization is the focus of much congressional interest. Mr. Hoeper presented a new definition of recapitalization recently adopted by the Army—

> The maintenance and systemic upgrade of currently fielded systems to ensure operational readiness and a zero time/zero mile system. Our objectives include: (1) Extend service life, (2) Reduce operating and support costs, (3) Improve system reliability, maintainability, safety, and efficiency, and (4) Enhance capability.

Mr. Hoeper observed, "The transformation drive requires an investment in the legacy force today. Without it, escalating O&S [operating and support] costs will drain future resources." Among initiatives designed to support recapitalization and logistics modernization, he announced that the Army has become the first of the armed services to include "sustainment" as one of the evaluation criteria for program and project managers.

The Logistics Summit provided the opportunity for senior logisticians from throughout the Army to brief their colleagues on developments in their commands and agencies. Presentations were made by the Office of the Deputy Chief of Staff for Logistics; the Army Materiel Command (AMC) and its major subordinate commands; the Army Combined Arms Support Command (CASCOM); the Army Training and Doctrine Command's combat service support schools; the Defense Logistics Agency (DLA); Army Forces Command; Eighth U.S. Army; Third U.S. Army; U.S. Army, Europe; and U.S. Army, Pacific.

Important topics discussed at the summit included velocity management, DLA initiatives and reorganization, creation of AMC's Operations Support Command and field support centers, the Global Combat Support System-Army (GCSS-Army), the Wholesale Logistics Modernization Program, the Single Stock Fund, the National Maintenance Modernization Program, recapitalization, emerging logistics technology, the progress of the interim brigade combat teams, and the latest developments in Kosovo.

The Army Logistics Summit 2000 was sponsored by the AMC Commander, General John G. Coburn, and the CASCOM commander, Lieutenant General Billy K. Solomon. ALOG

Improving the Joint Deployment Process

by Commander Robert C. Bronson, USN

The Department of Defense is working on several fronts to ensure that its deployment capabilities will be ready to support the force-projection requirements of Joint Vision 2020.

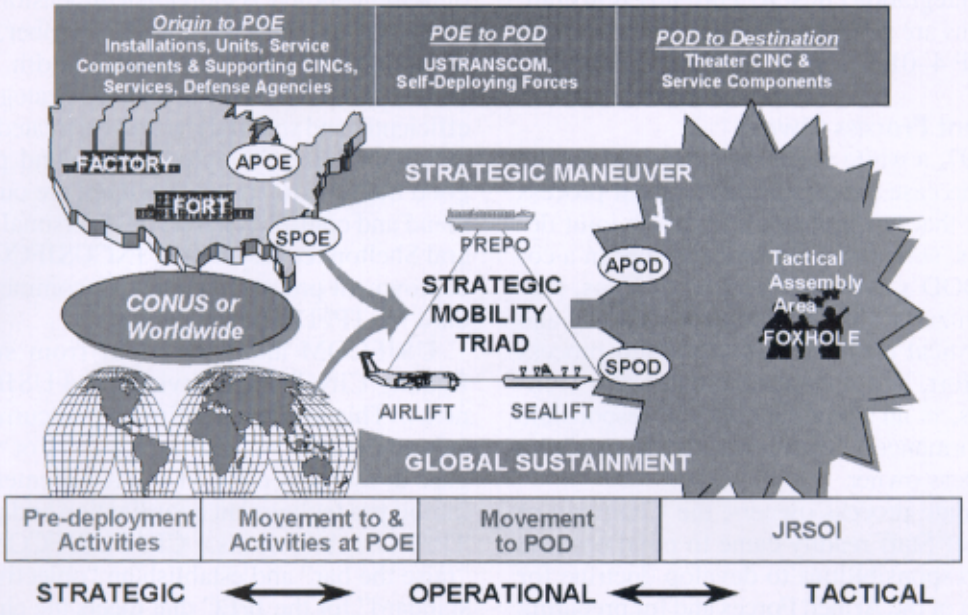
At the Joint Deployment Conference held at Fort Eustis, Virginia, in August 1999, Lieutenant General Thomas R. Burnette, the deputy commander in chief of the U.S. Joint Forces Command (USJFCOM), stated, "Deployment has become a national issue, in that our Nation has moved forces back to the continental United States with a commitment to deploy rapidly." Since the end of the Cold War, the Armed Forces have relied increasingly on their force-projection capabilities to respond to a large number of contingencies around the world. They therefore have placed major emphasis on increasing strategic lift capabilities in order to move and sustain forces for contingency operations. Complementary programs to pre-position materiel and supplies globally have lessened strategic mobility requirements. To make the most of these efforts and ensure the success of the force-projection strategy, the Department of Defense (DOD) has undertaken improvements to the joint doctrine, organizations, and information systems needed for planning and managing the deployment process in an effective and efficient manner.

Joint Deployment Process Initiatives

Experience gained during contingency deployments to Southwest Asia, Somalia, Haiti, and the Balkans indicates that the same lessons were relearned during each operation because the responsibilities for improving the deployment process were diffused among many different organizations and not focused on the requirements of the joint force. The individual services are responsible for manning, equipping, training, and sustaining their forces, and they initiated a number of actions to eliminate the problems identified for their parts of the overall deployment process. At the same time, the commanders in chief (CINC's) of the geographic unified combatant commands have command authority over the forces assigned within their areas of responsibility and must plan and manage the deployment of joint forces, usually in a combined environment.

As a result of lessons learned in Operation Joint Endeavor in Bosnia, then Chairman of the Joint Chiefs of Staff General John Shalikashvili created the Deployment Process Special Action Group (DPSAG) with a twin purpose: provide a joint focus for the services' deployment initiatives, and enable the unified commands to influence the deployment improvement process directly. In 1997, the DPSAG was institutionalized as the Deployment Division in the Directorate for Logistics (J4) of the Joint Staff. The mission of this division is to oversee, direct, coordinate, and implement needed improvements in the joint deployment process. It serves as the single point of contact on the Joint Staff for the CINC's, the services, and Defense agencies for facilitating force projection-related actions and initiatives, and it provides centralized management to ensure horizontal collaboration on all projects aimed at enhancing deployment capabilities.

One of the first actions of the Deployment Division was to publish Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3202.01, Deployment Process Improvement. This foundation document contains policies and procedures for identifying, developing, reviewing, approving, and implementing improvements to the deployment process for the Armed Forces. The instruction requires horizontal integration of deployment initiatives through the Joint Planning and Execution Community (JPEC) and calls for aligning deployment improvements with such initiatives as the Joint Warfighting Capabilities Assessment/Joint Requirements Oversight Council process, the Joint Monthly Readiness Review, the Joint After-Action Reporting System, the Joint Universal Lessons Learned System, and the Remedial Ac-



☐ This chart illustrates the joint deployment process from CONUS to the overseas theater.

tion Project program.

The instruction tasked the Deployment Division to conduct quarterly meetings on deployment process improvement. These meetings are used to nominate and review new initiatives for action, update and review ongoing actions, evaluate potential recommendations to close actions, and collaboratively develop near- and long-term plans for process improvement and integration within the JPEC. The meetings have evolved into semi-annual joint deployment conferences for action officers and semi-annual video-teleconferences cohosted by the J4 and J3 (the Joint Staff's Directorate for Operations).

Joint actions identified by JPEC participants to improve the joint deployment process are tracked in an electronic format via the Global Command and Control System (GCCS) on the Secret Internet Protocol Network (SIPRNET). JPEC participants can gain access to this data base through the J4 Deployment Division home page on the SIPRNET. As of April, 62 deployment process improvements had been identified for action, of which 33 have been implemented.

The Deployment Process

Joint deployment is a dynamic and complex process involving numerous stakeholders and process chains, resulting from the multitude of organizations and functional processes involved in deployment planning and execution. It begins when force-projection planning is initiated—often with the National Command Authorities' directive to execute a mission requiring deployment of forces—and ends when an integrated force arrives at the prescribed destination ready to conduct operations. In its simplest form, the joint deployment process encompasses four primary nodes—point of origin, port of embarkation, port of debarkation, and destination—and three major movement legs—point of origin to port of embarkation, port of embarkation to port of debarkation, and port of debarkation to destination.

Joint force deployment operations consist of four major phases: predeployment activities; movement to activities at the port of embarkation; movement to the port of debarkation; and joint reception, staging, onward movement, and integration. These phases describe the major deployment activities of a joint force from point of origin (post, base, or fort) to a prescribed destination (intermediate staging base, forward operating base, or tactical assembly area) in theater. The phases are continuous and iterative and depend on the commander's concept for employment and changes in mission. Deployment is an operational imperative enhanced and facilitated through logistics planning and support.

Doctrine

In the early stages of the efforts to improve the joint deployment process, a need for joint deployment doctrine was identified. This doctrine would provide details of the deployment and redeployment processes, including their phases, planning, and execution. As a

result, Joint Publication (JP) 3–35, Joint Deployment and Redeployment Operations, was approved 7 September 1999. JP 4–01.8, Joint Tactics, Techniques, and Procedures (JTTP) for Joint Reception, Staging, Onward Movement, and Integration (JRSOI), currently is in draft. These publications are available through the Joint Electronic Library (JP 4–01.8 to authorized users only).

Joint Deployment Process Owner

In August 1997, a white paper was prepared for the JPEC, making the case for a joint deployment process owner. It stated that "to produce a seamless joint deployment process, someone must pull together in a coherent manner DOD's current collection of plans, programs, and organizations for deployment planning and execution. A critical element in a successful process improvement effort, and a critical element in a well-managed process, is an individual who is responsible for process performance." In essence, DOD needed a deployment process owner.

Among candidate process owners, the Chairman of the Joint Chiefs of Staff readily came to mind because of his statutory responsibilities to develop doctrine for joint employment of the Armed Forces and for preparing joint logistics and mobility plans to support strategic and contingency plans. However, in comparison to other major stakeholders, the Chairman has far fewer resources dedicated to the deployment process.

As the ultimate customer, a supported CINC has the largest stake in improving the deployment process because he has the most to gain when everything works well. By law, he must exercise control over operations in his theater. He needs to control the flow of personnel, equipment, and materiel in and out of his theater. However, it was felt that, if a single geographic CINC was the deployment process owner, the other geographic CINC's would be concerned that the solution reached would be regional rather than global.

Although primarily a supporting CINC, CINCUSJFCOM has responsibilities as joint force integrator, trainer, and provider for the majority of the Nation's combat forces. CINCUSJFCOM therefore could speak for other CINC's from a more global perspective. Consequently, on 23 October 1998, the Secretary of Defense designated the CINCUSJFCOM as the joint deployment process owner for DOD. In this role, the CINCUSJFCOM is responsible for maintaining current effectiveness while leading actions to improve substantially the overall efficiency of deployment-related activities.

In April 1999, the Chairman of the Joint Chiefs of Staff, General Henry H. Shelton, proposed the establishment of a time standard for developing Time-Phased Force and Deployment Data (TPFDD) for deployment. This standard would cover the period from notification and receipt by the supported commander of a National Command Authorities decision to completion of validated, level four detail TPFDD for the first 7 days of the mission. (Level four detail is data expressed as number of passengers and as individual dimensional data of cargo by equipment type and unit line number. Cargo dimensions are expressed in length, width, and height in inches.) The capability to execute strategic deployments efficiently and smoothly would be created by using available technology, coupled with sound procedures and good training, to ensure that there are outstanding command and control systems. In a personal message, General Shelton requested the CINCUSJFCOM, as the joint deployment process owner, to recommend a time standard for TPFDD development.

USJFCOM analyzed input from supported warfighting CINC's, the services, and USJFCOM components. This analysis confirmed that current TPFDD development and validation take days or weeks and that gaps in essential mission and requirements information inhibit predeployment coordination and preclude timely TPFDD submissions. CINCUSJFCOM proposed to "raise the bar" and establish an "objective performance standard" for the JPEC that meets the challenges of crisis response. This objective performance standard was a 72-hour standard for TPFDD development and validation that would include level four detail. A 72-hour standard would effectively guide the JPEC toward a "reengineered" deployment process, shape policy and technological applications, support the identification of capability requirements, and optimize the use of strategic-lift assets. General Shelton accepted the 72-hour TPFDD time standard and set an objective of meeting it by October 2000.

Information Systems

On 29 July 1999, the Joint Requirements Oversight Council (JROC) received a proposal to use two emerging joint deployment information systems in an effort to meet the 72-hour TPFDD time standard for deployment and provide an operational capability in the near term. The JROC, which is composed of the Vice Chairman of the Joint Chiefs of Staff and the service vice chiefs of staff, agreed that the Transportation Coordinator's Automated Information for Movement System II (TC–AIMS II) will be the near-term, joint single-source data system and the Joint Force Requirements Generator II (JFRG II) will be the near-term, joint single-source feeder system for capturing and feeding unit movement requirements information into the Joint Operation and Planning Execution System (JOPES). The objective is to construct a joint system architecture for building TPFDD. The JROC also agreed with the recommendation that the Marine Corps become the executive agent for JFRG II. Selection of these two systems was the first step to-

ward meeting the 72-hour TPFDD time standard by October.

The implementation and business processes for these applications are detailed in CJCSI 3020.01, Managing, Integrating, and Using Joint Deployment Information Systems. The intent of this instruction is to transform the joint deployment process from one that is deliberate and sequential to one that is collaborative and provides the supported CINC with appropriate control.

The following initiatives will be the core of the common operational framework for developing future information systems—

- Establishment of a single-source data system for unit deployment.
- Implementation of advanced technology to transmit and access source data.
- Establishment of live, shared data for virtual collaborative planning and execution monitoring.
- Development of joint deployment decision support tools.

TC–AIMS II

As mentioned above, TC–AIMS II will be the single source of unit movement information for the JOPES. TC–AIMS II will exchange unclassified unit deployment files with JFRG II.

TC–AIMS II is the result of collaboration between the Armed Forces and the Joint Project Management Office, headed by the Army as executive agent. The goal behind TC–AIMS II is to improve and expedite unit movements and the actions of transportation component commands by providing timely and accurate information for use at all joint deployment community command-levels in support of continental United States (CONUS), outside CONUS, and in-theater joint reception, staging, onward movement, and integration operations.

TC–AIMS II addresses a critical shortfall in DOD transportation movement operations. It will provide unit mobility personnel, embarkation personnel, installation transportation offices, and traffic management offices throughout DOD with a single, effective, and efficient automated information system that supports transportation management of units, passengers, and cargoes during day-to-day operations within the Defense Transportation System. These personnel previously used a variety of service automated systems and manual processes.

The TC–AIMS II system includes software and applications installed on service-provided hardware that support unit movement and sustainment transportation functions and provide access to various load-planning functions. These functions are available to the TC–AIMS II user from a client-server network or stand-alone configuration at the unit or installation level, whether the user is in garrison or deployed. Processing, tracking, and reporting of data from TC–AIMS II will be available to decision makers at various command levels via the in-transit visibility capability of the Global Transportation Network.

Joint Force Requirements Generator II

JFRG II is a TPFDD-editing application designed to satisfy deployment planning and execution requirements, whether the users are at home stations or deployed at remote command centers. JFRG II accelerates the development, sourcing, analysis, and refinement of plans, resulting in rapid creation of TPFDD. Planning response time is decreased through the system's simplicity of design and data base methodologies. Numerous standard deployment-related reports and graphs assist planners during the analysis and refinement phases of TPFDD development as they prepare for a deliberate, crisis action, or exercise deployment and redeployment. JFRG II will import and export TPFDD to and from JOPES.

JFRG II operates on Pentium-based notebook and desktop computers. The standard desktop or notebook used by most planners satisfies the hardware requirement for JFRG II and enables the deployment planner in the field to be involved actively in the TPFDD development process.

During the Joint Deployment Conference last August, when General Burnette challenged the participants to "make deployment a national treasure," he succinctly stressed the three needs of a successful deployment process—

- The need to deliver the capabilities at the right time and place to the warfighting CINC.
- The need to be flexible.
- The need to be collaborative.

In essence, all current efforts to improve the joint deployment process are aimed at meeting these needs. Setting standards will help measure the success of these efforts. The development of a 72-hour TPFDD time standard is the first step toward implementing improvements today that will be aligned with meeting Joint Vision 2010 requirements. It also will provide a target to drive immediate improvements in every aspect of the deployment process, from origin to destination. Setting and meeting this TPFDD time standard will be the first step toward "making deployment a national treasure."

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Automated Battlebook System: Leveraging Technology for Force Projection

by Colonel Jerome Johnson

Today's Army must be prepared to deploy worldwide at a moment's notice. Our National Military Strategy calls for an Army quick-response force capable of deploying from U.S. bases to support contingencies anywhere in the world in a very short time. The success of such rapid deployments depends on the availability of pre-positioned equipment, materiel, and ammunition. The Army activity responsible for managing the vital mission of global pre-positioning is the Army Field Support Command (Provisional).

Deployments that depend on drawing pre-positioned equipment to support their assigned missions are a complex business. They require detailed planning in advance to ensure that deploying forces are trained and equipped properly to meet the requirements of the situation. Many sources of information exist to support the deployment mission. Accessing this information quickly and efficiently requires technological solutions—automated repositories of information and software tools to access and manipulate the information. The key is leveraging technology to provide cutting-edge software that the deployment planner can master quickly with minimal training. Chief among this software is the Automated Battlebook System.

Automated Battlebook System

The Automated Battlebook System (ABS) is a portable deployment-planning tool that provides real-time visibility of land-based and afloat Army pre-positioned stocks (APS) items and applicable "battlebook" reference information. In its current form, the ABS is released on CD–ROM approximately every quarter with updated data, battlebook text, and new program changes.

To leverage technology in the management of APS, the Army contracted with Stanley Associates, Inc., in 1995 to develop, implement, maintain, and support a Windows-based client-server software application called the Army War Reserve Deployment System (AWRDS). Each of the Field Support Command's pre-positioned sites uses the AWRDS to manage the APS at its location. Information on the APS is transmitted in real time via the Internet to the master data servers in Alexandria, Virginia, and Rock Island, Illinois. It is through a full-time connection with the AWRDS master data servers that the ABS maintains real-time visibility of APS data. This full-time connectivity allows ABS users to update their ABS data base at any time through the Internet. The AWRDS not only interfaces with the ABS but also with a variety of other Standard Army Management Information Systems (STAMIS).

ABS and the Deployment Planner

The ABS provides the deployment planner with many tools for rapid APS deployment planning. Here is a typical APS deployment scenario. The commander of a mechanized infantry battalion in the 3d Infantry Division (Mechanized) at Fort Stewart, Georgia, has just received an order to prepare the battalion to deploy to Southwest Asia. He calls the battalion S3 to pass on the order and issue his initial commander's guidance. After receiving the order, the S3 calls the S4 and then clicks on the "ABS" icon on his laptop computer. He knows that he is going to deploy and fall in on APS located in the theater. He needs to develop the deployment equipment list (DEL) to support this mission, and he needs answers to the following questions—

- When the battalion arrives in country, what equipment will it draw?

- Where is this equipment located?
- What is the condition of this equipment?
- What are the procedures for drawing this equipment?
- What "To Accompany Troops/Not Authorized for Pre-positioning" (TAT/NAP) equipment must the battalion deploy with in order to be fully mission capable when it arrives in country?
- What equipment shortages are there in theater?

Fortunately, the ABS can provide answers to these vital questions.

The battlebook text, provided by APS subject-matter experts, provides a wealth of information on deployment planning and the procedures for drawing equipment from a particular site or ship. A "doctrine" tool provides direct access to the FM 100–17 series of manuals, which contain APS doctrine. This reference material is presented in a straightforward, simple-to-use, browser-based format that provides the tools for quick access to information.

Users gain access to APS equipment data through a "unit sets" interface that provides visibility of equipment by unit type or location down to the serial number (or local item number or national stock number) level. Robust reporting and querying tools allow deployment planners to customize the ABS output to suit their particular needs.

A "prepo status" spreadsheet tool provides detailed information about on-hand and required equipment quantities as well as TAT/NAP information. An interface with the Standard Property Book System-Redesign (SPBS–R), coupled with the "prepo status" spreadsheet, provides the user with the tools he needs to develop an accurate DEL.

Recently, the Field Support Command began deploying the ABS suite of tools on the Internet as a prototype called the BattleWeb. The BattleWeb will be available later this year as an icon under the Army Electronic Products Support (AEPS) website. (AEPS is the standard Army Materiel Command web architecture.) The website address for AEPS is http://aeps.ria.army.mil.

ABS and BattleWeb Training

Although generally simple to use, the ABS and the BattleWeb do require some training. The need for training can be attributed to the complexity of APS deployment planning as much as to the ABS and the BattleWeb themselves. At present, the Field Support Command, in cooperation with the Army Forces Command, depends on a Stanley Associates mobile training team (MTT) to take the required training to users. Forces Command provides the funding for ABS MTT's and manages the schedule.

However, the Field Support Command's recent development of computer-based training (CBT) for the ABS will enable users to learn how to use the ABS without an MTT. The CBT includes three separate tools that together support a learning continuum, from quick reference to comprehensive, in situations from crisis response to sustainment training. Two components of this CBT—Checkpoint and Pathfinder—are integrated directly into the ABS to provide the user with instant assistance and training. Checkpoint provides quick reference information based on "hot spots" located on the user's screen. Pathfinder is a "wizard" that leads the user to real output, based on the user's interaction with the system. The third component—the Battlebooks Advanced Training Lab (BATL)—provides self-paced, scenario-driven training in a virtual ABS.

Once integrated into a future release of ABS, this CBT should eliminate most of the need for ABS training by MTT's. The next logical step is to provide similar web-based training (WBT) on the BattleWeb.

So let's return to our typical APS deployment scenario. How do the battalion S3 and S4 accomplish their planning? The answer, of course, is by using the ABS or the BattleWeb after a quick, self-paced CBT or WBT lesson.

The ABS, via the BattleWeb, offers the Army's soldiers and civilians a strategic tool to meet the needs of the 21st century. This tool neatly fits into the Chief of Staff of the Army's vision of providing a direct link to the information needed for a lighter, faster deployment of troops.

For more information on the ABS and the BattleWeb, visit our website at www.battlebooks.com; send e-mail to sosfs-coi@ioc.army.mil; or telephone the Army Field Support Command (Provisional) at (309) 782–0462. Our mailing address is Commander, U.S. Army Field Support Command (Provisional), ATTN: SOSFS–COC, Rock Island, IL 61299–6500. **ALOG**

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What Do *You* Know About APS–3?

by Dr. Derek Povah

Using the DTLOMS model, the author analyzes how well the Army trains its soldiers to use Army Pre-positioned Stocks Afloat in a deployment. His conclusion: More needs to be done.

Most of the Army's warfighters need to know more about the Army's Pre-positioned Stocks Afloat (APS–3) program; the associated processes of logistics over-the-shore (LOTS) and reception, staging, onward movement, and integration (RSOI); and the deployment planning tool called the Automated Battlebook System (ABS). To correct this deficiency, training on APS–3, LOTS, and RSOI should be institutionalized in the Army School System along with the ABS. I believe that the need for training in these areas can be illustrated by using the Army's doctrine, training, leadership, organization, materiel, and soldiers (DTLOMS) model.

APS–3 and Deploying Soldiers

Today's APS–3 fleet of ships has been designed and equipped to provide a power-projection capability of one heavy combat brigade ready to fight no later than 15 days after a deployment begins (C+15). This APS–3 force is a 2 x 2 heavy force, meaning two armored and two mechanized battalions plus support. The APS–3 fleet also provides theater-opening ships, combat support and combat service support units, and sustainment stocks capable of supplying a contingency force for 30 days. This massive cargo load will require quick offloading.

The scenarios for using APS–3, LOTS, and RSOI involve many players, and they will have to be able to perform in all kinds of weather conditions and sea states and under the threat of enemy attack. An APS–3 ship's crew will man cranes, assist and direct the offloading of cargo to watercraft, and direct drivers to the ship's causeway piers. Drivers inside wheeled and tracked vehicles will move toward the shore in convoys along piers. Soldiers manning watercraft will convey their cargo between ship and shore continually. Army civilians and contractors will unload the ships and watercraft in the reception and staging area as quickly as possible.

Before the troops match up with their vehicles and equipment, each piece will move through the offloading areas (reception and staging) to the onward movement area, where all maintenance and weapon checks will be conducted. Meanwhile, fresh reinforcements in the integration area will be in a state of high stress as they try to match up with their individual equipment, fighting vehicles, trucks, and guns (perhaps while under fire). Add to this confusion the facts that not one soldier will have seen the vehicles or equipment in the APS–3 inventory before arriving at the port or beach; troops previously engaged in hard fighting might be resting or recuperating in the RSOI area; and other troops will be awaiting medical evacuation to the very ships from which all the equipment is being discharged.

With all this in mind, consider the position of a newly commissioned second lieutenant, a slightly more mature first lieutenant, or a somewhat seasoned captain. These officers probably are 22 to 30 years old and have served anywhere from 1 to 8 years. They are assigned to a designated warfighting brigade that has been given orders to deploy within 72 hours. This includes falling in on vehicles, supplies, inventory, and equipment as it is offloaded from a ship in the APS–3 fleet. The officers and their subordinate enlisted personnel belong to

A Brief History of APS

The Army Pre-positioned Stocks (APS) Program originated after the Persian Gulf War, when the National Military Strategy changed from forward deployment to force projection. The APS–3 (Army Pre-positioned Afloat, or APA) was the initial element of this program. APA called for pre-positioning aboard ships a 2 x 2 heavy brigade with support (two armored and two mechanized battalions, plus support units, theater-opening combat support and combat service support units, and sustainment stocks for an area of operations) that could be operational by 15 days after a deployment operation begins (C+15).

Since its inception in the early 1990's, APS has expanded to six additional brigades with support pre-positioned at land-based sites in Southwest Asia, Northeast Asia, and Central Europe. By December 2001, the Army plans to have an additional brigade with support pre-positioned afloat, thus creating a total of eight pre-positioned brigade sets.

The Army Field Support Command (Provisional), headquartered at Rock Island Arsenal, Illinois, has the monumental task of managing the APS program. To accomplish this, the command employs personnel in 12 countries to perform the day-to-day management of APS stocks, both land-based and afloat. These personnel include soldiers and Department of the Army civilians, as well as U.S. and foreign contractors.

every military occupational specialty (MOS) series in the Army's inventory. The officers' APS–3, LOTS, ABS, and RSOI training before this assignment probably equals less than 4 hours of mobilization and deployment instruction. (From this point on, for convenience, I will refer to APS–3, LOTS, and RSOI collectively as APS.)

To assist the officers in preparing for the deployment, a senior noncommissioned officer (SNCO) warfighter with the rank of sergeant first class is part of the planning team. The age of this SNCO can range from 30 to 45 and his length of service from 12 to more than 20 years. Today's SNCO has deployment experience gained from numerous contingency operations over the last 5 years and from rotational training exercises at the National Training Center at Fort Irwin, California. Like the officers, however, he probably has less than 4 hours of APS–3 training. (It should be noted that the APS–3 fleet has not been involved in any contingency operations.) The young soldiers the officers and SNCO will take into battle also have not received any significant deployment or APS–3 training.

This lack of training can make all the soldiers, civilians, and equipment within the entire RSOI area extremely vulnerable even before they meet up at some hostile port or beach. This vulnerability is something the enemy may be well aware of and will be willing to use to his advantage to inflict losses on both soldiers and civilians. To avoid such losses, soldiers must learn to move quickly through RSOI. We must ensure that, before the soldiers reach the vulnerable RSOI phases, they are proficient not only in RSOI but also in how to plan their deployments. The DTLOMS model currently implemented by the Army is the foundation for achieving this.

Doctrine

The Army Training and Doctrine Command (TRADOC) has developed force projection doctrine that attempts to amplify this statement in the current FM 100–5, Operations: "The purpose of force projection is mission accomplishment and not merely entry into area of operations." The following is a list of this doctrine and its status—

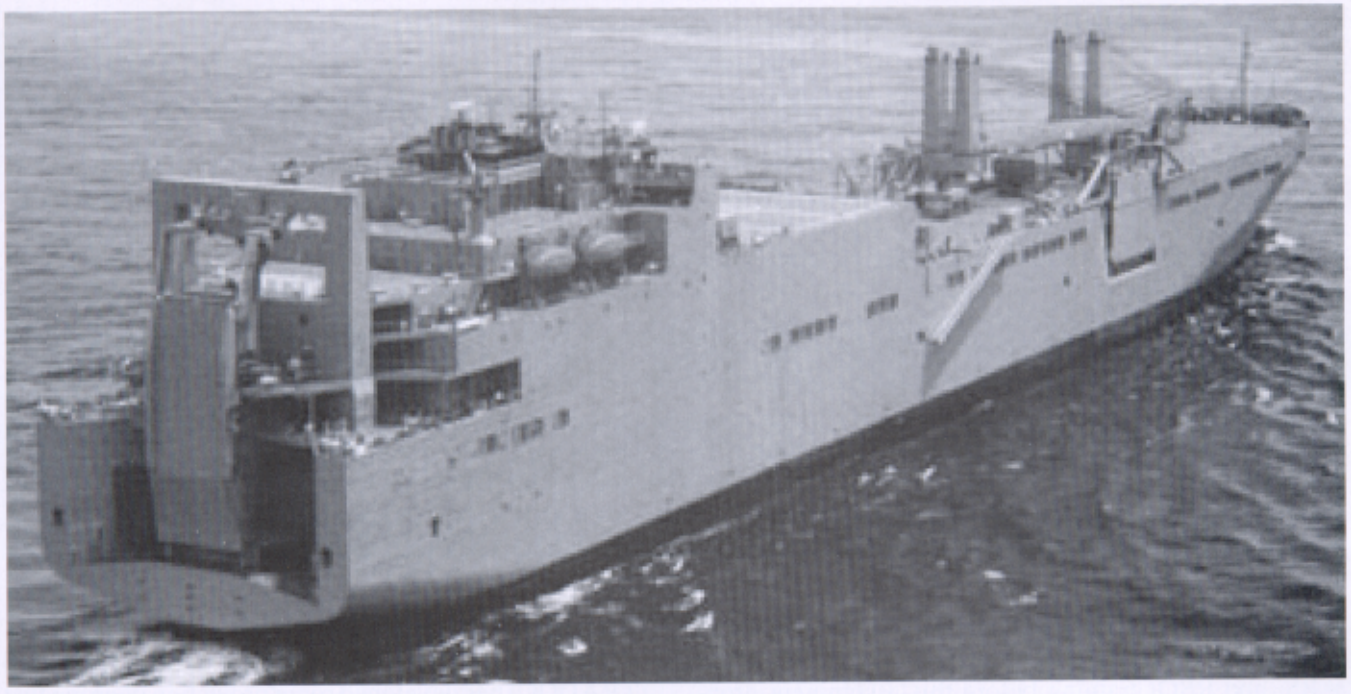
- FM 100–17, Mobilization, Deployments, Redeployment, and Demobilization, was published in October 1992.
- FM 100–17–1, Army Pre-Positioned Afloat Operations, was published in July 1996.
- FM 100–17–2, Army Pre-Positioned Land, was published in February 1999.
- FM 100–17–3, Reception, Staging, Onward Movement, and Integration, was published in March 1999.
- FM 100–17–4, Deployment: Fort to Port, and FM 100–17–5, Redeployment, currently are in draft.

Training and Soldiers

Although this doctrine is refreshingly recent, APS–3 training curricula, as of this writing, cannot be found within the Army School System.

FM 100–17–1 requires TRADOC, the Army Forces Command (FORSCOM), and the Army Materiel Command (AMC) to provide training to warfighters. A few years ago, Headquarters, Department of the Army (HQDA), provided funding to establish a mobile training team to teach APS and ABS to the warfighters until TRADOC, FORSCOM, and AMC developed and funded their own APS and ABS training. However, they did not do so, and HQDA discontinued funding for the mobile training team in fiscal year 1998.

During Operations Desert Fox and Desert Thunder,



☐ Large, medium-speed, roll-on-roll-off ships like this are key components of APS–3.

units of a FORSCOM division ready brigade (DRB) designated to fall in on APS–3 had to use their own funds to obtain training from a contractor APS and ABS mobile training team under an Army Field Support Command [FSC (Provisional)] contract. (FSC was formerly the Army War Reserve Support Command.) This was achieved only through careful coordination among the units, FORSCOM, the FSC, and the contractor. By October 1999, FORSCOM had made funding available and signed a contract to provide its units with APS and ABS training. Some visionary leaders are beginning to place APS on their unit training calendars.

Since Operations Desert Fox and Desert Thunder, training surveys have been administrated to second lieutenants, first lieutenants, captains, majors, and SNCO's attending APS and ABS training. When answering the question, "Do you see a need to incorporate APS and ABS into the Army School System?" their overall response was affirmative. When asked, "Into what courses would you incorporate APS and ABS and where?" the most frequent responses included officer basic courses, captains career courses, the Combined Arms and Services Staff School, basic enlisted individual training, advanced initial training for all MOS's, basic and advanced NCO courses, first sergeant courses, sergeant major courses, warrant officer basic and advanced courses, mobility warrant officer basic courses, and the Command and General Staff Officers Course.

Generals have received mobile training team instruction and, with their subordinates, have admitted their lack of APS knowledge. Many high-ranking officers involved in APS–3 matters have suggested that Army National Guard and Army Reserve schools also incorporate APS in their training areas, as should schools with pre-command courses, the School for Advanced Military Studies, and the Army War College.

Army civilians also need APS education. I believe that the Sustaining Base Leadership and Management Program, taught at the Army Management Staff College at Fort Belvoir, Virginia, could best accommodate such training.

Leadership

The most essential dynamic of combat power is competent and confident officer and NCO leadership (see FM 100–5). So consider this bold statement made by a senior-level general officer: "Even though doctrine, equipment, other agencies, etc., are in place for deployments, it is the warfighters that are not confident when confronted with deployment matters relating to all aspects of APS."

Leadership for APS begins at the National Command Authorities (NCA) level. It is only through this leadership authority that APS assets can be used in a major theater of war. The result of this requirement is that APS management has been split into peacetime and wartime leadership roles and responsibilities.

In peacetime, APS management is the responsibility of AMC's Executive Agent for APS, the FSC, which is headquartered at Rock Island Arsenal, Illinois. However, in wartime, APS leadership transfers to a specific commander in chief (CINC), but only after APS has been

activated by the NCA. That the CINC's are not responsible for APS in peacetime is perhaps one reason why the warfighting CINC's lack interest in APS matters and funding for peacetime training. This lack of interest by the very top leadership has a tendency to trickle down to other levels of command. The results of this are evident, with APS training partially forgotten until the deployment warning order is received. When that occurs, it is too late to begin training.

In a force-projection army, every commander, every soldier, and every unit must be trained and ready to deploy. Leaders have the responsibility to train their subordinates. This may be their most solemn responsibility (see FM 100–5).

Organization and Materiel

Below the NCA level, two distinct organizational roles and responsibilities have been structured for peacetime and wartime. In peacetime, the role of the CINC's and warfighters is to train troops continually to win wars. In wartime, their role is to win wars; on the day of battle, soldiers and units will fight as well or as poorly as they are trained (see FM 100–5). In peacetime, the FSC work force is responsible for acquisition, inventory control, and maintenance of all APS end items, equipment, and supplies to achieve a continuing high state of readiness.

In order for the FSC to provide APS to any CINC in the world, all APS–3 assets are classified as "swing stocks" and maintained in a combat-ready condition. A CINC will receive added force-projection assets from seven large, medium-speed, roll-on-roll-off (LMSR) ships carrying cargo equal to a 2 x 2 heavy brigade, including combat support and combat service support equipment and supplies. To assist in offloading where port facilities are insufficient, APS–3 maintains port-opening equipment aboard two heavy-lift pre-positioning ships and one tactical auxiliary crane ship. In addition to the LMSR ships and port-opening ships, five containerships carry sustainment supplies and ammunition. The materiel associated with APS is estimated be worth approximately $1.4 billion. The inventory list consists of wheeled and tracked fighting vehicles; trucks, engineering, medical, and military police vehicles; artillery pieces; aviation, quartermaster, and mortuary affairs assets; and many containers with vast amounts of equipment, tools, spare parts, and medical and food supplies.

All of this materiel is stowed aboard and between the many decks of each ship. The ABS provides the FSC with a tool to capture total asset visibility of all of this materiel. The ABS contains the entire APS inventory, stow locations, all APS-associated doctrine, maps, and much more, and all of this information is available on a CD–ROM. The ABS allows retrieval of real-time information and displays the worldwide status and availability of APS equipment.

Having total asset visibility makes the ABS a valuable pre-deployment planning tool. Through the ABS, unit movement officers and others can identify quickly the ships and the types and quantities of equipment they will fall in on and their locations. The ABS provides them with a tool to assist in quickly calculating their own "To Accompany Troops/Not Authorized for Pre-positioning" equipment requirements before they meet up with a ship; in turn, it allows them to reduce their airlift requirements. Through the use of ABS, valuable time is saved in the pre-deployment phases—time that soldiers need to perform other demanding pre-deployment requirements.

So how does the Army's effort at preparing soldiers for using APS measure up using the DTLOMS model? I believe like this—

Doctrine: Yes.
Training: None.
Leadership: Low interest.
Organization: Questionable.
Materiel: Yes.
Soldiers: High interest.

Today, a soldier's point of reference when associated with APS ranges from very narrow to none. This narrow point of reference will place him in harm's way. A lot remains to be done to expand the APS proficiency of our soldiers. Soldiers involved in deployment planning, who are exposed to the Army's minimally provided APS training, have recommended that APS training be institutionalized within the Army School System. They have even gone so far as to recommended appropriate courses. Soldiers are our number one priority. They are challenging their leaders to provide them with better training. We need to listen to them. ALOG

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Institutionalizing Contractor Support on the Battlefield

by Joe A. Fortner

In the first of two articles on contractor support, the author discusses general policy and doctrine development efforts for using contractors to support Army operations.

Lessons learned throughout our country's history, including those from our most recent military operations, demonstrate that contracting can be an effective force multiplier. Contracted capabilities can increase or decrease available support resources quickly in response to changing requirements. They can extend existing military capabilities, present alternative sources of supplies and services, and provide capabilities where none exist in the military. The Army can obtain substantial advantages and economies through contracted support.

Contracting for support services is not new; contractors have supported the Army in every contingency since the Revolutionary War. Contract teamsters, for example, provided critical support to General George Washington. Contractors supported military operations during the American Civil War, both World Wars, the Vietnam War, and the Persian Gulf War.

Today, the Army uses contractors to support a wide variety of activities, from routine base operations to technical maintenance of high-tech weapon systems. But, except for Logistics Civil Augmentation Program (LOGCAP) contracts, the Army's use of contracted support typically has been focused on individual contracts written and implemented as circumstances required.

This article focuses on general policy and doctrine development efforts for using contractors to support Army operations on the battlefield. More detailed issues associated with managing, deploying, protecting, and sustaining contractors will be discussed in a subsequent article in the next issue of *Army Logistician*.

Institutionalizing Contractor Support

Over the past year and a half, the Army has attempted to institutionalize contracting as a routine function of military operations. The Army's procedure for institutionalizing a process is simple in concept. It tasks an agent or organization to investigate the process in precise and finite detail, perform analytical and intellectual reviews, and coordinate the results among the appropriate staff agencies. The Army then writes and publishes appropriate policy and doctrine, and the process is institutionalized.

In mid-1998, the Army Training and Doctrine Command (TRADOC) and the Army Combined Arms Support Command (CASCOM) formed an Integrated Concept Team (ICT) to develop a capstone field manual for Contractors on the Battlefield. Coincidentally, the Office of the Assistant Secretary of the Army (ASA) for Acquisition, Logistics, and Technology (ALT) was beginning to develop a capstone field manual for *acquiring* contracted support. Additionally, the Office of the Deputy Chief of Staff for Logistics (ODCSLOG) had begun to develop Army-level policy for using contractors to support Army operations. TRADOC and CASCOM, as co-chairs of the ICT, invited ASA (ALT) and ODCSLOG representatives to join the ICT to ensure coordinated and synchronized doctrine and policy development. The ICT also invited numerous organizations with contracting experience to participate, including the Army Forces Command, the Army Intelligence and Security Command, Army Materiel Command, and combat support (CS) and combat service support (CSS) service schools.

Over the following several months, the ICT accomplished much. Its successes included—

- Publication of Army Regulation (AR) 715–9, Contractors Accompanying the Force, 29 October 1999. This

AR establishes Army policy for using contractors to support battlefield operations. It is the first Army-wide policy governing contractor operations on the battlefield.

- Publication of Field Manual (FM) 100–10–2, Contracting Support on the Battlefield, 4 August 1999. This is the Army's first capstone doctrinal manual for acquiring contractor support. It focuses more on acquisition of contract support than on contractor operational support.
- Publication of FM 100–21, Contractors on the Battlefield, 26 March 2000. This is the Army's first capstone doctrinal manual for the operational aspects of using contractors to support Army operations.
- The Contractors on the Battlefield Rock Drill, which was presented to Army leaders first on 29 June 1999. The presentation embodied all of the knowledge the ICT had amassed during its deliberations. CASCOM continues to present versions of the rock drill in numerous forums.

Basic Principles of Contractor Support

Using contractors to provide support and services to military operations is not without risks or costs. Institutionalizing their use in doctrine therefore must be based on certain governing principles. These principles are not absolutes; some of them, in fact, may be mutually exclusive at certain levels of detail. Nevertheless, they provide functional parameters within which to evaluate the desirability of using contracted support in military operations.

These principles, which have been incorporated into the doctrinal and policy publications listed above, include the following—

- Contractors do not replace force structure. They augment Army capabilities and provide additional options for meeting support requirements.
- Depending on mission, enemy, terrain, troops, time, and civilian considerations (METT–TC), contractors may deploy throughout an area of operations and in virtually all conditions.
- Commanders are legally responsible for protecting contractors in their area of operations.
- Contractors must have enough employees with appropriate skills to meet potential requirements.
- Contracted support must be integrated into the overall support plan.
- Contingency plans must ensure continuation of service if a contractor fails to perform.
- Contractor-provided services should be invisible to the users. Any links between Army and contractor automated systems must not place additional burdens on soldiers.
- The Army must be capable of providing critical support before contractors arrive in the theater or in the event that contractors either do not deploy or cannot continue to provide contracted services.
- Although contractors can be used as an alternative source of capabilities at theater or corps level, commanders must remain aware that, within a given operation, using contractors could decrease flexibility.
- Changing contractor activities to meet shifting operational requirements may require contract modifications.

These basic principles provided the framework for developing doctrine and policy for contractors on the battlefield. They are applicable to contractor efforts today and on the future battlefield.

Types of Contractors

The ICT has defined three types of contractors and documented the definitions in FM's 100–10–2 and 100–21.

Theater support contractors support deployed operational forces under prearranged contracts or under contracts awarded from the mission area by contracting officers serving under the direct contracting authority of the theater principal authority responsible for contracting (PARC). Theater support contractors provide goods and services and perform minor construction to meet the immediate needs of operational commanders. Contracting officers deploy immediately before and during the operation to procure goods, services, and minor construction, usually from local vendors or nearby offshore sources. Theater support contracting occurs according to the theater PARC's contracting support plan. This plan, which is an appendix to the logistics annex of the operation plan, campaign plan, or operation order, governs all procurement of goods, services, and minor construction within the area of operations.

External support contractors provide support to deployed operational forces that is separate and distinct from either theater support or support provided by system contractors (see below). They may operate under pre-arranged contracts or contracts awarded during the contingency itself to support the mission. Contracting officers who award and administer external support contracts retain unique contracting authority derived from organizations other than the theater PARC. The Army Materiel Command (AMC), for example, provides commercial depot support by contracts through its commodity commands. Other organizations that provide external support contracts include the LOGCAP Program Office; the U.S. Transportation Command, which provides Civil Reserve Air Fleet and commercial sealift to support the theater; and the Army Corps of Engineers, which procures leased real property and real estate. These organizations retain contracting authority from their parent commands for those specific functions.

Commanders and their staffs include these commands in their mission planning; they should include support appendices in the applicable staff section annex to the operation plan, campaign plan, or operation order. For example, the staff engineer coordinates Army Corps of

Engineers procurement of real estate and real property, and the joint force transportation planner coordinates with U.S. Transportation Command component commands to monitor their assets. External support contractors establish and maintain liaison with the theater PARC as they conduct their unique support missions. They procure goods and services they need in the theater in accordance with the theater PARC's contracting support plan.

System contractors support deployed operational forces under pre-arranged contracts awarded by program executive officers (PEO's), program managers (PM's), and AMC to provide specific support to materiel systems throughout their life cycle during peacetime and contingency operations. These systems include, but are not limited to, vehicles, weapon systems, aircraft, command and control infrastructure, and communications equipment. Contracting officers working for the PM's and AMC's major subordinate commands administer their system contractors' functions and operations through their contracts. AMC and the individual PM's maintain contracting authority for those contracts, plan required support for their systems, and coordinate that support with the supported commander in chief's planning staff. The contracting organization with responsibility for system contractors establishes and maintains liaison with the theater PARC or senior Army contracting official in theater as specified in the theater contracting support plan. These contractors procure goods and services they need in the theater as stipulated in the theater PARC's contracting support plan and published in the operation plan, campaign plan, or operation order.

Note that these definitions do not include the term "contingency contractors," a term that has been in common use. This is because the term is not sufficiently precise for doctrine and policy publications; all contractors supporting military operations in an area of operations are contingency contractors.

Benefits of Contractors on the Battlefield

There are several reasons why the Army needs to use contractors on the battlefield, the most fundamental of which derives from the Army's mission—to deter our Nation's potential enemies and, if deterrence fails, to win our Nation's wars. However, over the past several years, the resources available to perform that mission have dramatically decreased. Our active-duty force structure, for example, has dropped from 789,000 in 1989 to 480,000 in 2000. Yet the operating tempo (OPTEMPO) continues to rise. In 1999, soldiers across the Active Army were deployed an average of more than 130 days per year.

More specific reasons why the Army benefits from using contractors include the following—

- They can facilitate force projection by permitting more rapid force closure. As the Army becomes ever more based in the continental United States, force-projection capability becomes increasingly critical. Theater support contractors provide an in-place capability that does not have to be deployed, and any capability that can be obtained in theater saves time and effort during deployment operations.
- Contractors provide a source of high-tech, low-density skills. The Army is reaching the point where it no longer can afford to maintain the training infrastructure for military occupational specialties with a density of a few dozen soldiers. Such skills are readily available from system contractors. In fact, the manufacturer of a weapon system (or major subsystem) is a common source of such talent.
- Contractors permit the Army to maximize combat forces in areas where total force size is constrained. The Army sometimes operates in countries where status of forces agreements limit the total number of uniformed soldiers. By using contractors, who do not count toward the force limit, the Army can increase the number of combat soldiers available and still have adequate CS and CSS capabilities.
- Contractors can provide capabilities the Army does not have. Although this usually means high-tech skills, it also can include more mundane skills. In Bosnia, for example, contractors are providing sewage treatment service for the base camps. The Army does not have appropriate soldier skills for this function.
- Contractors can reduce OPTEMPO and its inherent burden on soldiers. A force-projection Army requires soldiers to deploy frequently and for long periods of time. This can affect soldiers' quality of life significantly and, ultimately, impact training and retention. Using contractors, particularly in relatively benign environments, reduces the need to send soldiers to perform the mission.

Limitations on Contractor Use

Contractors have supported, and will continue to support, the Army across the full spectrum of military operations, and they will be used in virtually all locations on the battlefield. However, there are three functions that contractors, by law, cannot perform—

- Armed combat. The United States does not contract out its warfighting.
- Command and control of U.S. military and civilian personnel. Command and control is a uniquely military function that cannot be contracted.
- Contracting. The Army does not hire contractors to perform its contracting function.

Except for these limitations, contractors can perform any Army function. This means that virtually all Army CS and CSS functions potentially are contractible. Today, contractors routinely perform such CS and CSS func-

tions as transportation, maintenance, medical support, signal support, real estate management, and mortuary affairs.

Determining Core Capabilities and Risks

Contractors are not soldiers, so they are not subject to the same rules and conditions as soldiers in the field. This introduces the related requirement for core capability determination and risk assessment.

The Army's total capability to perform a given function, such as transportation, maintenance, or field services, is the sum of the capabilities of uniformed soldiers and units (Active Army, Army National Guard, and Army Reserve), Department of Defense civilians, host nation resources (military or civilian), other civilian resources, and contractors.

A core capability can be defined as that portion of a given functional Army capability that must remain in the "green suit" force structure. But this definition depends on METT–TC; the requirement varies with the circumstances. Circumstances dictate the amount of a functional capability that the Army can contract out. This means that core capability has both functional and quantitative aspects. It is not enough to determine which functions can be contracted out; the Army must determine, for each contemplated operation, *how much* of each function can be contracted.

One of the biggest factors affecting determination of core capability requirements is risk assessment. There are two aspects of risk assessment. One is the risk to contractor personnel, and the other is the risk to successfully accomplishing the mission. Because contractor personnel are not soldiers, the Army must protect them physically. While contractors can be armed, they can use their arms only for self-defense. They cannot use their arms to perform perimeter defense or even to protect their fellow contractors. This means that using contractors to perform an otherwise military function may not reduce the green-suit force requirement by the same amount. Soldiers still have to be present to protect the contractors. On the other hand, contractor presence almost certainly will reduce the soldier presence by some amount. If the contractor fails to perform, there may not be sufficient soldier presence to accomplish the mission successfully.

Operational circumstances also affect risk assessment. In relatively benign environments, such as a humanitarian assistance operation, the risk to contractor personnel may be quite low. Accordingly, their presence may be very high in proportion to the soldier presence. In less benign circumstances, such as a major theater war, risks to contractor personnel may be much higher, and their presence may be reduced significantly.

The key point is that core capability determination and risk assessment must be an integral part of the planning process for any military operation where contractors may be used. Staff planners must have the doctrinal and policy tools necessary to perform that planning. The capstone doctrinal manuals and regulations already developed provide only the most basic insights for staff planners. Doctrine that addresses the tactics, techniques, and procedures level of detail is still needed. **ALOG**

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CONTRACTOR AWARDED MEDAL OF HONOR

America's only female Medal of Honor recipient was a contractor. She was Dr. Mary Edwards Walker. Dr. Walker served the Union Army during the Civil War with the title of "Contract Assistant Surgeon." At war's end, General William T. Sherman recommended her for receipt of the Medal of Honor, and President

Andrew Johnson approved it on 11 November 1865. Later, in 1917, the War Department rescinded the award of Dr. Walker's medal (along with some 900 others). She refused to relinquish her medal and wore it until her death in 1919. President Jimmy Carter restored Dr. Walker's medal posthumously in 1977.

Supporting the National Training Center

by Major William C. Latham, Jr.

Although their accomplishments often are overshadowed by the more visible presence of Fort Irwin's customer units, the "Desert Warriors" quietly keep the installation running 24 hours a day, 7 days a week.

It is 2115 on training day 4 of rotation 99–07 at the National Training Center (NTC) at Fort Irwin, California. One kilometer north of the distinctively shaped mark in the desert terrain known as "the Arrowhead," infantrymen from the Virginia Army National Guard dart forward in a crouch under the deadly blur of rotor blades. Their squad leader directs them to seats in the back of the UH–60 Black Hawk helicopter. In the cockpit, the dimmed lights on the instrument panel illuminate the faces of First Lieutenant Martin Meyer and Chief Warrant Officer (W–3) John Crowley, members of the NTC's Corps Support Battalion, who wait patiently for the "pax" [passengers] to strap in. As the passenger doors slam shut, the UHF radio crackles.

"Flight, this is lead. We are going to depart to the south, break left, and follow the road to the east, where we'll hop over the 'worm hole,' then slide left toward Red Lake, and come into the LZ [landing zone] from the east."

"Chalk Two, Roger."

"Chalk Three, Roger."

As air mission commander for this air assault, Meyer commands a flight of three UH–60's. His mission is to insert 100 light infantrymen into landing zones located in the enemy's rear area. If all goes as planned, these platoons will relay enemy locations and knock out enemy tanks before they even cross the line of departure.

Seconds after his last radio call, Meyer smoothly raises the collective lever with his left hand, increasing the pitch in the blades and lifting the aircraft up and forward. Pilots in the other two UH–60's perform the same maneuver almost simultaneously, and the flight forms a ragged line of march as the aircraft settle into cruise fleet, skimming south along the valley floor at 100 miles per hour.

The NTC Corps Support Battalion may be the best battalion you've never heard of. With over 900 soldiers and civilians assigned, the battalion supports almost every aspect of the NTC's mission to provide world-class training for the 70,000 Active Army, Army National Guard, and Army Reserve soldiers who train at Fort Irwin each year.

The late Major General James Wright, then the Army's Quartermaster General, once called the NTC Corps Support Battalion "the best support battalion in the United States Army." "Able, flexible leaders and tough, well-trained soldiers make the difference," explained Wright. "They hang tough on every mission."

Although the battalion's accomplishments often are overshadowed by the more visible presence of its customer units, the 11th Armored Cavalry Regiment and the NTC Operations Group, the Desert Warriors keep the installation running 24 hours a day, 7 days a week.

The battalion's combat service support mission is unique. It provides direct support (DS) and general support (GS) maintenance for the NTC's aging pre-positioned fleet of over 1,200 vehicles and 15,000 items of equipment. It maintains equipment for the NTC Operations Group, the 11th Armored Cavalry Regiment, and the installation command group. The pre-positioned fleet alone contains two full brigades' worth of equipment, each of which sustains an operating tempo nearly four

☐ NTC Corps Support Battalion soldiers provide HET support to units training in the desert.

☐ "Desert Warriors" tie down vehicles being transported in the day's HET mission.

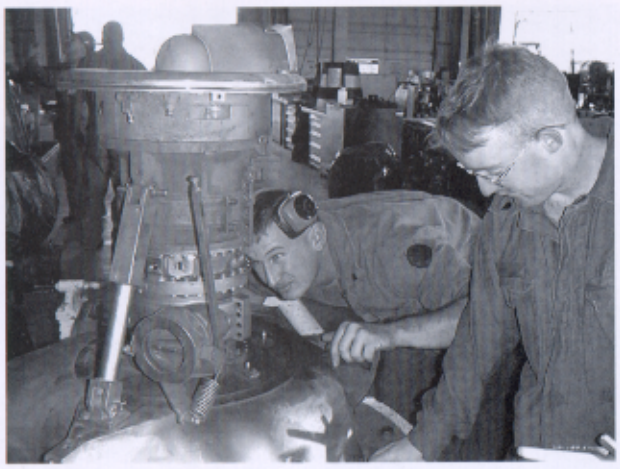
times higher than the Army average.

In addition to its maintenance mission, the battalion operates a supply support activity and provides heavy equipment transporter (HET) support for both rotational "Blue Force" ("BLUFOR") units and the 11th Armored Cavalry Regiment's opposing force (OPFOR). The battalion also provides air ambulance support to rotational units, the installation, and surrounding communities and aviation support of both the installation and the OPFOR. The battalion also provides administrative support for two explosive ordnance disposal (EOD) detachments that support the installation and communities throughout southern California.

The organization's soldiers execute each of these diverse missions daily. The battalion has cut its backlog of DS and GS work orders by more than half in the last 6 months, while safely flying over 2,000 hours. In addition, the battalion has achieved an exceptional rating on its last Army Forces Command (FORSCOM) Aviation Resource Management Survey, and it recently won the FORSCOM commander's Supply Excellence Award for the second year in a row.

At 0830, Specialist Bartley Wilt allows his high-mobility, multipurpose, wheeled vehicle (HMMWV) to creep forward slowly while he checks his position on his precision lightweight global positioning system receiver. Gentle breezes are all that remain of the previous night's 50-mile-per-hour winds, and the morning sunshine heats the cloudless blue sky. Wilt is searching diligently for Tarantula 12 Echo, one of the NTC's light infantry trainers, whose vehicle generator has malfunctioned.

Wilt is a member of the 699th Maintenance Company's "Marauders," a team of mechanics who specialize in making rapid, on-site HMMWV repairs. The Marauders patrol the desert throughout each training rotation, providing



☐ Soldiers from the 31st Maintenance Company work in the M1A1 engine rebuild shop at the NTC.

critical maintenance to the observer-controllers of NTC's Operations Group.

Five hundred meters later, Wilt spots the disabled HMMWV to his west and shouts, "He's over there!" The problem is a cracked bracket on the HMMWV's generator. Fortunately, Wilt brought three spares, and he attacks the job of removing the unserviceable generator.

It is now 1115 at the "Flagpole." The midday sky is cloudless and breezy, providing the BLUFOR and OPFOR soldiers with a much-needed break from the 90-degree heat. A 60-foot-long HET turns in a graceful arc at the end of a long line of other already-parked HET's. Behind the trucks, two dozen track crews wait impatiently to load their tracks onto the HET trailers for the move west to their next battle position.

The loading goes quickly and smoothly. With the flip of a switch, the driver of the first HET slowly lowers his trailer bed on hydroelectric "bogie cylinders." Once the bed is lowered, he drops down the two loading ramps and waves the waiting Sheridan tank forward onto the trailer. Within 2 minutes, the tank is chained securely to the trailer.

Down the line of HET's, the sequence is repeated 24 times. Then the big trucks rumble west in a line, each vehicle trailed by a dark brown cloud of dust. Despite the dusty conditions, drivers leave both cab windows open. The breeze provides limited relief from the combined heat of the desert sun and the vehicles' 500-horsepower engines.

After 40 minutes of jostling over bumps and potholes, the convoy reaches the top of Brown Pass at 1215. Again, the HET's arc left into line, drop their ramps, and offload their lethal cargoes. The OPFOR crews rapidly mount their tanks and rattle off to their separate battle positions. Amid a symphony of slamming ramps and rattling chains, the HET drivers prepare their vehicles for the next "flip" back to the "Flagpole," where more tracks stand waiting for a ride.

In the 577th Maintenance Company Shop Office, First Lieutenant George Durhan squeezes past a crowd of soldiers and civilian contractors in the outer office to reach for his phone. It is 1345, and his supply sergeant has just notified him that a major repair part is missing. Durhan needs to call to see if he can walk through another parts request before close of business.

As shop officer for the largest maintenance company at Fort Irwin, Durhan has his hands full managing the maintenance efforts of 250 soldiers and 11 shops. While the unit's mechanics perform knuckle-busting work on the vehicles in the pre-positioned fleet, Durhan juggles priorities to ensure that parts are on hand, jobs get completed on time, and the right people work on the right jobs.

Durhan is part of a cadre of proud young officers and noncommissioned officers who sustain the NTC Corps Support Battalion. Together, they provide the leadership and discipline needed to carry out the commander's vision of a trained, ready battalion that provides outstanding support to its customer units.

Training and maintenance are tough, dirty jobs at the NTC. As the saying goes, "Life be hard in the desert." Thanks to the continuous, round-the-clock efforts of the Desert Warriors, however, the vehicles keep running and the NTC continues to provide world-class training to a world-class Army. **ALOG**

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Keeping DCSLOG Forms Up to Date

by Gregory T. Tuttle

Maintaining a large number of official forms can be a daunting task, especially if there is no data base available to track the forms used and the information they gather. This is just the situation that the Office of the Deputy Chief of Staff for Logistics (ODCSLOG), Department of the Army (DA), has faced in managing the 365 active logistics forms for which the DCSLOG is the proponent. About 75 percent of them are DA forms, and 25 percent are Department of Defense forms; many are published electronically. Along with having no data base to manage the forms, ODCSLOG also has had no automated tools or processes within its DCSLOG Publications Management System (DPMS) for synchronizing updates of blank forms with policy changes.

To correct these problems, the Logistics Integration Agency (LIA) at New Cumberland, Pennsylvania, a field operating agency of ODCSLOG, has developed an automated forms update capability that is fully integrated with DPMS. The new forms capability provides a data base for managing approved forms, draft forms, and recommended changes to forms; support tools for authors and sponsors that permit the possible consolidation and elimination of some forms; a capability for synchronizing the update of forms with the update of prescribing policy through integration with DPMS; and the ability to submit recommended changes to blank forms, to include automating the process for managing recommended changes.

LIA has constructed a separate data base of electronic forms that will serve as a policy analysis tool and will allow users to query the displayable contents and data base fields of existing and newly revised electronic forms. The data base now contains about 200 forms. The rest of DCSLOG's forms should be digitized and in the data base by December.

As an example of how this data base will work, let's assume a policy maker wants to know how many DCSLOG forms would need changing to add a "submitter e-mail address" field to all forms. He first would have to determine how many of the forms already contain that field. Today, the policy maker would have to look at hundreds of forms to compile an answer. Using the forms data base, this analysis could be performed in seconds. The policy maker simply would run a data base search for forms that have "submitter," "e-mail," and "address" fields.

Since forms collect information needed within the logistics process, tools that quickly and easily identify what is being collected and where it is collected are important. Policy makers can use these tools to reduce duplication among forms and decide if a new form is needed.

DPMS now tracks the review-and-update status of all DCSLOG publications. A coordinator is assigned to monitor the status of each publication as it moves through the review, update, and publication stages. LIA will integrate forms update procedures into the DPMS Army Regulation (AR) and DA Pamphlet (Pam) management process. Although forms must be prescribed by AR's and DA Pam's, they are published in a variety of formats and often can be updated separately from the policy sources that prescribe them. DPMS will be modified to track scheduled review dates, update milestones, and track publishing status for forms in the same manner as that currently performed for logistics policy documents.

To tie the policy and forms update processes together fully, LIA will construct an automated DPMS cross-reference that can be used to identify and maintain prescribing relationships between DCSLOG forms and policy documents. For instance, the LIA coordinator responsible for a particular DA Pam will have access to a quick cross-reference that identifies all forms prescribed by that pamphlet. If the pamphlet is scheduled for review during the third quarter of 2001, all forms it prescribes also can be assigned a review date of the third quarter of 2001. A single LIA coordinator thus will be responsible for both the prescribing document and all prescribed forms. Since examples of all forms are not provided and sometimes are not referenced in their prescribing documents, this ensures all prescribed forms are reviewed during the policy update process. In turn, policy makers can use DPMS search tools to determine the effect of changes to forms referenced in more than one publication. A form change could trigger changes to several publications that reference that form.

LIA will provide an electronic DA Form 2028, Recommended Changes to Publications and Blank Forms, submission capability for logistics forms. This capability will be integrated with existing submission procedures for DPMS changes, allowing electronic DA Forms 2028 to be submitted for blank forms as well as AR's and DA Pam's. This feature is necessary since users sometimes access forms without opening their prescribing documents. It also will allow the ODCSLOG to collect change information on forms in the same manner it now does for regulations and pamphlets. **ALOG**

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Planning for a Successful Theater Support Command

by Colonel George William Wells, Jr., USAR

The Army currently is changing from a structure largely based on the division to one that emphasizes quicker, lighter, power-projection forces. Joint Publication 4–0, Doctrine for Logistic Support of Joint Operations, states that, wherever feasible, chains of command and staffs should be organized in peacetime so that they do not have to be reorganized for war. Among the Army organizations in the forefront of meeting this requirement is the theater support command (TSC). The TSC is an echelons-above-corps organization combining active and reserve component units that will be tailored to manage focused logistics in an area of operations. To perform this mission, the multicomponent TSC must be aligned in garrison as it will deploy in the field.

The question is, how do we get from here to there? It is an internal organizational challenge to integrate the TSC's multicomponent structure and personnel with automated equipment to achieve an effective joint fighting force. In this follow-on article to "Theater Support Command: Multicomponent Logistics" (*Army Logistician*, May-June 2000 issue), I will discuss the internal operations, coordination, and communication processes needed to create a successful multicomponent organization from units that can be separated by thousands of miles.

Doctrine

Many hours have been devoted to developing Field Manual (FM) 63–4, Theater Support Command. TSC personnel are using the emerging doctrinal guidelines as the basis for field-testing functional operations in a number of military exercises. Soldiers participating in these exercises are formulating the results into detailed operational tools that can be inserted into internal command pamphlets and standing operating procedures. These documents in turn serve to delineate the unit mission, the command vision, and the mission-essential task list (METL) of the TSC.

TSC leaders have developed comprehensive training strategies for informing their personnel about the TSC's unfolding structure and operations. In this training, soldiers study logistics doctrine in FM's and read TSC-oriented articles from professional journals. In the reserve components, soldiers are given training classes during drill that include review of assigned reading material, open discussion, and participation in tabletop practical exercises. These classes cover the basics of logistics flow, detailed descriptions of command elements and their interaction, TSC responsibilities, and commonly used acronyms.

Personnel

As a separate multicomponent organization, the TSC is made up of soldiers from both the active and reserve components. One of the first requirements in structuring the TSC was determining which component would fill which positions. A select task force carefully reviewed each paragraph and line number in the pending TSC table of organization and equipment, considering such elements as mobilization, operational needs, long-term planning, day-to-day functions, and soldier promotion opportunities. The task force also factored in the unique logistics requirements of different areas of operations.

The TSC active-duty element requires a certain mix of soldier skills to perform daily support operations. On the other hand, it was determined that long-term planning and simulated exercise experience are critical for the success of the reserve elements. As these issues were outlined, the TSC's logistics support demands were balanced against the active and reserve component training needs to avoid potential mission requirement shortfalls. Overall, the selection of personnel from the active and reserve components was based on meeting both individual and unit needs.

Recruiting and Retention

The recruiting of quality soldiers is vital to TSC stability. Active-duty positions are filled through direct assignments. TSC reserve component positions are filled by direct assignment through the recruiting structure or by self-generated unit initiatives. Soldiers enter the military looking for challenge, and, upon completing training, they expect to use their soldier skills. TSC leaders

have recognized this and are committed to planning dynamic and purposeful field training opportunities for their troops. To enhance soldier skills, training will include force protection exercises, weapons fire, driver licensing, common skills testing, physical fitness activities, and employment in meaningful logistics activities.

High-quality logisticians must be sought methodically and placed in TSC organizations. The last 10 years have seen a dramatic drawdown in the size of our military forces, especially in young combat service support (CSS) officers and noncommissioned officers (NCO's) in leadership positions. Many active and reserve component mid-level management positions have been eliminated, and the number of units has been reduced (with an accompanying reduction in management positions).

Rather than just relying on the normal assignment process to provide the soldiers it needs, one TSC has taken an additional step: it has formed an in-house reserve component recruiting team whose sole purpose is to fill the ranks of the command with quality logistics officers, NCO's, and enlisted soldiers. The team will be structured with energetic officers and NCO's committed to recruiting quality soldiers. In order to achieve recruiting goals, these soldiers will schedule their drill periods in conjunction with their recruiting activities. The TSC anticipates that this internal recruiting task force will be engaged actively for a minimum of 1 year.

The responsibilities of mid-level and senior TSC leaders do not end with recruiting. Once a soldier is assigned, the command must provide him with the opportunity to do his job in an environment of satisfaction, recognition, and realistic work assignments. He should be given leadership opportunities, the chance to be promoted on time, the chance to demonstrate the skills he has learned, and opportunities to practice and contribute to the team. TSC leaders must provide their soldiers with challenging logistics support operations in a realistic training environment. The experiences gained in these efforts weigh heavily in soldier satisfaction and retention. The TSC must provide a fertile learning situation that links young logisticians with senior mentors.

Rating Schemes

Rating schemes must correspond as nearly as possible to the chain of command and supervision within an organization, regardless of component or location. The integrated TSC rating scheme will have active-duty soldiers rating reserve component soldiers and vice versa at different duty locations, which will present unusual challenges. As with all rater-ratee relationships, scheduled face-to-face counseling sessions are required. However, all parties have some concerns about the fairness of periodic evaluations written by members of another component. A soldier's opportunity to be observed by a rater from another component may occur only once a year, when the soldier travels overseas. Likewise, when a rater visits a reserve organization, the soldier he is assigned to rate may be absent from drill because of military schooling, a required physical, or personal matters.

To institute positive rating schemes, TSC's are developing an internal system of checks and balances. A fully integrated rating scheme requires leaders in each location to establish an effective means of ensuring that regulatory guides and soldier concerns are being met. To assist in this endeavor, active-duty soldiers will make extended visits to assigned reserve elements during drill periods. This will allow for more hands-on training, observation, and vital personal linkage between the rater and the ratee.

A number of communication mechanisms will be put into place, such as e-mail and video teleconferencing, to provide continuous links between soldiers and their raters. These mechanisms must be monitored by each soldier and by leaders in the TSC to ensure that the soldier is satisfied and achieves a satisfactory career progression.

Career Progression

The development of the TSC integrated manning roster, which combines soldiers of the two components, makes promotion a key soldier concern. However, the integrated manning document affects soldiers differently, by increasing the number of some positions, reducing others, and eliminating still others. Thus it may well enhance the promotion potential of some soldiers and hinder others.

Career progression is particularly critical for reserve component TSC soldiers. While most active-duty soldiers rotate in and out of the TSC, reserve soldiers spend a majority of their careers in the same reserve element. Such homesteading is discouraged, but it is in fact a reality for many reserve soldiers today because of unit scarcity and limited military occupational specialty (MOS)-specific positions. In the present restructuring of the TSC, leaders have realized that position downgrades and the resulting evaluations could reflect negatively on soldiers approaching command selection and promotion boards. To preclude potential negative actions, such soldiers will be protected until they leave the TSC. This process will ensure that TSC soldiers' careers are not damaged unfairly because of reorganization factors beyond their control.

Training

The training needs of the TSC and its soldiers remain demanding and dynamic. The standards for reserve component soldiers are no different from those for active-duty soldiers. Reserve soldiers are required to pass the Army Physical Fitness Test twice a year, record their marksmanship performance, and maintain their MOS qualifications. Military specialty training must be

conducted before soldiers can train fully with the unit. Likewise, active-duty and reserve soldiers must be afforded the opportunity to continue their professional schooling. Collective logistics training is a key element in the mission success of a TSC. MOS-qualified soldiers must be team-oriented to contribute to the organizational mission.

The opportunity to put doctrinal theory into practice is accomplished through realistic training exercises. Such exercises will provide METL training opportunities for soldiers to learn, make smart decisions, and gain invaluable logistics experience. Active-duty soldiers have many opportunities to participate in such exercises. However, reserve soldiers' training opportunities generally are limited to inactive duty training (IDT) or to one annual training period.

TSC reserve soldiers will focus on operating tempo and training exercise opportunities during overseas deployment training (ODT). It is envisioned that the reserve TSC element will be surrogate trainers for subordinate traced personnel. Together, these exercise scenarios will enhance individual soldier and unit team-building logistics knowledge.

Automated Technology

Joint Vision 2010 focuses on how technology will shape conflicts by providing commanders with faster and more accurate information. Information technology will improve the ability to see, prioritize, and assess information, resulting in dominant battlespace awareness. TSC logistics networks are geared to manage and leverage information in a very fluid and dynamic environment. Tomorrow's digital battlefield will be more integrated and modular and driven by interactive CSS information management and operations systems. TSC soldiers must be proficient in using specific digital interfaces so they can rapidly anticipate, allocate, and synchronize the flow of logistics resources. The efficient use of systems, such as the Global Combat Support System-Army (GCSS–Army), Transportation Coordinators' Automated Information for Movement System II (TC AIMS II), automatic identification technology (AIT), and the future Multi-Technology Automated Reader Card (MARC), will be critical to ensuring information dominance in future logistics operations.

As the TSC upgrades its flow of digital information, operational tasks will be accomplished at a faster rate. Upon mobilization, a network of subordinate logistics commands, such as area support groups, corps support commands, and augmented command elements like the medical command and engineer command, will be linked to the TSC. The TSC headquarters will recognize that subordinate organizations may not have the same technical capability as the TSC. Close coordination and communication among logistics organizations must ensure the effective fielding of digital systems.

Training is critical to using technology in the TSC. Regardless of whether they are active or reserve component, soldiers assigned to operate Standard Army Management Information Systems (STAMIS) or internally developed software packages must be trained and ready. There is no time during mobilization to wait while soldiers are trained. Historically, reserve soldiers have not had the same opportunities as their active-duty counterparts to train on the latest STAMIS technology. The integrated TSC structure requires that systems be distributed to all locations with TSC units so soldiers can maintain their skills on those systems. Fielding of TSC logistics data systems must be planned and executed carefully.

Communication

Communication is the key to organizational success when all parties are working as one. TSC leaders, staff members, and soldiers must communicate with one another on a constant basis. Communication is the fiber connecting the TSC soldier to those he supports and those who support him. However, communication is especially challenging for the TSC, which must link soldiers of different components and ranks at different locations. Effective means of communication can ensure that the organization prospers and meets its mission goals. Failure to communicate effectively in the TSC will result in failed missions and harm to soldiers.

Contingency Operations

Doctrine and planning both envision forward deployment of the TSC's early entry module (EEM). The exact makeup of the EEM will depend on the individual TSC. The critical element is timing: when will reserve component soldiers be called forward? Currently, the reserve components are restricted to a formal Presidential Special Reserve Call-up (PSRC). A delay in call-up under this authorization could affect TSC logistics operations critically.

To reduce reliance on a PSRC, the TSC could initiate temporary tours of active duty to fill the early call-up voids with volunteers. The EEM could be staffed partially with active-duty personnel. To evaluate the EEM's capabilities, individual TSC's are developing training scenarios for exercising EEM's. TSC's actually must deploy the EEM to the field to analyze the logistics personnel and equipment required to support missions.

Component-Unique Requirements

The Army Reserve Personnel Command (AR–PERSCOM) will continue to maintain officer evaluation reports (OER's) and NCO evaluation reports (NCOER's)

for reserve soldiers. Reservists will continue to rely on AR–PERSCOM for promotion and command selection boards. The formal selection of the special troops battalion commander and command sergeant major for the TSC will be conducted at the Army Reserve regional support command or AR–PERSCOM.

To process OER's and NCOER's efficiently, there must be a carefully framed, timely process linking the active and reserve component personnel staffs. Tracking personal information and written comments, as well as required counseling statements and input from others, will challenge the administrative process. The authority for final processing and external distribution of the reports likely will fall along component lines. It makes sense to have all OER's and NCOER's sent to component-specific reviewers for final review and then on to the appropriate personnel command. The final decision will be based on what benefits the individual soldier.

Many mandatory taskers must be completed during reserve soldier IDT weekends. These taskers include birth month audits, the Soldier Readiness Program, individual board packet preparation, and directed training by higher headquarters. Mandatory requirements cause a loss of approximately 8 hours during each drill, which puts a severe strain on maintaining the mission capability of reserve units.

Another administrative concern is the issuance of awards. The TSC's currently are looking at how to process component-unique individual awards. Timely recognition of soldiers' outstanding achievements through awards brings about positive results. Awards given months after the fact lose their luster, and the recipient himself is less than pleased. But issuing awards can be a time-consuming process, and paperwork must be funneled to the primary repository to ensure a timely response.

Another personnel concern is that there are data in the reserve component Standard Installation and Division Personnel System (SIDPERS) data base that cannot be transferred to the active component upon mobilization. The current reserve component SIDPERS 2.75 is not applicable to the active component version, SIDPERS 3. This problem has been recognized by the Army's Deputy Chief of Staff for Personnel, and attempts to standardize the process are underway. Recent linkage of reserve component elements to the Regional-Level Application Software, which issues pay, cuts orders, and is responsible for personnel actions, will have a major impact during mobilizations.

TSC organizations have limited equipment, which reduces concerns about what equipment to store and where. The separate locations of TSC units make it logical to keep individual weapons, masks, chemical protection suits, and fly-away computer packages with individual soldiers. TSC's are beginning to visualize and field test EEM and full-up TSC headquarters operations. Critical timing factors require TSC soldiers to mobilize from their assigned locations straight to the area of operations. TSC equipment may be owned by the separate components, but it is integrated at physically separate locations.

Through a number of memoranda of agreement and understanding, many of the multicomponent integration issues facing the TSC are being studied and solutions negotiated. Senior Army headquarters have supported operating agreements achieved through collective concurrence. Future regulatory guidelines ultimately will formalize many of these agreements.

Physical separation provides a unique challenge. It forces a close and continuous working relationship between the TSC headquarters and its reserve elements. It forces leaders to determine if training such as the Army Physical Fitness Test, weapons fire, and common task testing should be done by reserve soldiers during ODT or IDT. It challenges the planners and operators in TSC headquarters to conduct integrated operations. It requires that extra attention be paid to soldier concerns that normally are taken for granted. It continually will challenge senior leaders and staff in supporting the logistics community. The key to success is to closely monitor, coordinate, and communicate training and operational requirements.

In order to be successful, the TSC must be organized for success. Decisions on TSC organization must be a combined effort, from the commander on down to each and every member in the structure. During peacetime, the challenge of tasking and completing requirements will be complicated. It will take the collective leadership of the staff in each headquarters element to closely coordinate the results. Upon mobilization of the TSC, these training efforts will pay untold dividends. Indeed, careful training of soldiers will yield huge benefits to those requesting logistics support in future operations.

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Alternatives to the Soldier Canteen

by Major James E. Gibson

The author believes that soldiers need more than water carried in a primitive attachment to their belts—they need an easy-to-use hydration system that enhances their battlefield performance.

Water, fuel, and ammunition are three key elements of logistics support on the battlefield. Sources, distribution, and methods of employment of these elements will be affected directly by advances in technology. Fuel, as we know it, may be changed into more efficient forms, or even eliminated. Ammunition someday may become obsolete through the use of nonlethal technologies. Water, however, is the one battlefield need that cannot be omitted or changed as long as soldiers fight battles. Soldiers need water to be effective in any kind of operation. Its importance remains fixed regardless of how advanced technology and warfighting become.

Historically, soldiers have relied on water either supplied to them by servants or carried with them in canteens. The canteen originally was a place rather than a piece of equipment; Webster defines canteen as " . . . a place outside a military camp where refreshment [is] . . . provided for members of the armed forces." The canteen of old gave way to the post exchange of the present, and that "place of refreshment" became a flask or container that the soldier carried on a march. As late as the American Civil War, the canteen, which was constructed of various materials, normally was carried on a strap over the soldier's shoulder or across his body. In World War I, the infantry soldier carried a metal canteen and cup attached to his cartridge belt. The canteen is now made of plastic, but its design and use have remained essentially the same since that time. Somehow modern technology has marched right past one of the soldier's most vital and basic needs. It is time for the Army to take a look at how it can improve the way it supplies, stores, and delivers water to soldiers on the battlefield.

"Hydrate or Die"

Our bodies are almost two-thirds water. Blood is 92 percent water; the brain is 75 percent water; muscles are 75 percent water; and bones are 22 percent water. Therefore, water is essential to the functioning of nearly every part of the human body.

Water moistens oxygen for breathing, regulates body temperature, carries nutrients and oxygen to all cells in the body, protects and cushions vital organs and joints, helps to convert food into energy, and removes waste. Even a small shortage of water can be devastating to a soldier's performance.

A water-requirements calculator developed by the International Bottled Water Association in Alexandria, Virginia, estimates that a 200-pound person who exercises up to 60 minutes a day (the equivalent of a 10-kilometer run) should consume 143 ounces of water. To test the loss of water from the body during exercise, I ran for an hour when the outdoor temperature was about 70 degrees. Even after drinking a pint of water that I carried during the run, I lost about four pounds, or 64 ounces, of water weight.

During basic training, soldiers are required by their drill sergeants to drink water from their canteens. However, on their own, soldiers are not likely to drink enough water to sustain themselves unless it is convenient, safe to drink, and palatable.

Problems With the Current Canteen

Canteens can impart a "plastic" taste to water, making it barely palatable. Certain lower grade plastics, such as the high-density polyethylene used by the milk industry, also can give a plastic taste to water. Bottled water com-

panies solved this problem by changing to higher grade, more expensive polyethylene terephthalate, which does not pass on any plastic taste to water.

Water is most palatable when cool rather than cold. Experts say that water in the 45- to 55-degree range is best for absorption and cooling of the body's core temperature. Water can be kept cool in bulk storage tanks using chillers or ice. When dispensed into canteens or 5-gallon water cans, the water is warmed quickly by summer heat. Conversely, in the winter, water in canteens or cans may freeze.

A canteen is awkward to carry and use. Water weighs about 8 pounds per gallon. Carrying a filled canteen on a strap around the neck or hung from a utility belt already loaded with ammunition and other gear may slow a soldier down when he needs to move quickly. Crawling and climbing are more difficult when a loosely suspended weight is bobbing on a soldier's body. A canteen can catch on brush or wire obstacles while a soldier is on the move.

To drink from the canteen, a soldier must unfasten the flaps of the canvas cover, draw the canteen out, unscrew the cap, drink, then return the canteen to its cover and refasten the flaps. In a tactical situation, a half-empty canteen sloshes audibly, potentially revealing the soldier's position.

The Need for Something Better

Hydration is the new buzzword among health-conscious individuals. The International Bottled Water Association published messages in several national magazines in 1999 that suggested that water is "brain food," "diet food," a "high-test drink," and a "bodyguard."

Hydration, as a concept, must be part of an integrated system that works with a soldier, not simply a commodity carried in a primitive attachment to his belt. Today's soldier needs a hydration system that is made from better materials and is easier to carry and use than the current canteens so he will be encouraged to drink more water and, consequently, will perform better on the battlefield. He needs a hydration system that acts as an enabler to personal combat power, not an obstruction.

The soldier of the future will have a heads-up display on his helmet, a weapon that can be aimed around corners, and a computer wired to his pack frame. These systems will be digital, virtual, and almost invincible. The soldiers operating them will be too busy handling information to take their minds off the battle long enough to fuss with a snap or flap to get a drink of water. A hydration system for the modern soldier should be one that he can operate almost intuitively. Taking small drinks on a regular basis is a healthy habit and is easy to do if the hydration system is positioned close to the carrier's mouth and quickly accessible.

☐ An easily available hydration system would allow soldiers to move quickly on the battlefield and encourage water consumption.

The Answer

Ten years ago, a former paramedic preparing to participate in a bike race called the "Hotter N' Hell 100," held in Wichita Falls, Texas, each August, was concerned with getting enough water to sustain himself during the race. Reaching for the water bottle mounted on his bike was dangerous, and water stops were 2 or 3 hours apart. So he fashioned a portable hydration system from medical tubing attached to an intravenous (IV) drip bag. He stuffed the bag into a sock and sewed the sock onto the back of his T-shirt. Thus the idea for the commercially available CamelBak® water bladder hydration system was born.

The CamelBak hydration system is essentially a plastic water bladder connected to a length of hose that fits into an insulated bag that can be strapped on the carrier's back or attached to a rucksack. The hose is positioned close to the wearer's shoulder strap to eliminate snagging on obstacles. It can be situated so the end is near the carrier's mouth for easy access. The "bite" valve at the end of the hose makes the water readily available to sip or drink. The hose can be run through an insulated tube to protect the water from body heat or exterior temperature extremes. The bag can be exchanged or filled easily, and its opening is large enough to accept ice cubes. According to the manufacturer, this system "keeps the water supply away from bacteria-breeding mud and leaves your hands free for more important things." Since the water does not slosh, it is silent. The tubing is compatible with most personal water purifiers, so it may be used in situations where potable water is not available or when local water sources may be contaminated.

The CamelBak system already is used by soldiers in Panama. Staff Sergeant Andrew Laskoski, a platoon sergeant stationed there, purchased one to replace his Army-issued canteen. He was quoted in a newspaper article as saying, "Thing is, [with the CamelBak system] you can fight and still be drinking water, not hauling out your canteen. It's kind of a necessity, but we gotta buy our own." Sergeant Laskowski's statement shows that sol-

diers have identified a need for a better hydration product, but they are forced to purchase it themselves.

The use of the CamelBak product by the Navy has become so widespread that a caution message was published concerning the possible loss of small parts, such as hose clips, from the system. The message warned that any loose item on a carrier flight deck could get sucked into a jet engine and cause damage, and gave instructions on how to secure the system better. It is interesting to note that there was no knee-jerk reaction banning the product. Apparently, the Navy likes the CamelBak hydration system.

The Army and Air Force Exchange Service (AAFES) sells the CamelBak system in clothing sales stores and post exchanges. The cost ranges from $50 to $70 for a basic system. The exchange at Fort Lee, Virginia, and probably other locations offers a "stopgap" kit for retrofitting the current canteen with a mouthpiece and clip that can be attached to a tube and run from the current canteen. One kit costs about $3.50 without the tube, and another costs about $8.50 and includes an insulated tube.

The CamelBak hydration system and others like it are being manufactured by a growing number of sports equipment firms and used widely by sports enthusiasts such as snowboarders, bicyclists, and runners. Bottled water is certainly an option, but it is expensive, creates waste, usually requires two hands to open and use, and sloshes audibly when carried.

Close, But No Cigar

The Army Soldier and Biological Chemical Command's Natick Soldier Center in Massachusetts has developed a modular lightweight load-carrying equipment (MOLLE) system that will increase soldier performance on the battlefield. The MOLLE has an accompanying hydration unit that can be placed into one of its side or top pouches. The hydration unit can be removed from the MOLLE and carried on the soldier's back using attached straps if desired. This is a good idea, but the MOLLE hydration system still appears to be a product of "canteen mentality" that views water as an accessory rather than as a necessity. There still is a need for a system that is dedicated solely to water, such as the CamelBak system, and is an issued item rather than a personal purchase. Such a hydration system represents an excellent opportunity for the military to use commercial off-the-shelf (COTS) technologies to support soldiers in the field. Development of the Land Warrior fighting system is expected to continue until fiscal year 2015, so there is sufficient time to incorporate a COTS hydration system into it.

A Workable Facsimile

The military could develop its own hydration system that would be less expensive than a COTS system like CamelBak by incorporating the bagged water technology currently available. The Water Packaging System (WPS) has been in use for about 2 years and has been field-tested successfully in Bosnia. The WPS is a commercial, vertical-feed form-fill-and-seal machine that packages water in 1-liter bags at a rate of 28 bags per minute. Each WPS is emplaced near a reverse osmosis water-purification unit and a containerized ice plant (CIP). Both the WPS and the CIP are housed in trailer-mounted expandable shelters.

The small water bags produced by the WPS could be fitted with insulated hoses, valves, and bag carriers to work like the CamelBak system at lower cost. A personal filter pump could be issued for emergency personal resupply. During training, refills could be drawn from tap water, "water buffaloes," or 5-gallon cans. However, bulk storage facilities require constant monitoring to ensure water quality, and they are difficult to move on the battlefield. A better method may be to use packaged water that has been chilled and placed in insulated containers for quick distribution in the field. Using disposable bags in a one-for-one exchange operation would minimize disposal and sanitation problems. A process for collecting and recycling the plastic bags would, of course, have to be a part of the system plan.

A change to the current water storage and delivery system is long overdue. A potable, palatable, easily available hydration system that allows soldiers to move easily and quickly on the battlefield and encourages water consumption would be an important force multiplier. Soldiers under fire on the battlefield should be able to get a drink of water without taking their hands off their weapons. They need an easy-to-use, bagged, insulated water supply storage and delivery system fully supported by the logistics structure. That capability is available in the civilian sector in the form of the CamelBak hydration system or in the military by incorporating some of the characteristics of the commercial system into current water-packaging technology. Either way, the Army's immediate goal should be to provide soldiers in the field with a greatly improved hydration system. **ALOG**

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The Deployment Imperative

by Peter J. Higgins

Members of the U.S. military today face many unknowns, such as when and where they will be called upon to use military power next and if that call will be for a combat operation, humanitarian aid, or something in between. The size, structure, and capabilities of our military forces are based on the potential threats they face and the funding they receive from Congress. Currently, the most likely hotspots are Korea and the Middle East, so the United States has stationed sizeable forces in those locations and has pre-positioned stocks of war materiel nearby. Our military forces have plans in place and are prepared to fight in those two areas if necessary. However, there is no certainty they ever will mobilize in either location. Forces could be deployed to other sites where the United States has no forward presence and for which minimal planning has been done.

If we knew with absolute certainty who, when, where, how long, or even *if* we will fight, our problems of getting adequate sustainable forces in place quickly would be much easier. Because today's preparations to meet these challenges will affect future readiness, the United States must remain vigilant to both the future and current threat environments.

In recent years, the United States has transformed its military from a large forward-deployed force, with hundreds of thousands of troops stationed overseas, to a smaller power-projection force. Some functions previously performed by active-duty forces have been transferred to the reserve components or vice versa. There are many reasons for this transformation, but they probably can be summarized in one word—money.

While the size and structure of our military have changed, there has not been a commensurate reduction in requirements. Our country's National Security Strategy, published in December 1999, states, "Our strategy is founded on continued U.S. engagement and leadership abroad . . . We cannot lead abroad unless we devote the necessary resources to military, diplomatic, intelligence, and other efforts." Addressing military activities, the strategy continues, "Strategic mobility is a key element of our strategy."

This means that to carry out our National Security Strategy, the Department of Defense must have the airlift and sealift necessary to move a military force overseas quickly to support a combatant commander and the National Command Authorities when necessary. Moving a force and sustaining it is called "deployment," and the U.S. Transportation Command (USTRANSCOM) is responsible for developing the deployment process and ensuring that it works. The Chairman of the Joint Chiefs of Staff and combatant commanders have primary responsibility for planning the employment of forces.

Because the size of our military has decreased while the requirements and operating tempo have not, we increasingly rely on private industry, contractors on the battlefield, and pre-positioned equipment. Each of the services and the Defense Logistics Agency has equipment, fuel, and ammunition pre-positioned strategically around the globe. Some of these pre-positioned stocks are land-based, and some are stored on ships capable of moving quickly toward a trouble spot. This capability is critical to fulfilling the quick-deployment requirement.

Many elements of deployment are explained and discussed in the Joint Course on Logistics presented by the Army Logistics Management College (ALMC) at Fort Lee, Virginia, on behalf of the Joint Staff Director for Logistics (J4). The course addresses such deployment topics as the Joint Operations Planning and Execution System, USTRANSCOM, the Joint Deployment Process, the Transportation Coordinators' Automated Information for Movement System II, and the Joint Force Requirements Generator II. If you are not familiar with these organizations and systems, your background as a professional logistician is incomplete, regardless of your branch of service or specialty.

Logisticians involved in the deployment process need to know and understand the changes taking place in this vital area if the United States is to fulfill its National Security Strategy. How much do you know about the Time-Phased Force Deployment Data System? How knowledgeable are you about the mandate General Henry H. Shelton, Chairman of the Joint Chiefs of Staff, has placed on the Armed Forces to deploy a brigade-sized unit anywhere in the world in 96 hours, a division within 5 days, and five divisions within 30 days? This is power projection, and it is difficult to achieve. Each step of the process must be accomplished correctly if the whole process is to succeed. Therefore, each player must know and understand the requirements of all other participants.

If you would like to learn more about the Joint Deployment Process and joint logistics, the Joint Course on Logistics may be for you. For more information, call (804) 765–0285, send an e-mail to ruggieroa@lee.army.mil, or visit ALMC's home page at http://www.almc.army.mil. **ALOG**

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Multifunctional Communication on the Future Battlefield

by Captain Steven T. Wall

"Red 5, this is Red 6." The lieutenant powered up his computer display, and his commander's image came up.
"Red 6, this is Red 5."
"Red 5, take your platoon to establish a checkpoint along the highway at grid point GL34519283 not later than 2300, 18 June. Provide real-time intel video and SA [situational awareness] of forces withdrawing along route yellow."
On the screen next to the commander the digital map display popped open, showing Red 5's sector and the adjacent units in the area of operations. The electronic whiteboard showed the units with which he was to coordinate. Another list showed the intelligence requirements the commander had written down during the battalion order.
"Roger, Red 6."
"OPORDER and commo package sent, Red 5."
The file transfer protocol (FTP) icon came up, showing that the operations order, communications waveform software, and map files had been received. He clicked "Save," and moved the map and text icons into his new mission folder, and saved the communications files on his computer.
"Message received, Red 6."
"Good luck! Red 6 out."

These notional radio transmissions could occur in the not-too-distant future. Already, our Kosovo Peacekeeping Force (KFOR) units communicate with joint, multinational, and civil authorities. We send orders electronically, and we collaborate with joint and multinational forces. We sometimes tap civilian networks, and we have real-time video capability. So what's the problem? The problem is that we must use multiple radios to accomplish these tasks instead of one communications system.

Many of the systems used by today's forces, such as the Single-Channel Ground and Airborne Radio System, the Enhanced Position Location Reporting System, the near-term digital radio, mobile subscriber equipment, and satellite communication systems, are not capable of moving the large amounts of data the forces require. The solution will be the Joint Tactical Radio System (JTRS), a family of wideband, digital radios that are interoperable, affordable, and scaleable, meaning they can be replaced with more powerful ones without necessitating the rewriting of any software. JTRS is capable of simultaneous voice, video, and data transmission. When fielded, it will give users the flexibility of using one multifunctional communication system rather than two, three, and sometimes even four types of radios.

The Basics

Here's how JTRS will work. Users will input data to JTRS via a system or laptop computer or through a video or voice device. JTRS will look at the type of information submitted and to whom it is being sent. If the information is being sent to a user in the same network as the sender, the radio will route the data directly to the receiver over the best waveform (frequency) possible. This means that the radio decides the type of frequency range to use. The radio makes this selection based on the available bandwidth, the frequency allocated to it, and the traffic load on that frequency. The same method applies to a message sent to a unit beyond the line of sight. The radio may select a satellite link or "hop" the message from one radio to another. This flexibility of frequency, transmission method, and routing function is what makes JTRS different from the tactical Internet and radio architecture we have today. It does away with single-function radios and gives users a more dynamic and robust system.

The future battlespace will require seamless, mobile, ad hoc networks to pass on survival and planning information and provide real-time and near-real-time voice, video, and data transmission. An infantry soldier, cavalry scout, or aviator who sees the enemy will be able to send a message to an artillery or other system control node. The message will be processed and evaluated as to the target type, quantity, and location and routed to the system most capable of destroying the target. The data then will be passed to an artillery unit attack helicopter or missile system. Because these data will be passed and processed electronically, the evaluation and

communication time among participants will be reduced greatly. The seamless integration of the communication systems used will decrease the chance that an electronic message will be misrouted in the tactical Internet and increase the speed and quality of service. Tactical Internet standards require that a call for fire be delivered in less than 5 seconds and that a logistics system message of up to 95,000 bits (slightly less than the amount of information that fits on a 3.5-inch floppy disk) be passed in 10 minutes or less.

Army Operational Concept

JTRS will meet the Army's emerging needs for secure multiband and multimode digital radio. The JTRS family will be scaleable for use in all environmental domains, such as airborne, ground, mobile, handheld, fixed-station, maritime, civilian, and personal communication and will be based on a common communications system architecture. It will be an open-system architecture, interoperable with legacy communications systems, and capable of future technology insertion. This means that at first it might not replace all the radio systems we currently use, but it will interoperate with them.

The integration of JTRS will occur over several years, with command and control platforms likely to receive it first. The Army initially will field the JTRS in those battlefield functional areas that use multiple radios. Selected users needing multiple paths for voice and data information exchange will be served by a JTRS that is configurable and programmable to operate simultaneously on multiple bands and in multiple modes across multiple networks while automatically routing data within and among applicable networks. Desirable capabilities of the JTRS are—

- Plug-and-play versatility.
- Field-configurable modular hardware.
- Field-programmable waveform software.
- Embedded position location; automatic situational awareness feed to network.
- Secure data network.
- Three or more other networks or modes (voice, video, and data).
- Automatic local and Internet routing.
- Dynamic networking, addressing, and bandwidth allocation and power-consumption control.
- Emulation of selected legacy radios.
- On-the-move operations.
- Open architecture design.
- Compliance with joint tactical technical system and support of operational architectures.
- Self and ad hoc organization and mobility within the infrastructure.

User Community

The JTRS Joint Program Office (JPO), staffed with representatives from all the services, is tasked with defining and developing the JTRS architecture. To accomplish that, JPO solicited the help of industry to define the JTRS baseline architecture. In October 1999, a contract was awarded to the Raytheon-led Modular Software-programmable Radio Consortium to develop the system architecture for JTRS. The consortium will develop the prototypes for the architecture and demonstrate its interoperability. A second consortium will use that same architecture to develop waveforms capable of emulating the legacy radios. The two then will swap waveforms and related technologies with each other, which will validate the compatibility and openness of the selected architecture.

The interoperability of JTRS with legacy systems currently in the Army's inventory will reduce fielding costs and help digitize the Army. According to the current Operational Requirements Document (ORD) for JTRS, the aviation community will receive JTRS radios in fiscal year 2002. Ground and manpack JTRS radios are scheduled to be available in fiscal year 2004.

The Army continues to focus on the needs of the user. Army Training and Doctrine Command (TRADOC) schools took a hard look at the ORD and developed priority waveforms that helped guide the TRADOC System Manager for Tactical Radios (TSM–TR) in the development of the JTRS waveforms. The TSM–TR also is working as a part of the JTRS Network Integrated Product Team that is developing the network drivers, requirements, and related technical features of the JTRS network. The network will provide dynamic, wireless routing and links for all services.

The TSM–TR's goal is to use the technological capability of JTRS to give the joint warfighter the ability to communicate across many waveforms and domains to accomplish a variety of missions on the digital battlefield of the 21st century.

For more information, visit the JTRS JPO home page at http://www.jtrs.sarda.army.mil or the TSM–TR home page at http://www.gordon.army.mil/tsmtr, or send an e-mail to keeverj@emh.gordon.army.mil or walls @emh.gordon.army.mil. **ALOG**

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Contingency Contracting in East Timor

by Brigadier General Philip M. Mattox
and Lieutenant Colonel William A. Guinn

In supporting an international force sent to restore and maintain order in a strife-torn East Asian nation, the U.S. Pacific Command used contractors to reduce the U.S. military presence and provide targeted support.

The geographic area of responsibility of the U.S. Pacific Command (USPACOM) far exceeds that of the other unified commands. At 105 million square miles, it covers 52 percent of the Earth's surface and encompasses 43 different and diverse countries. With responsibility for commanding U.S. forces over such a huge area and for dealing with so many countries, USPACOM always finds that accomplishing its assigned missions is challenging and interesting. The recent U.S. involvement in East Timor underscored that reality. In its use of contractors, USPACOM's mission in East Timor also may have illustrated an important aspect of logistics support in the future.

East Timor Mission

East Timor originally was a Portuguese colony occupying the eastern portion of the island of Timor. The remainder of the island was part of the Dutch East Indies, which in 1949 became the independent nation of Indonesia. Following the collapse of Portugal's overseas empire, Indonesia assumed control of East Timor in 1975.

In August 1999, the people of East Timor, in a referendum sponsored by the United Nations, voted overwhelmingly in favor of independence from Indonesia. Unfortunately, following the announcement of the referendum's results, armed militias opposed to the independence movement went on a countrywide rampage. East Timor's infrastructure was looted, then burned and gutted. Basic services such as water and food distribution and communications were disrupted and destroyed. Thousands of East Timorese fled their homes as the militias continued their assaults. With East Timor in chaos—no working infrastructure, tremendous numbers of internally displaced people, and continued lawlessness—the situation looked bleak.

The United Nations responded by authorizing an Australian-led coalition called International Forces East Timor (INTERFET). Eighteen countries besides Australia eventually supported INTERFET: Argentina, Bangladesh, Brazil, Canada, China, Denmark, Ireland, Italy, New Zealand, Pakistan, Philippines, Portugal, Singapore, South Korea, Sweden, Thailand, the United Kingdom, and the United States. In Operation Warden, INTERFET conducted peacemaking operations to end the violence. That mission quickly transitioned to the peacekeeping mission of Operation Stabilise.

The U.S. mission in East Timor had definite goals and parameters. First, we were determined that INTERFET would succeed in restoring order. Second, we would maintain a minimal U.S. military presence on the ground and limit USPACOM's contribution to INTERFET to capabilities that only the United States could provide effectively. Third, we would work to ensure the transition of U.S.-provided support to the United Nations and other appropriate agencies as soon as it was prudent to do so.

To accomplish this mission, USPACOM established U.S. Forces INTERFET (USFI). USFI was commanded by a Marine Corps brigadier general and eventually included personnel from all of the armed services. The mission of USFI's small headquarters was to execute U.S. support to INTERFET within the special parameters given by the Joint Staff.

USPACOM planners devised a joint effort in which USPACOM's component commands—U.S. Army Pacific (USARPAC), the U.S. Pacific Fleet, Pacific Air Forces, and Marine Forces Pacific (MARFORPAC)—provided personnel and equipment to USFI to use in supporting INTERFET. This support consisted of com-

☐ East Timor is located on the eastern half of the island of Timor, which is at the bottom center of the map. It is 400 miles north of Darwin, Australia.

mand and control systems, strategic lift, and logistics and civil affairs support, as well as planners. One of the most critical items provided was heavy-lift helicopter support.

Helicopter Support

East Timor is a rugged, heavily mountainous island. The existing road network is minimal and often in a poor state of repair. The monsoon season, which was approaching as INTERFET prepared to deploy, would make existing dirt roads nearly impassible for INTERFET peacekeepers, representatives of nongovernment organizations, and the local East Timorese alike. Clearly, helicopter support would be critical to establishing a peacekeeping operation and quickly stabilizing the situation.

At the time, Australian CH–47 Chinook helicopters were inoperative because of systemic transmission problems, and other INTERFET partners had not deployed any medium- or heavy-lift helicopters. In keeping with USPACOM's commitment to provide only U.S.-unique support, the Australian joint headquarters command—known as Australian Theater (AST)—requested heavy-lift helicopter support from USPACOM.

The U.S. heavy-lift helicopter support initially was provided by four CH–53 Sea Stallion helicopters from MARFORPAC's 31st Marine Expeditionary Unit (MEU). They later were replaced by helicopters from the 11th MEU. The 31st MEU's helicopters flew off the *USS Peleliu*, while those of the 11th MEU flew from the *USS Belleau Wood*. These general-purpose amphibious assault (LHA) vessels functioned as forward operation bases for the helicopters. They also provided a visible U.S. presence without adding to the U.S. footprint on the ground. Supporting the heavy-lift helicopter mission in this manner required that several thousand marines and sailors man the needed ships and equipment, which obviously was not an ideal situation for the long term.

Decision to Contract

By October, in order to free units for other missions and reduce personnel and operating tempo, USPACOM began to explore alternative courses of action for providing helicopter support. A variety of ideas were explored—everything from using commercial offshore "lily pad" platforms to continued military rotations. Eventually, it was decided to explore the possibility of contracting with commercial sources for the needed support. After looking at various contracting possibilities, USPACOM settled on the Army Materiel Command's Logistics Civil Augmentation Program (LOGCAP) as the best source of support for this mission.

LOGCAP is based on a standing, umbrella-type services contract that takes advantage of what civilian industry does best to augment U.S. forces in the continental United States and abroad. Since 1992, the Army has deployed the LOGCAP contractor in support of major missions in Somalia, Southwest Asia, Italy, Haiti, the Balkans, and East Timor. The program is intended to act as a force multiplier while conserving uniformed forces for potential higher priority missions.

The Army's LOGCAP manager and the LOGCAP contractor, DynCorp, proved to be very flexible. Within 2 days of being contacted, they deployed representatives to USPACOM headquarters at Camp H. M. Smith Marine Corps Base, Hawaii. LOGCAP planners proved invaluable in assisting with the development of the helicopter support contract.

In early November, after receiving authorization from the Joint Staff, USPACOM initiated a LOGCAP contract to replace the MEU's ship-based helicopters. It also was decided that the commercial helicopters obtained under this contract would operate out of the Dili airfield in East Timor. (Dili is the capital and largest city of East Timor.) The U.S. Pacific Fleet funded the commercial helicopters after weighing the costs of deploying another ship-based rotation to provide support to INTERFET against the cost of the contract.

☐ **The LOGCAP contractor employed dozens of local nationals. Here, they assist in pouring concrete for the fuel point.**

Arranging for Contract Support

The LOGCAP contract was for use of four helicopters. After considering several possible options, USPACOM chose to accomplish the mission with two Mi-8 medium-lift and two Mi-26 heavy-lift helicopters. These helicopters would deploy from locations in Russia and Bulgaria along with their own air and maintenance crews. The helicopters and crews were all part of a subcontract to DynCorp. Overcrowding at the Dili airfield and the need to guarantee all-weather operations during the upcoming monsoon season required that hardstand helipads be constructed as part of the LOGCAP contract. DynCorp was given 2 weeks to be on station and operational.

In the next several days, USPACOM and USFI planners solved airspace clearance, customs clearance, life support, and fuel support problems in East Timor, as well as many status-of-forces-agreement and force-protection issues with INTERFET. The most pressing need was determining how to provide life and fuel support to the 100 incoming aircrew and construction personnel. With a minimal U.S. military presence in East Timor, we could not count on the availability of U.S. military support for this mission.

Fortunately, USPACOM already had an acquisition and cross-servicing agreement (ACSA) with Australia to support our forces operating out of Darwin, in northern Australia. The ACSA and the resulting support from our Australian allies proved invaluable over the next several months. Using the ACSA, USPACOM and Headquarters AST arrived at an arrangement that proved beneficial to both parties. With some assistance from U.S. contractors, AST would provide all food and fuel support for U.S. personnel in return for USFI helicopter support in East Timor.

Planning and execution of contingency contracting were new to this theater, and legal issues were a great concern. USPACOM had to coordinate with INTERFET to ensure that our contractors were afforded the same protection and benefits as military personnel. Immigration and customs arrangements for contractor personnel and their equipment and sustainment supplies were also a concern for the operation. Many of our personnel and their equipment would be moving through the USPACOM staging base in Darwin. Clearing Australian customs and immigration could have caused delays in our deployment to East Timor. Again, AST was very helpful in assisting USFI. In the end, this coordination ensured that we did not experience any delays in our deployment or replenishment efforts.

☐ **One of the two Mi-8 medium-lift helicopters from Bulgaria is unloaded from a Russian AN–124 transport. Below, contract helicopters are used to relocate thousands of East Timorese and their belongings.**

Helicopter Operations

The contracted helicopter operation in East Timor was a tremendous success. Given a very difficult mission, the LOGCAP team of reserve component personnel, Government civilians, and contractors was superb. The LOGCAP personnel overcame many obstacles to accomplish the mission.

The process of constructing the helipads offers an example of the difficulties encountered in establishing helicopter operations in East Timor. That project proved much more difficult than planned. East Timor lacked concrete production facilities, serviceable construction equipment, trained operators, and even the sand and aggregates needed to mix concrete. Almost everything needed to build concrete helipads and support facilities had to be imported into the country.

The two Mi-8's deployed from Bulgaria aboard a giant Russian-made AN–124 cargo plane, which also brought in all spare parts and a fuel tanker. The Mi–26's were flown directly to East Timor over a period of 10 days, traveling halfway around the world. The contractor arranged all flight clearances. USPACOM assisted by making several calls to U.S. embassies along the route to ensure that the deployment moved as fast as possible.

Despite these challenges, the contract helicopters performed their missions extremely well. They were invaluable in moving INTERFET personnel and equipment within East Timor. They also were employed heavily in humanitarian assistance missions, moving tons of food and supplies to alleviate suffering. After the situation stabilized, the helicopters were used to transport thousands of internally displaced persons as they were returned to their homes.

Overall, the contract helicopters made a substantial U.S. contribution to INTERFET's mission. Many of the U.S. helicopter pilots commented on the professionalism and competence of the contracted aircrews and their operations. In the 3 months that the 4 LOGCAP helicopters operated, they moved over 6,400 passengers and 845 tons of cargo. They also flew more than 475 hours without an in-flight safety mishap.

Transition To UNTAET

In late February 2000, INTERFET completed its peacekeeping mission. At the same time, the United Nations Transition Authority East Timor (UNTAET) was established to complete East Timor's transition to independence. The change from INTERFET to UNTAET ended the U.S. contract helicopter support mission. However, it did not end U.S. involvement in East Timor.

At the same time that UNTAET was activated, USPACOM stood up U.S. Support Group East Timor (USGET). Composed of personnel from all of US-

☐ **Left, contract helicopters are parked at the Dili airfield. Note the size of the Mi-26 heavy-lift helicopter in the center of the photo compared to the C–130 Hercules transport to its right. Below, moored in Dili Harbor, the hotel barge *Amos W.* provides life support for USGET.**

PACOM's component commands, USGET's mission was to coordinate the rotation and employment of U.S. military medical, dental, and engineer units into East Timor while providing technical assistance as needed to the UNTAET staff.

Like the helicopter contractors, the USGET staff and rotational units would need life support, vehicles, fuel, and communications. However, with Australian forces relinquishing primary responsibility for the East Timor mission to UNTAET, we had to find a substitute for Australian support for USGET. Once again, contingency contracting appeared to be the best way to support a limited mission.

USPACOM modified the LOGCAP contract to include the procurement of a large commercial hotel barge already moored in Dili Harbor. By using the barge and its crew, USGET personnel would be provided with billeting, food, water, and even laundry services, as well as exercise and recreational facilities. Additional contract modifications were used to obtain onsite medical care, commercial vehicles, drivers, fuel, maintenance, and communications support for USGET and the rotational units. Again, USPACOM had to determine how to fund this new USGET contract. After weighing the service components' requirements and missions, USPACOM directed that funding of the hotel barge contract be split evenly between its two major users—USARPAC and MARFORPAC.

USPACOM's experience with contingency contracting in East Timor has been very positive. In multinational operations like this, in which the United States is a junior partner, contingency contracting can be a viable course of action. It provides a meaningful U.S. presence and contribution while maintaining a minimal military footprint.

The LOGCAP contractors have performed superbly. Clearly, with current pressures on operating and personnel tempo, contingency contracting has gained favor as a means of supporting U.S. forces. USPACOM's use of contingency contracting demonstrates another way of providing U.S. support to coalition allies. It is a model for consideration when planning future contingency operations. **ALOG**

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The smoldering buildings and desperate faces of East Timor reminded one soldier of a rock song:

"Where the Streets Have No Name"

by Joseph Bonfiglio

Last fall, the eyes of the world were focused on the humanitarian crisis in East Timor. The situation there was desperate. According to fleeing refugees, anti-independence militias had forced people from their homes and killed thousands more after East Timor voted for independence from Indonesia in early September.

The Indonesian archipelago is a strategic, oil-rich location that flanks the Strait of Malacca, a crucial international shipping lane. The world community could not allow the chaos occurring in Indonesia's backyard to go unchecked.

In late September, an international peacekeeping force, led by the Royal Australian Armed Forces, began deploying to the disputed territory. This force, called International Forces East Timor (INTERFET), eventually expanded to include troops from 18 other countries and was accepted reluctantly by Indonesia.

The United States promised to provide communications, intelligence, and logistics support to INTERFET. To support the international peacekeeping force, the U.S. Pacific Command and the U.S. Transportation Command needed reliable intelligence information concerning East Timor, including seaport surveys. Unfortunately, there were no reports available on the ports in East Timor.

At the same time, the Military Traffic Management Command's (MTMC's) 599th Transportation Group had a deployment support team (DST) in Australia, where it had just finished offloading ships for Exercise Crocodile '99. To solve the seaport survey dilemma, the commander of the 599th Transportation Group tasked the DST commander to deploy a team to East Timor to survey Dili Harbor, the main harbor in East Timor, and other ports nearby.

On 19 September, Sergeant First Class Mark Giampietro, first sergeant of the 599th, and Captain Todd Browning, operations officer of the 836th Transportation Battalion, were selected as members of a team that would go to East Timor to gather the needed information. They first went to the North Australian port town of Darwin to prepare for the mission.

☐ **An Australian logistics support vessel (foreground) and a humanitarian relief vessel (background) are anchored in Dili Harbor, the largest port in East Timor.**

After arriving in Darwin, the MTMC survey team received full battle gear from the 836th Transportation Battalion. This gear included Kevlar helmets, body armor, 9-millimeter pistols, and other essential items. They received inoculations and malaria pills in preparation for deployment to East Timor, where, they had heard, the threats of Japanese encephalitis and dengue fever (an acute infectious disease caused by a virus and transmitted by mosquitoes) were as real as the bullets and machetes of the roving militias. To prepare for their mission, the team obtained maps and other information about the East Timorese ports from the Australian Defense Force Ground Imagery Center.

On 24 September, the Military Sealift Command (MSC) sent a Navy commander and a chief petty officer to join the MTMC team in Darwin. Following the DST's

☐ New Zealand Special Forces escort the MTMC–MSC port survey team at Karabela.

standing operating procedure, the team rehearsed conducting a port survey so they could reduce the length of time they would have to be on the ground in hostile East Timor.

On 25 September, the team briefed the U.S. Forces INTERFET commander, Marine Corps Brigadier General John Castellaw, on their survey plan. Although the original plan called for them to survey Dili first, General Castellaw instead directed the team to survey the port at Karabela, which is east of Dili, since Dili was not yet secure.

At 0545 on 26 September, the team boarded a Royal Australian Air Force C–130 Hercules transport bound for East Timor. After a brief stop in Dili to discharge some U.S. Air Force cargo, the aircraft continued to the deserted Baucau Airfield in East Timor. After an Air Force security detachment secured the area, the team members disembarked the plane. "There was a terrible smell in the air, and we could hear gunshots in the distance," said Giampietro. "There were mutilated animals nailed to the wall and anti-INTERFET slogans painted on the wall with animal blood."

Soon, members of the New Zealand "Kiwi" Special Forces arrived at the airport on three Royal Australian UH–60 Black Hawk helicopters to take the survey team to Karabela. The first two helicopters landed at Karabela, and the Kiwi Special Forces got off and quickly spread out to secure the port facilities while the team's "bird" hovered in the air.

With assurance from the Kiwis that the area was secure, the helicopter carrying the MTMC–MSC survey team landed, and the team quickly began measuring the port facilities and hangers. About 15 local nationals showed up with clubs, machetes, and uncertain intentions. Three Kiwis escorted them out of the port area at gunpoint, and the team resumed its survey.

"I have the utmost respect for the Kiwi Special Forces," said Giampietro. "It's unusual for U.S. forces to depend on other nations for force protection, but without a doubt, those guys were great."

With its survey completed, the team flew back to Baucau Airfield to await the C–130 that would carry them back to Darwin. The next day, the team briefed General Castellaw on the results of their survey. He commended the team's work, which had produced the only hands-on intelligence information available to INTERFET on Karabela. He told the team members that their survey report would benefit not only U.S. forces but all of the countries in INTERFET. Then General Castellaw advised the team of its next mission—a port survey of Dili, which, by this time, had been secured.

On 1 October, the team drew its weapons, ammunition, and gear and reassembled on the Darwin flight line at 0500 to board another Australian C–130 bound for Dili. When they arrived in Dili, the team members linked up with Aussie soldiers for force protection and were convoyed by high-mobility, multipurpose, wheeled vehicles to Dili Harbor.

"On the way down, we passed smoldering buildings and saw desperate people running around," said Giampietro. "What I saw reminded me of the U2 song, 'Where the Streets Have No Name,' about a country in turmoil, because the streets literally had no name."

As in Karabela, the team measured all of the port facilities and hangers. Overall, they found the port to be in good shape, except that the port authority's administrative building had been completely trashed, presumably by the militias. When the survey was finished, the team convoyed back to the Dili airport and flew back to Darwin the same night.

☐ Above, the survey team measures fenders on a pier in Karabela. Right, an American and an Australian soldier guard the port perimeter at Dili.

"When we got back to the lobby of the hotel where we were staying, it was strange to see people engaged in normal, everyday activities after seeing a country torn apart. It made me realize how valuable life is and how lucky we are to be Americans," said Giampietro. "It was a hell of an honor to do something to help those poor people and serve with great folks like the Kiwis and the Aussies. And we couldn't have done our job without the outstanding support of the Marines, who made up the bulk of the U.S. Forces INTERFET Headquarters. They went above and beyond the call of duty to help us."

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The author wishes to thank Sergeant First Class Mark Giampietro and Captain Todd Browning for the photos accompanying this article.

A LOGCAP Success in East Timor

by James Folk
and Lieutenant Colonel Andy Smith, USAR

U.S. support of the United Nations intervention in East Timor provided another opportunity to demonstrate the capabilities of the Army's Logistics Civil Augmentation Program.

The 16th of October 1999 proved to be a red letter day for the Army's Logistics Civil Augmentation Program (LOGCAP). One reason for the day's distinction had been planned for months, but the other was unanticipated. The planned event was the formal activation of the LOGCAP Support Unit, a 66-soldier Army Reserve troop program unit that reports directly to the U.S. Army Reserve Command but is under the operational control of the Army Materiel Command (AMC), the LOGCAP manager. The unforeseen event occurred that same evening, when the LOGCAP Program Manager (PM) was contacted by a representative of the U.S. Pacific Command (USPACOM) J4 staff. USPACOM's logisticians wanted to know if it was feasible to contract for heavy-lift helicopter support in East Timor, a former province of Indonesia where a U.S. task force had been deployed. Since 1992, the LOGCAP contractor has been deployed in support of missions in such far-flung locations as Somalia, Haiti, and Bosnia. Now East Timor would be added to the list.

Initial Deployments to East Timor

On 20 September, International Forces East Timor (INTERFET), a multinational coalition force led by Australia and supported by the United States and 17 other countries, deployed to East Timor. After successfully completing the peacemaking Operation Warden, INTERFET immediately transitioned into the peacekeeping Operation Stabilise. U.S. Marine Corps forces based in Okinawa and Hawaii quickly deployed to the area to assist INTERFET in both operations. Follow-on forces from the Army and Air Force arrived to augment the Marines, and the level of military support that the United States would provide soon reached its peak.

The initial contribution by the Army was limited to a small number of personnel, as special units were organized to provide specific capabilities to INTERFET. These capabilities included communications supplied by Task Force Thunderbird of the 86th Signal Battalion, civil-military operations support provided by the Army Reserve's 322d Civil Affairs Brigade, staff intelligence

and support officers detailed from U.S. Army Pacific, and command and control elements sent from the 516th Signal Brigade.

Need for Helicopter Support

As the situation developed and more U.S. support was requested, it became clear that medium and heavy tactical lift helicopter support was needed to cope with East Timor's mountainous terrain and poor transportation infrastructure. Roads in East Timor are often primitive and in many areas impassable—many remote areas are accessible only by air or four-wheel-drive vehicles. Compounding these transportation problems was the need to reach two noncontiguous districts of East Timor, the Acussi-Ambeno enclave (located in the western portion of the island of Timor, which otherwise is controlled by Indonesia) and the small, adjacent island of Atauro.

Helicopter support is the fastest and most efficient, and often the safest, method of movement in such an environment. Initial helicopter support was provided by the 31st Marine Expeditionary Unit (MEU) flying from the Navy amphibious assault ship *USS Belleau Wood*, which was anchored off of East Timor's capital city, Dili. CH–46 and CH–53 helicopters from the 31st MEU executed the helicopter support mission until another method was found.

The Marine helicopter mission was to provide lift support in transporting coalition members, internally displaced persons, and various types of internal and external cargo loads. The cargoes lifted by the Marines included military materiel, fuel blivets, humanitarian foodstuffs, and agricultural implements needed to sustain the local population until they regained the ability to support themselves. Helping displaced persons return to their villages and homes would help restore normal, everyday life for the Timorese.

If there was no alternative to using military equipment, then support of the U.S. mission in East Timor would require Navy vessels and Marine aircraft to be anchored off the Timor coast. The Navy vessels and crews, as well as the 31st MEU, would have to remain in the area as a staging platform for the air mission. The MEU air fleet could not operate from an airfield on the island because the military footprint allowed on East Timorese soil was limited by political agreement. Without relief, this floating contingent of sailors and marines would have to remain on station for the duration of the peacemaking and peacekeeping operations or be replaced by a similar capability. The only other capability available would be another MEU or an Army heavy- or medium-lift helicopter company, with all of their attendant operational, maintenance, security, and support personnel. Both of these options were considered undesirable, since they would require a large U.S. military presence for an indefinite period and would reduce the operational readiness of any unit that deployed to the area for a long time.

☐ At left, development of a base camp in Dili was one of the first tasks that confronted the LOGCAP team when it arrived in East Timor. The camp was needed to support construction of the helipads. Below, the completed helipads at Comoro Airfield included access ramps that connected with the runway.

Calling on LOGCAP

Replacing the Navy and Marine Corps forces with a civilian contract capability on the ground was a made-to-order operation for LOGCAP. Lieutenant Colonel William Guinn of the USPACOM J4 staff was advised by the LOGCAP PM that USPACOM's mission needs met the general criteria requirements of the LOGCAP contract and that the entire LOGCAP team was ready to assist USPACOM in determining the best course of

☐ **A maintenance shelter was part of the infrastructure that had to be created to support the U.S. mission in East Timor.**

action.

The initial challenge was to have the LOGCAP contractor, DynCorp, complete a market survey in less than 24 hours and determine what resources were available to accomplish the USPACOM mission. Included in this survey would be an estimate of associated costs. These cost and availability estimates would validate the feasibility of contracting out the mission.

To assist the USPACOM planners, representatives from the LOGCAP PM office and DynCorp deployed immediately to USPACOM Headquarters in Hawaii. These LOGCAP planners assisted the USPACOM staff in determining what was needed to transfer the mission from U.S. forces to the LOGCAP contractor. This assistance from the LOGCAP planners led to an approved statement of work for four heavy-lift helicopters with ground support elements, as well as an engineering effort to improve concrete helicopter parking pads, build the access ramps from the pads to the Comoro Airfield runway, and erect a temporary maintenance shelter. This would be a particularly challenging mission because East Timor is in a part of the world that is very poor in resources, so all construction equipment, skilled labor, and materials would have to be brought in from other places.

Other factors and constraints affected how the work would proceed. The American seasonal holidays (Thanksgiving, Christmas, and New Year's) were coming up, and there was a strong desire to have as many U.S. personnel as possible home as soon as possible. The monsoon season, which could hinder deployment and construction, was imminent. Lines of communication had to be considered because East Timor is about 400 miles from the nearest Australian port, Darwin, and deep within the Indonesian sphere of influence. Lastly, the operation had to be executed using as few funds as possible.

Preparing the Infrastructure

The opening team from DynCorp arrived in Dili in mid-November and immediately started coordinating with INTERFET and the U.S. forces on the ground. The contractor was followed quickly by a contracting officer's representative from the LOGCAP Support Unit. Within days, a base camp began to emerge and preparations were well underway to receive the first helicopters.

The first aircraft to arrive would be two Mi-8's, a civilian version of the Cold War-era military "HIP" Soviet transport helicopter. Two Mi-26 "Halo" heavy-lift helicopters would follow the Mi-8's. Russian-built helicopters were chosen by the contractor and USPACOM for this mission because of their low flying and maintenance costs and their quick availability for deploying to the area of operations. American-built aircraft were considered but rejected by the flight subcontractor, Clintondale Aviation.

The Mi-8 helicopters were loaded inside an AN–124 civil transport that flew directly from Bulgaria to East Timor. Not only did the AN–124 transport the Mi-8's, but it also brought the crews, a fueling truck and trailer, repair parts, and fueling equipment. The Mi-8's operated from the crowded Comoro Airfield tarmac until the helipad improvements were completed. (Comoro Airfield, located on the eastern edge of Dili, is the main commercial airport in East Timor.)

As materials were being obtained and transported from Jakarta, Indonesia, DynCorp's engineering partner, Fluor-Daniels Federal Services, deployed earthmoving equipment on ocean-going barges and transport craft to Dili to commence ground preparation. This transportation effort was necessary since no heavy equipment was available in East Timor. As soon as the first equipment arrived in East Timor, it was put to work improving the base camp site and preparing work areas for the mission. Fluor-Daniels literally had to bring everything for this mission with them. They had to erect a mobile concrete plant, dig water wells, and grade service roads; import all of the sand, concrete, and aggregate they would

☐ An Mi-26 helicopter is parked on one of the helipads.

need; and bring in skilled labor, since no licensed or qualified equipment operators were available locally.

The Mi-26's arrived in early December. These huge aircraft, the largest helicopters in the world, were flown all the way from Russia and Slovakia to East Timor. Even flying hundreds of miles a day, they needed almost 10 days to complete their journey. On the way, they faced harsh climate changes, had to fly over large expanses of desert and open ocean, crossed numerous international airspace corridors (which required diplomatic coordination), and weathered heavy storms.

The Helicopters Support the Mission

Once in East Timor, the Mi-26's immediately went to work. They used over half of the first month's available flight hours in the first 8 days after their arrival. These helicopters were perfect for this mission because they could take whole platoons of peacekeepers wherever they were needed and could return a large number of displaced East Timorese to their homes in a single lift. Special "long line" sling-loading equipment was brought in to support the huge aircraft. Whenever tasked, there was nothing the Mi-26's could not lift.

As more and more supplies arrived, the heliport improved and became available for limited operations. Before Christmas Day, the Mi-8's were able to park in the center of one of the uncompleted helipads, which freed critical tarmac space at the airport for other purposes. INTERFET aircraft started using the helipads whenever possible. By New Year's Day, ground tests had been conducted to see if the main pads could be used to park C–130 transports as well as the Mi-26's. By 3 January, all concrete had been poured; within another 48 hours, all the helipads were fully operational.

All types of missions were given to the contract aircraft, and INTERFET began to rely heavily on their services. Even after a commercial aircraft damaged one of the Mi-8's, all assigned missions continued to be flown. In addition to military and civilian moves, the helicopters were used on more than one occasion for medical evacuation and mercy missions. VIP's from many of INTERFET's contributing nations also were ferried on the aircraft. The Russian and Bulgarian crews were very professional in every aspect of their work, and the contractor's flight operations manager, Wyant Lauderman, became a key member of the INTERFET flight safety council. In all, the helicopters flew over 475 hours transporting more than 6,400 personnel and 845 tons of materiel and supplies.

☐ Army and contractor personnel survey the construction site for the helipads at Comoro Airfield in Dili. The LOGCAP engineering subcontractor, Fluor-Daniels, had to create a cement production facility from scratch in order to build the helipads.

A New Mission: Life Support

As operations seemed to be settling into a regular routine, USPACOM identified an addition to the mission: U.S. military personnel assigned to assist in the transfer of responsibility in East Timor from INTERFET to the United Nations Transition Authority East Timor

☐ One of the two Mi-26 heavy-lift helicopters takes off on a mission. The Russian-built Mi-26 is the largest helicopter in the world. The Mi-26's flew directly from Russia and Slovakia to East Timor.

(UNTAET) would need support. Specifically, they would require food, fuel, lodging, medical support, water, communications, security, and morale support. As soon as the requirements were determined, DynCorp started identifying sources of support and their costs. Additional personnel were brought in to perform the new tasks, while others who no longer were needed were sent home. More East Timorese were hired to support the transition, which provided a boost to the local economy.

The transition of the mission from engineering and aviation work to life support proved to be a smooth one. DynCorp was able to fill quickly every requirement identified by the customer. As the mission progressed, new contracting officer's representatives were brought in from AMC Headquarters. Throughout the mission, high-level oversight was provided by the LOGCAP Program Manager and AMC Headquarters, the USPACOM staff, and even the Office of the Secretary of Defense.

The East Timor mission has been rated as a total success. The efforts by the contractors there have validated the fundamental LOGCAP concept that the United States can support its overseas commitments without always having to use military assets directly.

The U.S. contribution to INTERFET will be instrumental in helping the Timorese people rebuild their devastated economy. Employing and training many East Timorese have produced a skilled local work force able to operate heavy equipment. The airfield improvements, although temporary, will provide a new commercial capability desperately needed by East Timor as it struggles to attract international investment.

LOGCAP stands ready for other missions anywhere in the world. Working closely with the contractor and the LOGCAP Support Unit to support its customers worldwide, the LOGCAP Program Manager's Office has 28 plans on the shelf that address the needs of every unified commander in chief in practically every part of the world. LOGCAP is prepared to repeat the success of the East Timor mission when called upon. ALOG

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Aviation Support to East Timor

by Captain Steven J. Keller

When helicopter support was needed for the humanitarian mission in East Timor, the LOGCAP contractor turned to an unlikely source for the needed aircraft and crews.

When the U.S. Pacific Command (USPACOM) decided to use the Army's Logistics Civil Augmentation Program (LOGCAP) to provide helicopter lift support in East Timor, its first step was to provide a statement of work defining its requirements to the LOGCAP contractor, DynCorp. DynCorp was tasked to prepare a rough order of magnitude, which is a cost estimate, and a technical execution plan, which is basically a concept of operations, based on those requirements. Once those documents were completed, DynCorp provided them to USPACOM.

☐ The two Mi-26 heavy-lift helicopters flown from Russia and Slovakia rest on newly constructed helipads in Dili.

DynCorp personnel deployed within 72 hours of receiving the notice to proceed and began making arrangements to execute the East Timor mission. First, DynCorp had to identify the most cost-efficient and available subcontractors. DynCorp has several available sources for helicopters, but the challenge was to find a subcontractor that could provide the helicopters needed for this particular operation while meeting the deployment schedule.

DynCorp evaluated criteria such as cost, capabilities, schedule, and reliability when negotiating with companies that could meet the lift requirements and schedule outlined in the statement of work. Many lift options and companies were considered, but ultimately DynCorp and USPACOM agreed that Clintondale Aviation would join the LOGCAP team and provide the helicopters and crews for the mission. Under the aviation subcontract, two Mi-8 medium-lift and two Mi-26 heavy-lift helicopters with associated air and maintenance crews would furnish the desperately needed lift support. This was the best option, but it presented some unusual challenges because the aircraft and crews chosen were located in Bulgaria, Russia, and Slovakia.

Identifying the Aircraft

During the process of preparing the rough order of magnitude, DynCorp tentatively identified aircraft for the operation. But because of the immediate and critical nature of the mission, DynCorp had to ensure that the aircraft could meet USPACOM's schedule. A DynCorp representative knowledgeable about aircraft traveled to Russia, Slovakia, and Bulgaria with Clintondale personnel to inspect each helicopter. He verified each aircraft by tail number, checked maintenance records, and assisted in coordinating the routes the helicopters would fly. These on-site inspections ensured that DynCorp did not lease any aircraft that would re-

quire a major maintenance phase, which would severely impact the mission's schedule.

International Efforts

The DynCorp representative assisted in coordinating with the Russian Embassy in Washington and other agencies to allow the use of the helicopters in East Timor, which otherwise would have been against current Russian policy. The Russian Government had released a policy on 1 November 1999 that recommended that Russian helicopters and crews not perform support work in the area of East Timor. Adhering to this policy, Russian aviation authorities initially did not approve the flight plans for the Russian-based helicopters DynCorp sought.

Subsequently, several letters were sent to the Russian and Indonesian Embassies requesting authorization for these specific aircraft to support humanitarian aid efforts in East Timor. The combined efforts of DynCorp, the Army Materiel Command (AMC) contracting officer, and other U.S. Government officials were successful, and visas were issued to the crews to perform work in the region. East Timor had no visa entrance requirement, but the Russian crews still were required to have visas before they could depart from Russia legally. DynCorp coordination with USPACOM and the commander of U.S. Forces INTERFET (International Forces East Timor) resulted in the issue of invitational travel orders for each crewmember. The Russian Government recognized the invitational orders, and the crews were allowed to support the mission in East Timor.

Delivering the Mi-26 Helicopters

Receiving permission to use Russian helicopters and crews in East Timor was just the first hurdle. The next was coordinating flight plans for the long journey. The Mi-26 "Halo" is the largest helicopter in the world, almost as large as a C–130 Hercules cargo plane, and it can haul just about as much cargo. This huge helicopter has a fuel capacity of over 3,000 gallons and burns about 1,000 gallons an hour.

The initial deployment plan was to fly the two Mi-26's from Krasnadar, Russia, and Bratislava, Slovakia, to a seaport, where they would be transported by ship to Dili, the capital of East Timor. Until the Mi-26's arrived, the plan called for using commercially owned CH–47 Chinook helicopters to provide the lift required by INTERFET. However, the cost of the CH–47 option proved prohibitive, so the decision was made to fly the Mi-26's all the way to Dili—a distance of over 11,000 miles. The aircraft would fly from Krasnadar and Bratislava, link up in Cairo, Egypt (approximately 1,400 miles from their origins), and then transit another 9,500 miles across Saudi Arabia, Oman, India, Thailand, and Indonesia before finally arriving in East Timor.

Clearance Troubles

Another DynCorp subcontractor, Universal Weather and Aviation, Inc., coordinated all overflight and landing privileges for the helicopters' journey. Delays encountered in receiving clearances from Saudi Arabia and India added 7 days to the flights. When overflight and landing privileges were denied by the Saudi Government, DynCorp started working on alternate routes. Fortunately, coordination through the Defense attaché at the U.S. Embassy in Riyadh yielded clearances across Saudi Arabia. The sheer size of the Mi-26 caused problems with clearances in India. An Indian flight rule, effective 1 January 1999, required aircraft with a seating capacity of 35 or more to have collision avoidance systems. The Mi-26, which can hold 85 passengers, did not have these systems. Again, coordination with the Defense attaché at the U.S. Embassy in New Delhi was successful in resolving the problem. The Indian Government granted an exception to the policy, and the aircraft were allowed to proceed on their long journey to East Timor. Including delays, the trip took 16 days.

☐ One of the Mi-8 medium-lift helicopters sits on the runway while the other is removed from an AN–124 transport.

Delivering the Mi-8 Helicopters

Delivering the Mi-8 helicopters had its own complications. The two aircraft were located in Sophia, Bulgaria, and the most expedient way of delivering them to East Timor was by transport aircraft, specifically a Russian-made AN–124. Initial delays were encountered in getting the AN–124 into Sophia because the airport was closed; airspace restrictions within 150 kilometers of the departure airfield were in place in anticipation of

☐ A DynCorp employee joins with a Bulgarian aircrew to offload one of the Mi-8 helicopters.

a visit to Bulgaria by President Clinton. Once the airport reopened, the AN–124 was allowed to land and load the two Mi-8's, a fuel truck, spare parts, generators, and crewmembers. The AN–124 then headed for East Timor. The need to rest the crew and the inability of the transport to remain overnight in Bacau, East Timor, because of airfield restrictions forced the AN–124 to stop in Jakarta, Indonesia. When the AN–124 finally arrived at Bacau, the helicopters were unloaded, assembled, and prepared for operations.

Flight Crews and Operations

The helicopter flight crews were Russian and Bulgarian citizens. They were handpicked and highly experienced in international flight operations. Their living conditions in the tropical environment of East Timor would prove challenging for them.

Typically, international contracted pilots speak adequate English, and the operations managers for these aircraft were fluent in English. The contract specified that at least one crewmember per aircraft speak fluent English. This English requirement surmounted the language barrier to a large degree, but communicating was still troublesome. Once the helicopters and crews closed on East Timor, the crewmembers attended numerous briefings and were oriented to the operational flight areas. This orientation was extremely important because there were no navigational aids on the island.

On 28 November 1999, the Mi-8's were ready to support operations. They were joined by the Mi-26's on 6 December. Teamwork was the key to the successful support missions in East Timor that followed. All assigned missions were completed. There was no cargo load too heavy for the Mi-26's to lift and no village too remote for the Mi-8's to reach. During the 3-month mission, the crews flew over 474 hours without incident and moved approximately 6,500 passengers and 845 tons of cargo.

☐ An Mi-26 helicopter carries a 10,000-pound forklift destined for another area of East Timor.

The contracted use of helicopters in East Timor was a distinct and unique challenge. Many lessons were learned and challenges overcome. DynCorp and the AMC LOGCAP Program Manager's Office proved that they can provide any augmentation that a commander desires anywhere in the world. The East Timor mission raised the awareness among military personnel that contractors can and will be used to perform a variety of functions on the battlefield, overcoming restrictions that arise in today's complex international arena. By having nonmilitary alternatives like LOGCAP, both commanders and diplomats have flexible options that previously were unavailable. The DynCorp team's success in East Timor has established a new model for future contingency operations that need contractor augmentation.

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Logistics and the Defeat of Gentleman Johnny

by Major John A. Tokar

The surrender of British General John Burgoyne at Saratoga was the turning point of the Revolutionary War. Logistics problems played a crucial role in the British failure.

The British logistics system during the American Revolutionary War was gravely deficient, and its defects contributed greatly to the ultimate British failure to subdue the 13 rebelling colonies. (See my previous article, "Logistics and the British Defeat in the Revolutionary War," in the September-October 1999 issue of *Army Logistician*.) Nowhere were these shortcomings more apparent, or the consequences more dire, than during the Saratoga campaign of 1777. The British commander, Lieutenant General John Burgoyne (known as "Gentleman Johnny"), historically has received much of the blame for the British defeat in this most pivotal of operations. Historians have noted that he maintained a lavish lifestyle in the field and paid little notice to the severe supply and transportation challenges that faced his army.

However, much of the blame for the British failure may be misplaced. Burgoyne was not inexperienced, and many other factors contributed to the shocking British defeat by an enemy that seemingly was disorganized and under-resourced. In particular, logistics played a decisive role during Burgoyne's campaign, perhaps more than at any other time during the war. During their campaign of 1777, the British felt many logistics shortcomings acutely, while the American supply system achieved some of its greatest success.

Logistics: A Concern From the Beginning

Burgoyne was not new to the North American theater when he arrived in Canada in the summer of 1777 to take command of the multinational force that would attempt to sever the New England colonies from their Middle Atlantic brethren. Nor was he ignorant of the British Army's logistics concerns. He had witnessed how logistics influenced the first significant British strategic judgment of the war, the decision to abandon Boston. (The British departed in March 1776.) At that time, Burgoyne had been the first to recognize that, even if British forces were successful in initiating a campaign from Boston, it would be very hard to maintain a line of communication with supply bases around that city. Not only were the rebels likely to attack the precarious supply lines, but they also were likely to sweep the surrounding area clean of any usable food and fodder. So General Thomas Gage, the British Army commander from 1768 to 1775, finally decided that the evacuation of Boston was unavoidable. In correspondence to England in October 1775, Gage admitted, "It appears to me most necessary for the prosecution of the war to be in possession of some province where you can be secured, and from whence draw supplies of provisions and forage, and that New York seems to be the most proper to answer these purposes."

Gage's successor, General Sir William Howe, and his deputy, General Sir Henry Clinton, agreed with Gage's analysis and initially wanted to move the garrison to New York (Manhattan and Staten Island). From there, they could attack south, into the Middle Atlantic colonies. If the British could defeat the Continental Army in the Middle Atlantic and subsequently convince those colonies to remain loyal, Howe felt that the South would capitulate. Then New England would have to follow suit.

With less than 6 weeks of provisions on hand and no knowledge of when his next shipment might arrive, Howe had no choice but to leave Boston. However, despite the desire to move to New York for strategic reasons, the army was moved to Halifax, Nova Scotia, primarily because Howe and Clinton were unsure if they could subsist adequately in the New York area. Moreover, they were equally unsure about when they could expect the next supply convoy from Cork, the Irish city that was the main port of embarkation for supplying the British forces in the colonies. (The state of supplies at Halifax was not much better than at Boston, but at least the locals were friendly.) The move was carried out hastily, with significant logistics consequences. An estimated 30,000 pounds of supplies were left behind because of inadequate shipping, and those supplies immediately fell into the hands of the rebels.

> *This campaigning is a favourite portion of Life; and none but stupid Mortals can dislike a lively Camp, good Weather, good Claret, good Musick and the Enemy near. I venture to say all this for a little fusillade during dinner does not discompose the Nerves of even our Ladies.*
>
> —Sir Frances Clerke,
> in a letter to his father
> during the Saratoga campaign,
> 10 September 1777

Logistics and a Campaign That Fell Short

After more than 3 months in Halifax, Howe finally decided to move the garrison to New York. Because of shipping delays in England, however, Howe was forced to postpone his move south. Four victuallers (supply ships) were held up in Cork from January until April 1776 for unknown reasons. Furthermore, the Treasury delayed sending troops and other supplies to the colonies because of a rise in shipping rates. The result of these developments was that Howe and his army lost 2 months of the campaign season (the period of favorable weather after winter) in New York and New Jersey. The impact of those lost months was significant. As a direct result of insufficient logistics, Howe was not able to land at Staten Island until the middle of the summer.

Still, despite this late start, 1776 was perhaps the best year of the war for the British. They had success against General George Washington at Long Island and White Plains and eventually had the Continental Army reeling across New Jersey. Washington was vulnerable and perhaps could have been defeated soundly. Had those 2 months not been lost early in the campaign season, Howe might have been able to crush Washington and conquer Pennsylvania as well, which would have had drastic consequences for the rebel cause. This lost opportunity often is cited as evidence of indecision and caution in the British leadership, but logistics certainly played a large part in that year's events. As historian Edward E. Curtis noted, "[The capture of Pennsylvania] would have been a far more serious blow to the Americans than the occupation of New York and New Jersey alone. Indeed, it might have sufficed to terminate the war."

The British Prepare for a Decisive Campaign

The British concept for the campaign of 1777, which eventually concluded at Saratoga, involved a three-pronged offensive. Burgoyne was to lead forces south from Canada, along Lake Champlain and down the Hudson River. Howe was supposed to detach a force from New York City to move up the Hudson to meet him, while Lieutenant Colonel Barry St. Leger hoped to create a diversion along the Mohawk River from Lake Ontario and then join them from the west. By adopting this strategy, the British hoped to split America in two, eliminating the possibility of mutual support between the New England colonies and those south of New York.

Unfortunately, Howe never really supported the plan, preferring instead to keep the bulk of his forces in New York for a push south. St. Leger laid siege to Fort Stanwix (present-day Rome, New York), but was forced to retreat when American General Benedict Arnold (not yet a traitor) arrived with 900 militiamen. Meanwhile, Burgoyne's force had such tremendous difficulties from the outset with terrain, transportation, and supplies that it never had a chance to achieve a decisive defeat of the rebels. From a logistics standpoint, Burgoyne's struggle is the most illuminating of the three movements.

Canada, where Burgoyne's expedition was to begin, was an entirely separate British command after 1775. Although British forces in Canada struggled with many of the same challenges faced by Howe in the rebelling colonies, Canada did provide some logistics advantages. That Canada was completely under British control after 1776 was certainly a benefit, but much of the British logistics success in the Canadian theater was due to Sir Guy Carleton, the British Governor-General. Carleton was able to eliminate much of the corruption and profiteering that hurt Howe's army; in particular, he established a commissariat that operated with a much higher degree of honesty and efficiency than previously experienced.

When Burgoyne returned to America on 7 May 1777, Carleton already had been notified that he would not be in command of the campaign that year. Nevertheless, he had collected most of the supplies and equipment Burgoyne required by that time, and he did not let personal misgivings about the command decision affect his

preparations. However, Carleton did not make adequate arrangements for the transportation of troops and equipment, and this failure would prove fatal to the expedition. For nearly a month after Burgoyne's arrival, Carleton did little to obtain the horses, carts, and drivers needed to conduct the portage that would be required at the southern end of Lake Champlain. Carleton assumed that sufficient numbers of French Canadian farmers would volunteer their services as *corvées* (as required by British law). But these laborers never materialized, and Burgoyne finally directed Carleton to contract for 500 two-horse carts for provisions and an additional 400 horses to haul artillery pieces.

Burgoyne knew that these horses would not be sufficient to support the army for the duration of the campaign, but he relied on his column's ability to obtain additional transportation on the march. This was a fundamentally bad assumption, based largely on faulty intelligence. Under the best of circumstances, the region they were to traverse would have failed to sustain an army adequately, both because of its sparse population and because most of the inhabitants were unfriendly. The 500 carts originally contracted were only enough to haul 14 days of provisions, instead of the 30 days that Burgoyne intended to carry. To compound the already critical transportation problem, the contractors did not provide carts and horses in the numbers originally requested, and many of the civilian drivers later deserted the campaigning army.

Burgoyne Moves South

Burgoyne's forces initially consisted of nearly 9,000 soldiers, of whom about half were British and half German. Out of the eight German regiments, roughly 3,000 soldiers were hired from Duke Carl I von Braunschweig. The latter were not merely Hessian mercenaries but regular troops, hired by the British Crown, commanded by Major General Baron von Riedesel, and bound by a loyalty oath. Burgoyne relied on Carleton to provide nearly 2,000 Canadian militiamen to assist in building bridges, acting as escorts and, most importantly, holding captured fortifications while his army advanced. However, these militiamen probably never numbered more than 150, so many regulars had to be detached to perform those tasks. Burgoyne also received only about 500 of the 1,000 Indians he expected to accompany his army.

Despite having fewer personnel, wagons, and horses than expected, Burgoyne decided to commence the expedition in the third week of June 1777. The men—particularly the German dragoons—were encumbered by bulky uniforms. Historians still debate why Burgoyne chose to march with dismounted dragoons, but most experts conclude that he assumed he could obtain the horses he needed later.

Burgoyne's officers—undoubtedly following the example set by their commander—insisted on bringing along enormous quantities of personal possessions. Burgoyne's personal baggage alone was said to occupy 30 carts, and although some stories of his opulent lifestyle have been exaggerated, he and his officers usually enjoyed their time on campaign. Compounding the critical transportation shortage was Burgoyne's insistence on hauling 138 artillery pieces in anticipation of protracted siege operations against American fortifications. The delays caused by moving the artillery overland gave the rebels time to prepare their defenses and to mass troops at critical locations. As historian Hoffman Nickerson pointed out, "It was the very movement of that apparatus that created the necessity of employing it."

The Americans Respond

American Major General Philip Schuyler was in command of the Northern Department of the Continental Army, which included New York. He considered Major General Arthur St. Clair to be his best subordinate, so St. Clair was placed in charge of the defense of Fort Ticonderoga at the southern end of Lake Champlain. However, the fort had been allowed to fall into disrepair, and St. Clair was manned and supplied inadequately. In addition, by failing to occupy Mount Defiance, which overlooked Fort Ticonderoga, the Americans made it relatively easy for the British to capture the fort. In retrospect, Burgoyne's forces probably could have bypassed Ticonderoga, but at the time the fort was considered the "Gibraltar" of New England, and its possession was of tremendous psychological importance to the Americans.

Initially, Burgoyne was able to maximize the use of his strongest support asset—waterborne transportation—and he moved his forces by boat nearly to the base of the fort. By early July, Ticonderoga was in British hands, and the Americans had lost many lives, supplies, and weapons in its defense. Because of the British supply shortages, their capture of badly needed provisions and weapons at the fort represented an even more significant loss to the Americans. Between Mount Independence (a fortification on the Vermont side of Lake Champlain) and Fort Ticonderoga, the British captured 1,768 barrels of flour, 649 barrels of pork, 5 barrels of beef, 36 bushels of salt, 100 pounds of biscuit, 180 pounds of peas, and 120 gallons of rum. They also added American ammunition, 40 artillery pieces, and 200 boats to their stocks.

Schuyler, however, had tremendous appreciation for logistics, and he "refused to despair" after the loss of Ticonderoga. Instead, he adopted tactics that he knew would exacerbate the supply difficulties that the British already were experiencing. As his men withdrew to the south, Schuyler ordered them to fell trees across the roads

and into Wood Creek to inhibit the British advance. Furthermore, he adopted a "scorched earth" policy, ordering all "crops burned, bridges destroyed, and all possible horses, cattle, and wheeled vehicles moved out of Burgoyne's reach."

British Plans Go Awry

Burgoyne's decision to use two routes instead of one to move his supplies, men, and equipment from Lake Champlain to the Hudson River often has been criticized as a tactical error, but it made sense logistically. Unfortunately, both routes had their disadvantages. Burgoyne chose to send his artillery and other heavy supplies south through Lake George, again maximizing his use of water transport, even though it took 17 days to get all the boats and equipment past the falls between Lakes Champlain and George. The other route, from Skenesboro by way of Wood Creek and Fort Ann, suffered from Schuyler's scorched earth tactics, so significant British manpower and time were needed to clear the roads of fallen timber. What should have been a 2-day march took nearly 3 weeks—an average daily advance of only 1 mile! Philip Skene, the Tory chief of Skenesboro, reportedly urged Burgoyne to use this route so that the British Army's manpower could improve his infrastructure while en route, including building a 2-mile causeway through a marsh. These continual delays further strained British food supplies.

Burgoyne was now at what some consider the decisive point of the entire campaign. Because he had received no replies to his urgent requests that Howe move up the Hudson to meet him (as originally planned), he correctly concluded that no assistance would be coming from that quarter. Moreover, he had received no word from St. Leger in the west, and his logistics situation was now deplorable. Although several other options were available, Burgoyne decided to keep his main force at Fort Edward and send a detachment to conduct a local foraging expedition. Von Riedesel suggested raiding nearby Bennington, Vermont, because intelligence sources reported that a large supply of corn, flour, and cattle there was guarded only by local militia. The German commander also hoped to acquire more horses to mount his forces. Skene had assured Burgoyne that the countryside around Bennington was full of loyalists and that the suspected enemy militia force was weak. He was not aware that American General John Stark had assembled 1,500 New Hampshire militiamen in a single week and was preparing to face the British raiding party. Moreover, the composition of the British force was curious, including female camp-followers and musicians. On 16 August, the British detachment was attacked, and the resulting British losses approached 900, half of them regulars.

Because Carleton was unable to augment his force, Burgoyne had to garrison Fort Ticonderoga, and that compounded the impact of his personnel losses in Vermont. The raid also proved that the initial estimates of loyalist support in the area were greatly exaggerated. When Burgoyne subsequently learned of St. Leger's defeat by Benedict Arnold, his right flank became vulnerable. Finally, the considerable delays caused by insufficient supplies and an overly cautious advance had allowed the rebels to amass a considerable opposing force on his front. To withdraw completely would be to admit that his plan was flawed, and that, to someone with Gentleman Johnny's ego, was unacceptable. By 13 September, he had amassed 30 days of supplies, so he chose to cross the Hudson and attack Schuyler's successor, General Horatio Gates. Perhaps he had resigned himself to his fate by this time, justifying his failings by reasoning that his expedition was only intended to tie up Gates so that he could not move south on Howe.

On 19 September, Burgoyne approached Freeman's Farm with about 6,800 regulars and 870 others. He had moved only 50 miles in the 74 days since arriving at Skenesboro. The resulting battle was a British defeat. Clinton, although under no instructions from Howe to do so, finally responded to Burgoyne's urgent request by starting a force of 3,000 men up the Hudson on 3 October. His progress was slow, however, and as had happened earlier, the delays allowed the rebels to swell their ranks (now more than 23,000 men) while the meager British supplies continued to dwindle. Burgoyne was forced to either retreat or plan a final drive south in an attempt to meet Clinton. His reconnaissance met with fierce American counterattacks, and on 7 October the British withdrew to Saratoga. Ten days later, hopelessly surrounded, with his supplies exhausted and with no hope of replenishment, Burgoyne surrendered.

What Went Wrong?

The difficulties of conducting military operations during an oppressive New York summer, through dense foliage and over difficult terrain, and the resulting delays that allowed the rebels to reorganize and resupply their forces compounded the inadequacy of Burgoyne's transportation. These were the primary factors leading to the surrender.

The British had abandoned their greatest advantage of the war—command of the sea—to adopt a plan of inland invasion that depended on lines of communication that were precarious at best. Although they did achieve temporary command of the lakes, they failed to use it to their logistics advantage. As historian James Huston points out, "Burgoyne allowed logistics to become his master instead of his servant. He was so concerned with getting everything up to meet all possible contingencies that he was too paralyzed to meet any contingency." Burgoyne was unable to seize the initiative at any time,

and surprise was almost always an advantage for his enemy.

Burgoyne made many tactical errors, to be sure, but the larger strategic mistakes were probably the ones that were fatal. Burgoyne was guilty of taking enormous baggage trains; he might have delayed unnecessarily in taking Fort Ticonderoga; and his choice of the Skenesboro route to move part of his army, instead of using only Lake George, is suspect, at least in hindsight. However, strategic planning mistakes were made in London before the campaign ever commenced (although Burgoyne was a participant in that planning), and coordination between Lord George Germain, the Minister of War, and Burgoyne was lacking. Another critical flaw was the assumption that loyalist support abounded in the countryside of New York and Vermont and thus would be a source of logistics aid. Most important was the fact that Howe never intended to support Burgoyne's effort by sending a force north to Albany. Howe's focus remained on the Middle Atlantic colonies.

Logistics Remains a British Problem

Instances of logistics inadequacy and their impact on operations did not end with the British defeat at Saratoga. The entry of France into the war following the debacle at Saratoga caused a change of strategy in London. The command of the army was given to Clinton on 8 May 1778 in Philadelphia, and he was ordered to abandon that city immediately and fall back on New York. Clinton also was instructed to carry out "harassing operations," which were consistent with his need to forage the countryside for provisions, and to send large detachments of his army to Georgia and the West Indies. The cumulative effect of these orders caused Clinton to sink into a deep despair, feeling that London had given up on his army's ability to quash the rebellion outright. The inadequate amount of provisions that he was receiving from Cork only reinforced in his mind that the British Government had switched priorities to the West Indies. His despondence over ceasing to be perceived as the main effort, as well as the lack of adequate supplies from England, caused another campaign season to pass without significant British offensive action.

The final significant example of British logistics inadequacy occurred in 1781 in the South. Lord Charles Cornwallis had the unenviable task of pursuing Nathaniel Greene's American army. Cornwallis had limited success in a campaign that featured not only a lack of logistics assets but also a lack of understanding of basic logistics principles. By contrast, Greene had been given the Southern command of the Continental Army after serving for 2 years as Washington's Quartermaster General. This experience provided Greene with an impressive education in the importance of logistics. Although he had an inferior force, he divided it in the face of Cornwallis' greater numbers, primarily so that he could subsist off the land with greater ease. Cornwallis, conversely, kept a line of communication open to the coast so that he could maintain his resupply options.

In January 1781, however, Cornwallis cut loose from his baggage trains in order to increase the speed of his pursuit. (He actually burned his wagons and remaining supplies!) He soon was forced to halt his chase after Greene in order to collect flour and other provisions, and over 250 men deserted rather than face the hardships of foraging. Cornwallis' gamble paid off in the short term, for he managed to catch Greene's force at Guilford Court House, North Carolina, in March. However, his fundamental mistake was the one so often witnessed in the early years of the war: he wrongly assumed that a significant loyalist presence in the region would rise up and provide for his army. Lack of provisions meant that his men were too ragged to follow up on the victory at Guilford. Cornwallis was forced to return to the Cape Fear River, where he could receive supplies by sea and attempt to refit his army. As soon as he disengaged, Greene quickly reorganized his own forces, moved away from Cornwallis into South Carolina, and continued his mission of reducing British control in the South.

As these examples demonstrate, the lack of sufficient provisions and the means to transport men and equipment severely affected British military operations in the Revolutionary War. Saratoga is widely recognized as the pivotal campaign in the war, and it also is the one that most clearly displays British logistics inadequacies. On a strategic level, the impact of the Saratoga campaign was far reaching, for it brought France into the war. General Burgoyne, while not incompetent, did not devote the necessary attention to logistics concerns during the New York expedition, and the result was ultimately fatal for the British Empire.

Modern logisticians can learn much through careful analysis of previous campaigns. Although time and technology have altered warfare greatly in the 223 years since Burgoyne was forced to surrender at Saratoga, the Revolutionary War still holds truths that are valuable to today's soldier. ALOG

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Commentary

The Logistics Corps

by Major Gerhard Schröter

As the Army moves into the 21st century, it is changing the way it does business. A Revolution in Military Affairs is preparing the Army for the dynamic, yet unknown, challenges it will face in the new millennium. At the same time, the logistics community is going through the Revolution in Military Logistics. This revolution introduces new concepts and structures that must operate in a completely new environment and that, in my opinion, are possible only if we merge the functional logistics branches into a Logistics Corps.

The New Environment

The Army of Excellence (AOE) that helped bring about the end of the Cold War is changing through a series of emerging operational concepts that are embodied in Force XXI, Joint Vision (JV) 2010, and the Army After Next (AAN). The main concept within all three visions is a military made up of small, agile forces that, according to JV 2010, "are adept at conducting sustained, synchronized operations from dispersed locations." These forces will operate in a joint environment and are not expected to have the luxury of a long deployment buildup and train-up time window. Rather, these forces will be required to deploy on short notice (measured in hours and days), arrive in theater ready to fight, win quickly, and redeploy rapidly.

In terms of logistics support, this dynamic new environment demands focused logistics that is, according to JV 2010, "responsive, flexible, and precise. Focused logistics will be the fusion of information, logistics, and transportation technologies to provide rapid crisis response, to track and shift assets even while en route, and to deliver tailored logistics packages and sustainment directly at the strategic, operational, and tactical levels of operations."

The Army trains logistics officers to be multifunctional, multicapable, and joint-oriented. I would argue that, in reality, we are not as multifunctional under the current system as we could be. The challenge to fill the new forward support and base support companies in the Force XXI division with tactically skilled, multifunctional lieutenants and captains is a key indicator of what awaits the logistics community in the redesigned Army. The force structure envisioned by JV 2010 and AAN, coupled with a constrained funding environment, compels us to reconsider the primarily functional AOE training and development model for logisticians.

The AOE Logistics Model

The Army's current logistics community is made up of three main functional branches or corps: Ordnance, Quartermaster, and Transportation. Each branch specializes in specific logistics functions, has its own training and education system, and has officers assigned to functional and multifunctional logistics units based upon their branch affiliation. Will this education system produce the multifunctional, multicapable logisticians who will support effectively the dominant maneuver concept envisioned by JV 2010 and the AAN? In my opinion, the answer is no because the current Army system relies so heavily on on-the-job-training (OJT) to develop the multifunctional officer. Each officer's assignments would have to be managed very carefully to ensure he is multifunctional. The Army cannot afford to depend solely on OJT if the success or failure of dominant maneuver hinges on the "responsive, flexible, and precise logistics" described in JV 2010. To ensure the logistics community is fully capable of meeting and exceeding the logistics expectations of JV 2010 and setting the conditions for logistics in the AAN, we must activate a Logistics Corps and abolish the Ordnance, Quartermaster, and Transportation branches.

The Army already took its first step toward the Logistics Corps concept with the introduction of the Combined Logistics Officer Advanced Course (CLOAC) in 1993. However, officers received functional training in their basic courses and were sent to the basic branch school during CLOAC Phase 2. CLOAC was redesignated as the Combined Logistics Captains Career Course (CLC3) in 1998. All logistics officers retain their functional branch affiliation throughout their careers. Officers are given the opportunity to receive the functional area 90 (multifunctional logistician) designation, but the formal multifunctional education process ends with CLC3. For the rest of an officer's career, the multifunctional education process relies mainly on OJT.

This informal education system was effective under the AOE structure, but force redesigns and the dynamic nature of 21st century warfare require a more formalized system. It is crucial that logisticians join their units educated, trained, and ready to deploy. Eight hours before line of departure will be too late for a functionally focused logistics officer to conduct OJT, effectively synchronize all classes of supply, and orchestrate maintenance sustainment operations on the dispersed and asymmetric battlespace of the future.

The Logistics Corps Model

The Logistics Corps training, education, and development system would train all logistics officers as multifunctional logisticians who can operate effectively in the complex and joint environment of the 21st century. All Army and Marine Corps logisticians would begin their careers with the Logistics Officer Basic Course. This would be followed by the Logistics Officer Advanced Course and then an echelons-above-brigade planning staff sub-course for logisticians as part of the universal Command and General Staff College of the future. Included in the curriculums would be training in joint logistics planning and operations at the joint task force and theater levels. After completing a training and education level, a logistician whose next assignment is to a position requiring specialized functional skills would attend a course designed to prepare him for the assignment. However, this would be the exception rather than the rule because the Warrant Officer Corps would continue to provide functional expertise as it does now.

Benefits of a Logistics Corps

A Logistics Corps would offer several tremendous benefits. First, all training would be conducted at one installation under one command. Second, the consolidation would reduce significantly the number of instructors and education support personnel needed, leaving more personnel available to fill tactical units. Third, consolidating the funding required by three officer training programs would decrease costs and increase the quality and training value of the one program. Finally, the talent that had been dispersed formerly among three functional corps would be consolidated within one organization. This new organization would produce the innovative logistics leadership needed to sustain the Army through the 21st century.

The feasibility of a Logistics Corps would depend on detailed studies of the personnel changes required, the impact on base infrastructure, and funding issues, as well as finding ways to overcome institutional resistance caused by the branch pride instilled at the separate basic courses. It is up to the current logistics leaders to take the steps that will allow the Army to produce multifunctional logisticians for the 21st century. As JV 2010 states, "Turning concepts into capabilities requires adapting our leadership, doctrine, education and training, organizations, and materiel to meet the high tempo, high technology demands posed by these new concepts." We owe the soldiers we lead and the units we support the best trained and educated logistics leaders who will leverage new technologies to produce dynamic organizations capable of accomplishing their missions.

Major Gerhard Schröter is attending the College of Naval Command and Staff in Newport, Rhode Island. He was assigned previously as brigade maintenance trainer at the National Training Center at Fort Irwin, California. He has a B.A. degree in international relations and German from Virginia Polytechnic Institute and State University.

Commentary

Effects of MOOTW on CSS Units

by Lieutenant Colonel Christopher R. Paparone

There is an omnipresent debate in the Army on the effects of military operations other than war (MOOTW) on the readiness of combat units to conduct their wartime mission. In general, many argue that the corrosive effects of MOOTW could be substantial, especially if the U.S. military continues its transformation from an institution focused on killing people and destroying things to an agency employed mainly for peacekeeping and policing. However, many observers seem to think that the effect of MOOTW on combat service support (CSS) units is innocuous. In fact, some seem to think MOOTW improves CSS unit performance because "they are doing what they would do in combat." I disagree strongly with both statements. I argue that the effects of MOOTW on CSS unit wartime proficiency are, to a large extent, just as corrosive as on combat units.

Combat Arms Debate

Most Army leaders would agree that MOOTW causes some dilution of the traditional core competencies of the warfighting Army. But Army leaders are realists and understand that our National Security Strategy

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Combat Arms Debate

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demands that we conduct MOOTW. This demand brings to light many deficiencies in our capability to conduct MOOTW. These deficiencies drive policies, training schedules, and materiel acquisition decisions. Under the Army Chief of Staff's vision, the Army now is programming shortcuts to generate force structure, training programs, and doctrine that will meet this growing challenge.

Deficiencies in MOOTW capability also are found at the individual and unit levels. As one newspaper article stated, "This is not the life [soldiers] expected when they signed up, ready to do battle and trained in armor, infantry, and artillery tactics. In Kosovo, . . . soldiers have had to learn to be surrogate mayors, school principals, police chiefs, social workers, and even corporate chief executive officers as they try to forge lasting peace in a land divided by centuries of hate."

The Army position seems to be that, although combat skills may deteriorate, leadership skills are honed. Yet in many cases, those same junior leaders did not join the Army to conduct peace but to wage war. The attrition rate for captains is 12 percent—relatively high. While some of this attrition is due to the enticing growth of the U.S. economy, some occurs because the missions are not what soldiers expected or were trained for.

CSS Unit Debate

The same situation holds true for CSS units. My former unit, the 47th Forward Support Battalion, 1st Armored Division, out of Baumholder, Germany, served two tours in Bosnia. Upon return from Bosnia, we studied and reported on what percent of the collective tasks listed in the battalion's mission training plan (MTP) were not experienced while in Bosnia. The MTP is a doctrinal list of all the tasks the unit is designed to accomplish in combat. We narrowed the scope to include only those tasks that were tied directly to our mission-essential task list (METL). We also estimated how many of these same tasks were not trained during a recent deployment to the Combat Maneuver Training Center (CMTC) in Hohenfels, Germany, under a high-intensity combat scenario.

The results showed that approximately 30 percent of the METL tasks were not experienced in Bosnia, and about 15 percent were not trained at the CMTC. Most of the differential was attributed to combat survival tasks such as support while maneuvering; night operations; nuclear, biological, and chemical defense; and operational security, such as camouflage, concealment, and light and noise discipline. We went on to estimate that only 5 percent of the tasks would not have been exercised at the National Training Center (NTC) at Fort Irwin, California. The reason for this lower percentage is that the NTC has enough maneuver space for an entire brigade combat team, while the CMTC can handle only one maneuver battalion at a time. Thus training at the CMTC is less taxing on brigade CSS than at the NTC.

The most remarkable result of our experience in the Bosnia operation was in the ad hoc nature of support operations in the U.S. brigade sector. Because of the base camp structure and an economy-of-force approach (dictated by the political situation), we had to disassemble the battlefield operating system for which we were designed—the brigade support area and field and combat trains system. In its place, we implemented an ad hoc return to "forward area support teams" in each base camp, supplemented by a distribution system largely operated by Brown & Root Services Corporation. Support platoon leaders, battalion S4's, soldiers, and officers operated a logistics system that was MOOTW-unique to a heavy division brigade combat team. The doctrinal brigade CSS system—one of the most difficult battlefield operating systems for a brigade commander—was not exercised.

In any case, we concluded that the corrosive effects of MOOTW ultimately were a threat to warfighting CSS METL capabilities for the brigade combat team. Because our unit returned to Bosnia for a second tour, we also demonstrated that to return to the band of excellence for CSS in warfighting takes approximately 6 to 8 months, depending on available resources. (This time period is a bit longer than that reported by the Center for Army Lessons Learned [CALL], which reported 3 to 6 months for CSS units. Because of the tempo of training and operations in U.S. Army, Europe, I would accept our figures over CALL's.)

In response to those who think CSS units are equally or better trained by virtue of a MOOTW deployment, I disagree. The CSS battlefield operating system is one of the most challenging systems in a brigade-level, high-intensity combat operation. Our analysis showed that, while CSS individual proficiency may be sustained in MOOTW, the complexity of supporting defensive or offensive maneuver is not. This is the challenge our combat and CSS leaders must understand and meet head on.

Lieutenant Colonel Christopher R. Paparone, a Quartermaster Corps officer, is a student at the Army War College. He has served in a variety of command and staff positions in training, MOOTW, and war. He has been selected for the Army War College Professorship Program.

Commentary

Bring Back the Troop Ships

by Kevin P. Burns

U.S. Army, Europe (USAREUR), is composed of 60,000 soldiers, most of whom are assigned to units in Germany. Under current rotation policies, one-third of these personnel are moved each year, although the exact makeup will change since there are differences in tour lengths. USAREUR Regulation 612–1 states that each incoming soldier will attend 2 weeks of in-processing before reporting to his unit. The primary goal of the in-processing is to provide the unit with a soldier who is aware of the political, social, and moral environment in Europe; has been introduced to key foreign language phrases; is physically fit and medically qualified; and is fully supplied for his position.

Currently, local personnel provide in-processing at the base support battalion (BSB) level. However, during the 12 workdays of instruction and processing, only about 60 hours of actual instruction and processing take place. The remainder of the time is spent moving to in-processing facilities and waiting for instructors. Furthermore, the soldiers typically are housed away from the in-processing facility, resulting in a large amount of commuting time.

To avoid the delays inherent in the current system, a new (yet old) concept may be worth exploring. As the saying goes, "Everything old is new again." Perhaps it is time to dust off the old files, update them using modern technology, and implement them to save money by using ships to transport soldiers and their families to Europe.

In-Processing Can Be Improved

I have made several assumptions about how to improve the current system. The first is that the best way to avoid lengthy commutes is to billet arriving soldiers in the facility where the in-processing takes place. This allows the soldier to spend more of his time actually in-processing and learning and less time on the road. Housing soldiers at the in-processing facility would allow the learning day to be lengthened and the indoctrination period to be shortened.

The second assumption is that technology may be used to process soldiers more quickly, particularly in the supply arena. The Army currently has soldiers come to a central supply facility to be issued Table of Allowances (TA)–50 field gear. This is issued by size from a central facility within the BSB, resulting in long lines and frequent waits while the gear is assembled and checked. Moving the troops en masse through the supply facility either creates long waits or results in staffing inefficiencies if the staff is sized to meet cyclical peaks. Levi Strauss & Company has introduced an automatic sizer that measures the customer as he stands in a booth in his underwear. A laser is run up and down his body, taking measurements and relaying them to a computer. These measurements allow a computer to custom-fit clothes to the customer. Such a system could be used to measure the soldier and transmit his measurements to his assigned unit, allowing his TA–50 issue to be prepared accurately before his arrival at the facility.

The third assumption is that soldiers would like the opportunity to have their families with them during in-processing and that the families also should be given an orientation. Thus, the in-processing facility should be large enough to accommodate at least three times the number of soldiers being processed. Since about 500 soldiers arrive in Europe each week, the facility needs to accommodate 1,500 people (soldiers and families).

Finally, the current cost of travel and a 16-day orientation for one soldier and two family members (one spouse and one child under 12) is about $5,690. Using a facility that is capable of lodging the entire family and reducing the number of in-processing days to 8 would save the government $1,920 in per diem costs.

The New (Old) Proposal

Based on these assumptions, here is my proposal: Bring back the concept of troop ships, but update the concept to one of quality for the soldiers and their families.

Having been on a number of the older troop ships, I know it is not beneficial to the soldier or to the Government to advocate that the Government own and operate

them. In the spirit of outsourcing, I suggest that the Government contract with a cruise line for cabin spaces aboard their vessels. A contract could be awarded for cabin spaces for 1,500 people, with a few restrictions to ensure quality is maintained. The contract would include several conditions. The ships must operate under the U.S. flag and in conformance with U.S. laws and regulations. Spaces will be set aside for classroom use for in-processing and orientation. Soldiers and their families will be treated the same as all other passengers. No more than 60 percent of the cabins will be reserved under this contract; the remainder will be available for commercial passengers. Voyage length will be 10 days or less.

Benefits to Using Cruise Ships

There is only one U.S. flag cruise line that operates ships capable of carrying 1,500 passengers. According to its publicly reported financial figures, it is making a profit with an average cabin cost of around $400 per day (based on two passengers per cabin). Using that figure as a base means that a cruise of 10 days can be estimated to cost $4,000—or $1,333 per person (based on assigning a family of three to a cabin). Realistically, a figure of about $1,500 per person is better, as family size will vary.

Conducting the in-processing on the vessel during the voyage means that the entire in-processing, transportation, and pay costs for a family of three would be about $5,000 for the 10 days, saving some $690 per family. Moreover, the soldier could see more of his family during the processing period, the family could be better educated about Europe, and the whole family could have some fun in the process.

By coordinating shipping schedules, soldiers could arrive licensed to drive in Europe, pick up their personal vehicles at port on arrival, and drive away immediately. Jet lag would be eliminated. The newer classes of cruise ships also do not have the problems with motion sickness that were endemic on the older ships. Facilities aboard the cruise ships are far more comfortable than most Army facilities.

On the Government's side of the equation, the financial savings pale in comparison to the advantage of having a fully indoctrinated replacement available 6 days earlier. Three ships could replace 25 orientation centers, reducing the staffing from the number needed for 25 centers to that for 3 centers. Training courses would be standardized throughout USAREUR. Working with the vessel operator, national defense features could be incorporated into the ship so it could be used as a command and R&R (rest and recuperation) ship during a contingency. Transportation would be arranged at group rates.

By operating under the U.S. flag, the Government would help revitalize the U.S. Merchant Marine, provide jobs to U.S. citizens, and ensure that the cruise ships used operate at a very high standard. There also are several benefits to calling for a large percentage of the passengers to be commercial, including revitalizing an industry and, more importantly, ensuring that regular cruise ship enticements and standards are provided.

Limiting the voyage to 10 days would allow for 8 days of in-processing and 2 weekend or off days.

Obstacles

Several obstacles must be overcome in implementing a program such as this. The current order-writing system is not geared toward arranging for a specific date for orders. Many orders say "travel on or about" a date, which could make it difficult to schedule cruise ships for transition to Europe. BSB commanders and current in-processing center personnel will want to maintain control of their facilities and will resist change.
Travel by sea is associated with the old cramped troop ships, seasickness, and slow boats. The newer cruise ships are none of these, of course, but the perceptions remain. Facility costs will not decline immediately as ship facilities are converted to use for military in-processing.

USAREUR provides in-processing for incoming soldiers at sites throughout Europe. Because of the time involved in the process and the numerous locations of the training facilities, program costs are high. The Army has an opportunity to consolidate training facilities and lower the Government's costs, cut the time a soldier is away from the unit, and provide a better trained and equipped soldier to the unit. To save money and time, the Army could provide in-processing facilities on board contract ships that would transport the soldiers and their families to Europe. In other words, bring back the troop ships in an updated mode.

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