ARMY LOGISTICIAN

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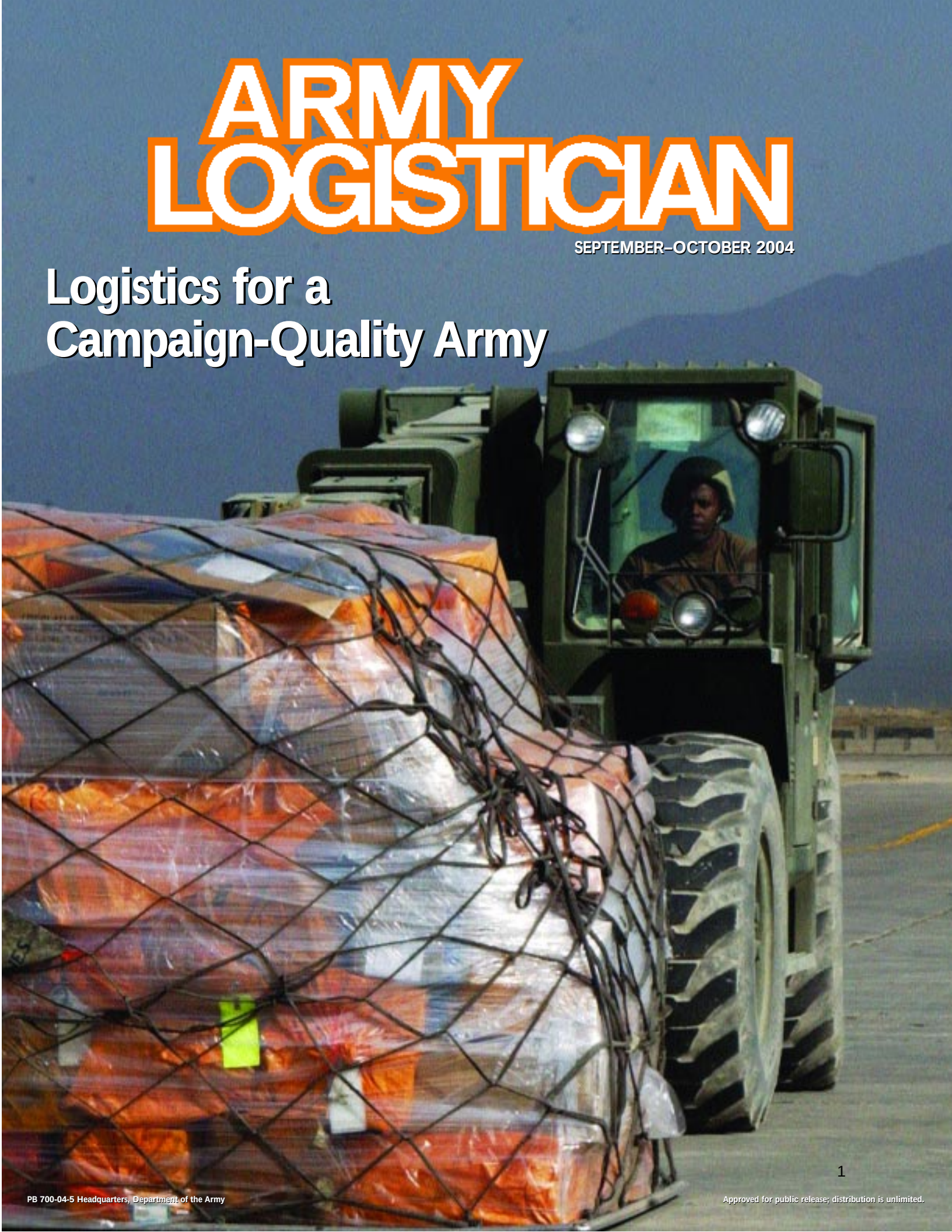
Logistics for a Campaign-Quality Army



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Cover: The goal of Army transformation is a campaign-quality expeditionary force that can support joint operations. Such a force requires a logistics system that provides end-to-end distribution and leverages joint interdependencies. The future logistics environment is already emerging in Operations Iraqi Freedom and Enduring Freedom. On the cover, a soldier at Bagram Airfield in Afghanistan prepares mail and other supplies for delivery to forces deployed to remote sites. An article on developing logistics for a campaign-quality Army begins on page 2.

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

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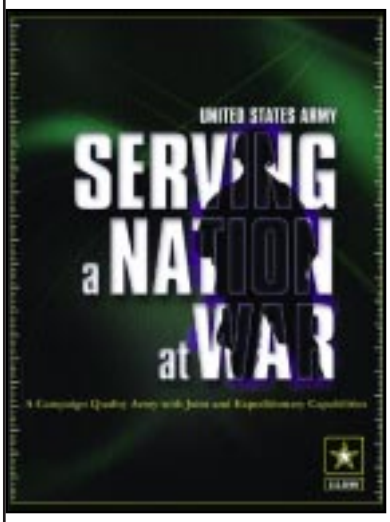
ALOG NEWS

ARMY LEADERS DESCRIBE STRATEGIC RATIONALE FOR ARMY CHANGE

The Army's senior leaders have released a paper summarizing the intellectual foundations for the profound changes that the Army is now pursuing. The paper, "Serving a Nation at War: A Campaign Quality Army with Joint and Expeditionary Capabilities," emphasizes the need for transformation even as the Nation is fighting a war in a new strategic environment. That environment is essentially "a war of ideas" against non-state adversaries violently opposed to Western values.



As summarized by Acting Secretary of the Army Les Brownlee and Army Chief of Staff General Peter J. Schoomaker—

> The single most significant component of our new strategic reality is that . . . this war will be a protracted one. Whereas for most of our lives the default condition has been peace, now our default expectation must be conflict. This new strategic context is the logic for reshaping the Army to be an Army of campaign quality with joint and expeditionary capabilities. The lessons learned in two-and-a-half years of war have already propelled a wide series of changes in the Army and across the Joint team. The Army always has changed and always will. But an army at war must change the way it changes.

The Army is adapting to this new environment by seeking to create a new "mindset" that is both joint and expeditionary. Accordingly, the Army is working with the other armed services to achieve "joint interdependence"—

> Interdependence is more than just interoperability, the assurance that service capabilities can work together smoothly. It is even more than integration to improve their collective efficiency and effectiveness. Joint interdependence purposefully combines service capabilities to maximize their total complementary and reinforcing effects, while minimizing their relative vulnerabilities.

The Army will organize for the new realities by developing more modular units and headquarters. At the same time, it will stabilize the force by increasing unit cohesion. The Army also will adjust the mix of Active and Reserve component forces, with some high-demand, low-density capabilities shifting to the Active Army.

Joint sustainment will be the hallmark of Army and Defense logistics—

> All the services have key interdependencies in the logistics arena and will experience even more in an expeditionary environment. There is a pressing demand for a joint end-to-end logistics structure that permits reliable support of distributed operations in which deployment, employment, and sustainment are simultaneous . . . . all services [will have to] fully embrace joint logistics, eliminate gaps in logistics functions, and reduce overlapping support.

To sustain an expeditionary force, the Army must develop an "effects-based logistics capability" in which logistics support is linked to maneuver capabilities. (See related story on page 2.) The Army will need to create—

- A distribution-based sustainment system.
- Army deployment and sustainment commands that can serve as the basis of joint logistics command and control elements.
- Better force protection of logistics installations and lines of communication.
- Fighting platforms that can be deployed more rapidly.
- The best possible individual equipment for the soldier.
- An improved Army aviation fleet.
- Significant improvements in conducting "network-enabled operations" to increase actionable intelligence and situational awareness.

The full paper can be accessed at www.oft.osd.mil/library/library_files/document_376_JEC_Paper_5.pdf.

(ALOG NEWS continued on page 50)

Joint and Expeditionary Logistics for a Campaign-Quality Army

BY MAJOR GENERAL TERRY E. JUSKOWIAK AND COLONEL JOHN F. WHARTON

The Army must provide regional combatant commanders with a campaign-quality force that has joint and expeditionary capabilities. Such a force requires interdependent, joint logistics capabilities that support the full range of military operations at all levels (strategic, operational, and tactical) consistent with the Joint Operational Concepts. This joint logistics system must include a responsive logistics infrastructure with simultaneous deployment, employment, and sustainment capabilities and a single, integrated, responsive end-to-end distribution system. These logistics structures also must be capable of integrating interagency and multinational capabilities.

The keys to achieving an integrated, networked, end-to-end joint logistics system are the right command and control and the capacity to provide responsive, effective, and efficient support to joint force commanders. The joint interdependencies of all the armed services must be leveraged to provide the regional combatant commander a single, joint logistics command and control capability that is responsive to his area of operations. This organization will serve as the senior joint logistics operational component for the regional combatant commander, allowing him to synchronize priority of support with priority of effort at the theater-strategic level.

In view of these developments, the Army must reconsider how a land component commander is sustained. This review must include the ability of the continental United States (CONUS) national sustainment base to support deployed forces. It also should encompass how the Army is supported, how the Army provides support to sister components once deployed, and how the Army contributes to joint logistics.

Current and future strategic realities reinforce the need to transform the way U.S. forces conduct and sustain joint operations. Military commanders must be able to conduct operations in permissive, uncertain, and hostile environments. Today, they routinely operate in fluid, nonlinear, noncontiguous environments, with highly distributed forces functioning at various tempos and in various phases of military operations. U.S. forces must be able to conduct distributed, simultaneous, joint operations in multiple theaters and multiple locations across the full range of military operations. These demands require, as never before, flexibility and coherence in the joint force and in working with interagency and coalition partners. Today's operational realities have a significant impact on Army support concepts, and logisticians must adapt to these conditions to provide the best support.

The Reason for Logistics Change

Today's logistics structures and concepts of support were developed for a Cold War Army that relied on an extensive support infrastructure; distinct, linear support structures; and predictable requirements. The Army's need for developed airfields and seaports highlighted to potential adversaries its points of entry and both the origins and the limits of its lines of operations and support.

The support requirements generated by current equipment and a doctrine of linear operations resulted in a logistics tail characterized by stockpiles of materiel at each echelon of support. These requirements often delayed the Army's ability to transition quickly from deployment to employment of the force.

Current joint doctrine views deployment, employment, and sustainment as separate functions rather than as a continuous, simultaneous joint operating concept. The result is seams between planning and execution systems and challenges in bridging the gap between strategic and theater movement and sustainment operations. These seams and gaps are even more apparent when the support requirements of interagency and multinational partners are considered.

Future organizations and joint doctrine must be designed to overcome these deficiencies. The U.S. military is striving to replace regional, functional, and service perspectives with an adaptive, global perspective. A unifying deployment and sustainment organizational capability must promote joint force flexibility, agility, endurance, protection, and mobility. Teaming with interagency and multinational partners is imperative. Organizational solutions to these challenges include modular, tailored, capabilities-based support organizations that can better meet the

requirements of an end-to-end, joint, distribution-based sustainment system and can be extended quickly and directly into the battlespace of supported units.

Achieving Joint Interdependence

Today's joint expeditionary operations require the Army to respond rapidly to the joint force commander with forces that can be deployed, employed, and sustained immediately and simultaneously on arrival in distant, austere theaters. Multiple, simultaneous operations over extended distances in a distributed battlespace require synchronization of all combat service support (CSS) assets, from strategic-level national providers to forward units at the tactical level. Logistics organizations must be capable of sustaining joint combat forces and interagency and multinational partners while minimizing the logistics footprint in the area of operations. To do this, all services must seek joint interdependence in logistics. This is especially true for the Army to continue to sustain land combat, which is its core logistics mission.

Joint interdependence relies on all the services and Defense agencies to maximize their complementary capabilities and minimize their vulnerabilities in order to fulfill the mission requirements of the joint force commander. To meet the new challenges that stem from changes in the joint operating environment, the Army must eliminate gaps and seams and transition its sustainment system into a continuous, fully integrated, globally synchronized, end-to-end distribution-based system capable of providing responsive support to tailored expeditionary joint forces conducting simultaneous distributed operations in a dynamic, nonlinear, and noncontiguous environment. A joint logistics command and control capability, operating at the regional combatant command level, could achieve that interdependence and provide the support needed for joint operations.

A Campaign-Quality Expeditionary Army

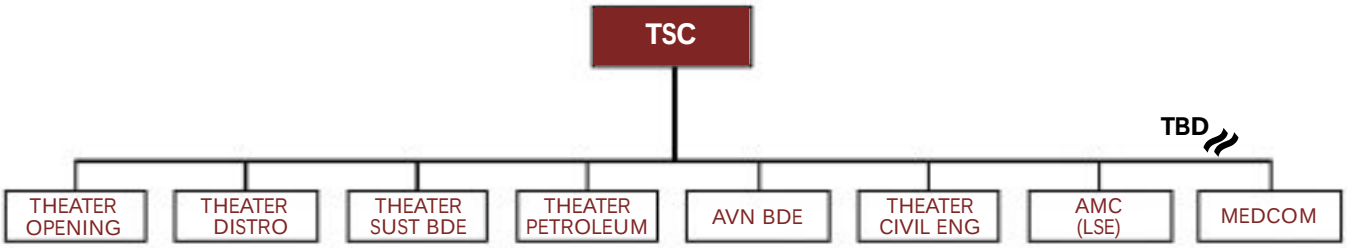
Supporting joint operations requires a campaign-quality Army. The campaign quality of an Army is its ability to win decisive combat operations and to sustain those operations for as long as necessary while quickly adapting to unpredictable changes in the context and character of the conflict. The Army's preeminent challenge is to reconcile expeditionary agility and responsiveness with the staying power, durability, and adaptability needed to carry a conflict to a successful conclusion. Army logisticians must ensure that the concepts developed for organizations and systems support the requirement for expeditionary agility and responsiveness—for speed and precision as well as staying power.

Moving to Modularity

Previous logistics organizational designs, going back to Division 86, were developed under resource

A 3d Infantry Division soldier adjusts outriggers on a VSAT satellite system at the National Training Center at Fort Irwin, California.

Theater Sustainment Command



Capabilities

- Plan, control, synchronize CSS for the UEy or Joint Force Commander
- Multi-functional and functional headquarters
- Capable of receiving CS and CSS modules to include: theater opening, theater distribution, medical (MEDEVAC, Level III, CL VIII), supply and service augmentation, personnel and finance, procurement, and contracting support to UAs
- Connectivity with AMC and DLA

This chart shows a notional theater sustainment command. The TSC organization is not fixed, and subordinate units are assigned or attached to the TSC headquarters based on the mission.

constraints that required centralization of CSS assets at the division, corps, and theater levels to increase productivity and efficiency. Concepts of support required an echeloned, contiguous, linear battlefield with secure lines of communication (LOCs). These support concepts relied on the continuous cycling of sustainment from higher to lower echelons, using "pooled" CSS resources. While this linear support model worked well in the past, today's operational realities require the Army to reexamine those concepts.

The Army's new conceptual framework employs modular combat units and organizations. Modularity is not new to Army logisticians; the CSS force design has been modular since the mid-1990s, providing tailorable support modules to satisfy specific mission requirements. What is changing is where CSS assets are located on the battlefield. Today, the Army needs more self-reliant maneuver organizations that can conduct combat operations without being continuously tethered to logistics support from higher echelons. As a result, CSS assets, once pooled at higher echelons, have been pushed down into maneuver brigade combat teams (BCTs) and support brigades.

Maneuver in an expeditionary, noncontiguous environment will put a premium on both unit agility and unit capacity. While self-sufficiency provides a greater level of operational freedom, the Army needs to ensure that logistics assets do not overburden the commander's maneuver flexibility. The Army must develop a solution that balances the additional logistics support needed for BCT self-reliance with the brigade commander's requirement for freedom of action and mobility.

Modular Headquarters

In place of Army service component commands, numbered armies, and corps and division headquarters, the Army will organize units of employment (UEs). There will be two types of UE headquarters, UEx and UEy. The UEx will provide battle command at the tactical and lower levels. The UEy will direct theater support and land component operations. Essentially, the UEx will combine the functions of today's corps and divisions, while the UEy will pick up the responsibilities of Army service component commands and numbered armies and some roles of the corps. Consequently, logistics organizations must be structured to support this collapse in echelons while supporting an expeditionary and campaign-quality Army.

End-to-End Distribution and Reducing Layers

Theater sustainment commands. To reduce layering of logistics organizations, the Army is developing theater sustainment commands (TSCs) at the operational level (UEy) that, with augmentation, can be capable of supporting joint forces. (See chart above.) The TSC will combine some of the current corps support command (COSCOM) and theater support command functions, thereby effectively eliminating a layer of logistics headquarters. The TSC will be a modular organization tailored to meet mission, enemy, terrain, time, troops available, and civilian (METT–TC) considerations. The command will include modular units specifically tailored to provide theater opening; theater distribution; medical; petroleum, oils, and lubricants; aviation; civil engineering;

and multifunctional supply, maintenance, and transportation support.

The TSC commander will serve as the senior Army logistics commander in the UEy. The TSC will provide command and control of assigned, attached, and operationally controlled units executing theater opening, theater distribution, supply, maintenance, medical, field services, contracting, procurement, transportation, personnel, finance, and multinational and interagency sustainment operations. The TSC will maximize throughput sustainment of Army forces and other supported elements and provide support to the operational-level units in the UEy's area of operations and overall sustainment support to Army forces. The TSC also will execute those lead-service, common-user logistics support requirements that the UEy commander assigns. The TSC will be capable of deploying two command posts into two separate joint operational areas for command and control of sustainment in a widely distributed environment.

In joint operations where the Army is the dominant service, the TSC could provide core elements of a single, joint logistics command and control capability. The TSC design will be capable of integrating joint augmentation into its headquarters and providing command and control of modular sustainment capabilities from the other services.

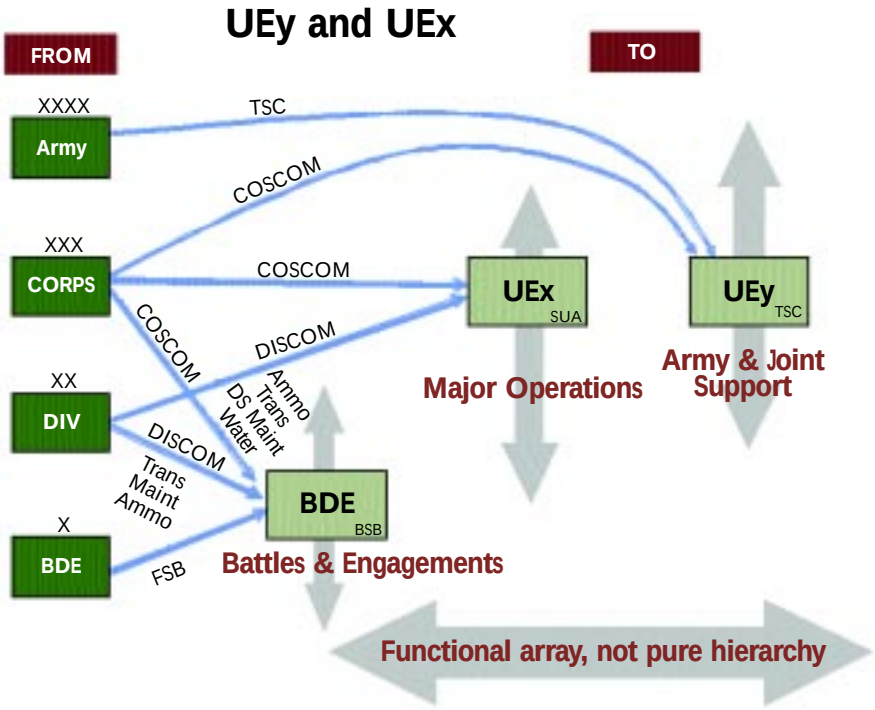
Theater opening. The opening of a theater of operations is more than just airfield or seaport operations; it is crucial to the success of the entire mission. Theater opening sets the initial conditions for effective support and lays the groundwork for subsequent expansion of the theater distribution network. The critical tasks for theater opening include—

- Operational sustainment command and control, with reach-back capability and in-transit visibility.
- Theater reception, staging, onward movement, and integration operations.
- Life support.
- Force protection.
- Theater sustainment.

In the past, command and control of these operations was conducted by ad hoc organizations that were not specifically structured or trained for that task. Today, a modular theater opening brigade headquarters is being developed that will be able to command and control modular units that are called forward as required to execute theater opening functions.

Theater distribution. Theater distribution is a critical and essential element of multifunctional support that includes air, land, and sea operations. As the Army transitions from a supply-based to a distribution-based logistics system, theater distribution focuses on an end-to-end capability to deliver materiel readiness from source of supply to point of use. The cornerstone of successful theater distribution is the merging of materiel management functions with movement management functions under a theater distribution brigade.

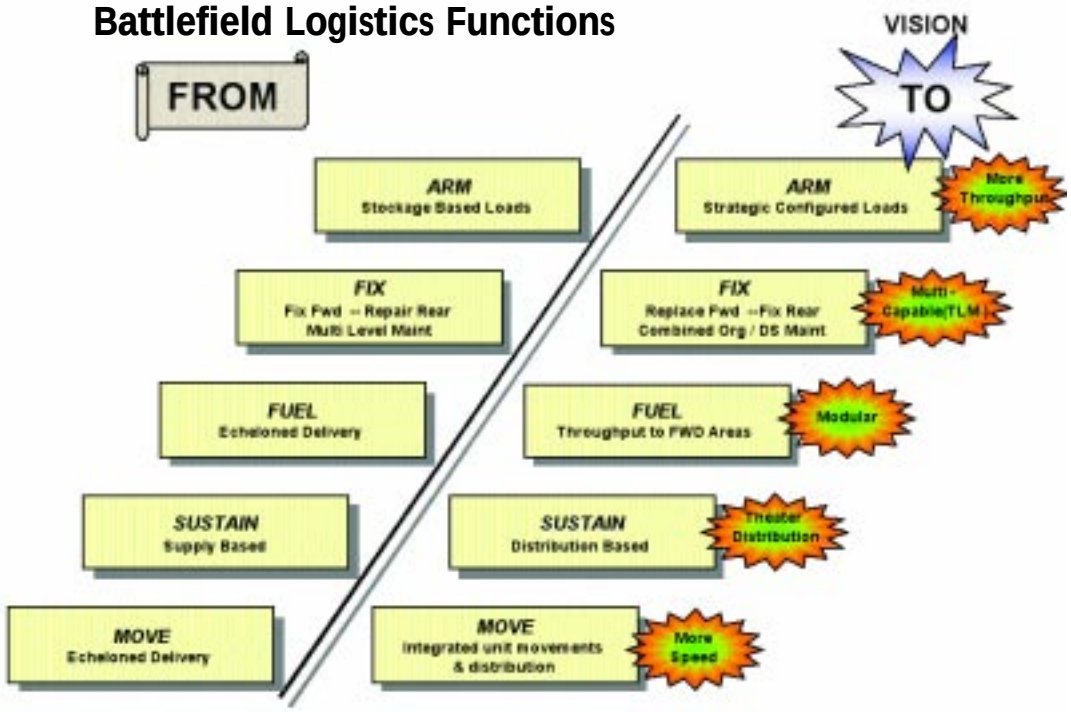
This multifunctional brigade will have the mission, responsibility, and authority to conduct theater distribution. It will be assigned functional and multifunctional battalions that will perform transportation, supply, and services missions. Distribution-based logistics will maximize throughput from the theater hub to the user level, bypassing intermediate echelons whenever possible.



The modular structure to which the Army is moving will collapse echelons to the UEy, UEx, and brigade.

Sustainment brigade (UEx). The sustainment brigade (UEx) will be a multifunctional CSS organization that combines functions that formerly resided in the division support command (DISCOM) and COSCOM. Its primary mission will be to plan, coordinate, synchronize, monitor, and control CSS in the UEx area of operations. The sustainment brigade (UEx) commander will serve as the senior logistics commander in the UEx.

The brigade will be a modular, tailorable organization comprised of both functional and multifunctional



The modular design will create a more self-reliant force compared to the Force XXI design.

subordinate CSS units. It will be configured for, distribute to, and retrograde from maneuver BCTs and other support brigades assigned or attached to the UEx. The sustainment brigade (UEx) will be capable (with augmentation) of managing logistics operations in support of joint or multinational operations and forces. With augmentation, it also could provide joint logistics command and control for a joint force commander.

General Concept of Support

The modular design requires a more self-reliant force. The Army will accomplish this by moving required functional assets previously located in the theater support command and COSCOM to the UEy level and by moving other capabilities in the COSCOM and DISCOM main support battalion to the UEx level and down into maneuver BCTs and support brigades to make those units more self-reliant. (See chart on page 5.)

At the UEy level, the Army will collapse and consolidate selected functions (such as the materiel management center and movements control center) in the theater support command and COSCOM into the TSC. This consolidation of materiel and movement management will be possible because of global communication connectivity and advances in logistics information and battle command systems. The Logistics Common Operating Picture (LCOP) now being used in Operation Iraqi Freedom and its successor, the Battle Command Sustainment Support System (BCS3), permit users to make single, integrated decisions to meet the joint force commander's requirements.

Experimentation by the 3d Infantry Division (Mechanized) has shown that some logistics management functions can be consolidated at home station. At the UEx level, the sustainment brigade will assume the remaining functions previously centralized at the COSCOM and DISCOM levels, including water production and distribution, field maintenance, and property book operations.

The new requirements to be performed in the maneuver BCTs include water production and distribution, ammunition holding and accountability, increased transportation, and self-contained two-level maintenance. Maneuver BCTs will have organic logistics organizations: a forward support company (FSC) in each combat arms battalion and a brigade support battalion (BSB) for the maneuver, aviation, maneuver enhancement, and fires brigades.

Arm Concept of Support

Force XXI provided an echelons-above-corps and corps ammunition distribution system that pushed ammunition supply points (ASPs) and ammunition transfer points (ATPs) forward in the division to support echelons-above-brigade customers. (See chart above.) This system required all customers, other than maneuver BCTs and aviation brigades, to return to an ASP or ATP to pick up their ammunition. In contrast, the modular design will provide each brigade (maneuver, fires, aviation, and maneuver enhancement) with an ammunition transfer and holding platoon that allows direct delivery of ammunition and ammunition accountability. Ammunition will be brought into the area of responsibility, where it will be configured to brigade requirements at a theater (UEy) ammunition storage activity and delivered directly forward to the brigades as required.

Fix Concept of Support

Force XXI began the move to a two-level maintenance principle of "replace forward and fix rear." In the Force XXI design, the organizational and direct

support (DS) maintenance functions were consolidated in the forward support battalions (FSBs). The maneuver battalion's field trains and DS support were consolidated into the FSCs of the FSB, but they operated in the unit's area. The area support maintenance company of the division support battalion (DSB) provided DS maintenance to supported division troops. For efficiency, repair of radios, special electronic devices, and missiles and welding were consolidated at the DSB.

To meet the modular design's requirement for greater self-sufficiency, minimum essential maintenance capabilities for welding and radio, special electronic devices, and missile repair have been designed into the BSBs. The modular design also retains the Force XXI use of FSCs for maneuver and engineer battalions, with organic maintenance platoons for field (organizational and DS) maintenance.

Under the modular design, the Army will provide the same type of FSC support structure for the support brigade. The DISCOM and COSCOM elements previously had to establish and push forward logistics elements (FLEs) to provide that support. All component repair will move to the theater (UEy) level, but it may be attached to the UEx or brigades based on the tactical situation.

Fuel Concept of Support

Force XXI fuel operations is an echeloned system of support organizations and stockage levels from the theater through the forward areas—a push system that moves fuel forward and requires on-ground storage and forward delivery in a constant, cyclic manner to the weapons platform. Pipelines and line-haul vehicles are the primary means of moving bulk fuel forward. COSCOM units deliver fuel to the divisional support organizations and directly into the FSBs, resulting in the constant positioning of corps assets in the brigade rear area and a requirement for a sizeable on-ground storage capability. This system supports a linear battlefield with maneuver formations moving forward and reasonably secure rear areas and LOCs.

The modular fuel support concept is significantly different from the sustainment brigade–forward. Three design requirements have dictated changes in UEx fuel operations: unit self-reliance over an extended timeframe; 100-percent mobility for unit assets (including stocks); and security issues stemming from maneuvering in noncontiguous space.

Modular fuel operations will be performed by organizations that are more flexible and capable. Fuel will be throughput directly to forward locations, and additional fuel capacity and mobile storage will be added to the maneuver BCTs and support brigades to reduce the need for on-ground storage.

Sustainment Concept of Support

Sustainment encompasses supplies and services such as Force Provider, field services, aerial delivery, mortuary affairs, and water production. The Force XXI support concept is identical to the Force XXI fuel concept, in that sustainment operations are echeloned and include numerous support organizations and stockage points from the theater through the forward areas. This is a push-pull system that can bypass selected echelons, but constant contact is required among sustainers, the sustainment system, and supported units.

Modular sustainment requirements call for greater BCT self-reliance and mobility. Modular force sustainment operations will be characterized by more flexible and capable sustainment organizations, reduced reliance on selected echelons (which allows for increased throughput directly to forward locations), increased capability forward, and increased mobility. The added water generation capability in the FSC, the reductions in echelons, and mobility improvements will eliminate supply point operations, create a distribution-based sustainment structure, and better integrate sustainment into the operational battle rhythm. Services also have been realigned to the theater (UEy) level, where they may be attached to the UEx and moved forward as required by the mission.

Move Concept of Support

The Force XXI support concept is based on centralizing transportation assets for increased productivity and greater efficiency. Transportation assets were taken out of the maneuver battalions and consolidated at higher echelons (FSB and DSB). This allowed the DISCOM commander to shift transportation assets to meet the logistics requirements of the battle. The echeloned system, however, diminished the advantages of centralization because the required handoffs at each echelon often caused delays.

The modular design places transport back in the maneuver BCT, except for the heavy equipment transporter system (HETS). Under this arrangement, the maneuver brigade commander will have greater control and the BCT will be 100-percent mobile. The design calls for one combat load on the combat platform, one in the FSC, and one in the BSB. The requirement to move loose cargo also will be reduced by using a palletized load system (PLS) or heavy, expanded mobility, tactical truck load handling system (HEMTT LHS) design. Forty-six of the 48 trucks in the heavy maneuver BCT will use the container roll-in-roll-out platform with either the PLS or HEMTT LHS. In the infantry maneuver

BCT, mobility will be increased by providing lift for one company in each battalion or one battalion in each brigade.

The reduction in the layers of command will eliminate or reduce the need for intermediate transfer points and maximize throughput directly to forward areas. The maneuver commander's movement expertise and capability will be enhanced by placing a mobility warrant officer and noncommissioned officer (NCO) in the brigade and an NCO in the battalion.

Logistics Focus Areas

As the Army begins its transformation to execute the concept of support outlined above, it also must improve known shortfalls in its current capabilities. These shortfalls require immediate action and directly affect its transition to an expeditionary force that is agile, versatile, and capable of acting rapidly and effectively. Four major logistics areas that require immediate attention include—

• ***Connect Army logisticians.*** Army logisticians must be an integral part of the joint battlefield network. They need satellite-based communications that provide continuous connectivity on demand, enabling them to pass key data from the battlefield to the industrial base. The funding of the Very Small Aperture Terminal (VSAT) by the Army G–4 demonstrates commitment to this important capability. [See related article on page 51.] Connecting logisticians will integrate logistics, distribution, and supply chain management through near-real-time matching of requirements with available supplies and transportation.

• ***Modernize theater distribution.*** Effective theater sustainment rests solidly on the fundamental concepts of distribution-based logistics. The Army needs to focus on the simple task of guaranteeing delivery—on time, every time—from the source of support to the soldier at the tip of the spear. The Army, in cooperation with the U.S. Transportation Command (the Distribution Process Owner), is working to develop a factory-to-foxhole solution for the joint environment.

• ***Improve force reception.*** To improve its ability to deploy rapidly from CONUS platforms, the Army must invest in its ability to receive forces in the theater. However, it is constrained by the lack of an organization that focuses on joint theater-opening tasks. The process of organizing ad hoc organizations to receive forces in theater takes time—a luxury that may not be available as the Army develops an expeditionary structure that can rapidly deploy joint-capable force modules. The Army is designing an integrated theater-opening capability that can rapidly execute critical sustainment tasks and is funding the procurement of the first four theater support vessels.

• ***Integrate the supply chain.*** The supply chain must be viewed in a holistic manner to ensure that the impact of actions is understood across the entire chain, not just at a single level or within a single service. The solution is an enterprise view of the supply chain and integration of service and Defense agency processes, information, and responsibilities.

The Army's logistics transformation strategy must define a clear path to a joint logistics system. Logistics must become a seamless system, both joint and expeditionary, and it must retain its campaign-quality robustness. This requires a cultural change, including the fusion of service logistics capabilities, the establishment of clear lines of command and control throughout the Department of Defense deployment and distribution network, and the removal of seams between the services and Defense agencies.

Clearly, the Army must provide a logistics capability that is responsive to the needs of a joint and expeditionary campaign-quality force. Logistics organizations that can be tailored and scaled and that can sustain simultaneous deployment, employment, and sustainment operations are needed to support the joint force commander. The result will be a logistics force that furnishes the joint force commander with assured, end-to-end distribution and a single joint logistics command and control capability that leverages joint interdependencies. The modular Army will provide both new and improved logistics capabilities that enhance support in a joint, interagency and multinational environment. **ALOG**

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Comments on the substance of this article are encouraged and will be used to develop and refine the Theater Sustainment Command operational and organizational plan. Comments can be emailed to tflogistics@lee.army.mil.

Logistics Challenges in Support of Operation Enduring Freedom

BY MAJOR JAMES J. MCDONNELL AND MAJOR J. RONALD NOVACK

The fundamental challenge of providing combat service support (CSS) in Afghanistan from late 2003 to mid-2004 was changing the focus from an expeditionary operation to a steady-state operation. Previously, the mission was viewed in the short-term, but by Operation Enduring Freedom IV—the fourth unit rotation to Afghanistan, which took place from July 2003 to May 2004—it was necessary to establish tactics, techniques, and procedures to facilitate long-term success in providing CSS. The change was made more complex by the requirement to cede half of Kandahar Airfield to the Afghan Government by the end of 2004. This obligation, while daunting, afforded logistics planners a clean-sheet approach to developing capabilities for the long haul. The following account details how the soldiers of the 10th Forward Support Battalion (FSB) of the 10th Mountain Division (Light Infantry) overcame these logistics challenges while stationed at Kandahar Airfield.

Predeployment Site Survey

The battalion's deployment process began months before the unit's departure when a predeployment site survey (PDSS) team visited the operating area. This visit was critical to determining what personnel and equipment had to be deployed to support mission requirements. Having personnel on the ground provided the incoming unit with an assessment that could not be matched by other means. The PDSS team had to gauge the available infrastructure and equipment that would be left behind by previous units in order to plan the battalion's deployment accurately. The PDSS team also collected email addresses and phone numbers (to include secure systems) from members of the departing unit so the incoming unit could coordinate directly with their predecessors.

Supply Support

The geography of Afghanistan was a dominant factor in developing the CSS template. Because Afghanistan is a landlocked nation with mountainous terrain and a deteriorated road network, it was apparent that time-sensitive support had to be transported by air. However, depending on air creates a logistics system with a single point of failure, so contracted surface transportation also was employed.

Surface transportation in Afghanistan is fraught with peril because of anticoalition militias that often try to prevent the delivery of supplies. Without a correspondingly large security element, military supply convoys to outlying firebases are subject to ambushes. However, such a security force would draw troops away from offensive operations. As a result, the 10th FSB coordinated with host nation military commanders for the use of "jingle trucks" (the name comes from the metallic tassels that adorn the vehicles). Jingle trucks were configured for dry, refrigerated, and liquid cargo. Units identified requirements to the "jingle man," the noncommissioned officer in charge for transportation operations, who then negotiated the type and number of vehicles for the mission with the host nationals. The drivers were provided safe passage through different friendly militia areas in order to transport supplies to the firebases. Personnel and time-urgent or sensitive cargo traveled by CH–47 Chinook helicopter on scheduled flights to the firebases.

Class I (subsistence.) Food was shipped by sea to Karachi, Pakistan, from the Bahrain-based prime vendor. In turn, foodstuffs, both dry and frozen, were transported to Kandahar Airfield by Pakistani-contracted vehicles. Class I was the greatest logistics challenge because of the number of transportation nodes and conveyance modes involved. The process began with a requisition from the Kandahar Airfield's food service technician to the Joint Logistics Command (JLC) in Bagram, Afghanistan. The JLC consolidated food orders from Kandahar and the other base camps in the combined joint operating area (CJOA) and sent the order to the prime vendor based in Bahrain, who filled the requisition. Six weeks later, the order was shipped across the Arabian Sea to the port of Karachi. The containers were stacked and warehoused at the port because of limited space and power shortages at Kandahar Airfield. The inventory carrying costs were borne by the port until space and power shortages at Kandahar Airfield were eased.

A scarcity of vehicles (especially those capable of carrying refrigerated cargo) and the lack of reliable asset visibility and in-transit visibility prevented the

FSB from specifically calling forward those items that were in the greatest demand. The result was a supply chain with too many peaks and valleys and attendant shortages and overages, rather than a steady and predictable stream. Previously, the notion that "more is better" was acceptable to ensure sufficient quantities were on hand. However, a steady-state operation demands less variance. The JLC and the base camps worked over time to clear the port as they developed a more reliable class I resupply system. A by-product of this effort was the timely retrograding of empty containers and generator sets that powered the refrigerated containers.

The 10th Forward Support Battalion at Kandahar Airfield in southeast Afghanistan provided support to firebases from Spin Buldak to Deh Rawod to Orgun E and units fighting in south or east Afghanistan.

Because of their short shelf life, fresh fruits and vegetables were delivered twice a week by a chartered air courier. Food deliveries were forecast based on the installation's headcount. Holiday-unique enhancements were provided to enliven Thanksgiving and Christmas meals.

Classes II (general supplies), IV (construction and barrier materials), and VII (major end items). A joint acquisition review board evaluated big-ticket resource or service requirements. The board convened weekly to review requests for items that were valued at over $200,000 before submitting them to the Combined Joint Task Force 180 (CJTF–180) at Bagram.

Over time, requirements were the result of the construction of more permanent facilities, improvements to the airstrip, and movement of facilities such as the fuel farm to the military side of the airfield.

Class III (petroleum, oils, and lubricants). The Defense Energy Support Center Middle East in Bahrain managed fuel for the CJOA. Although the vendors changed during Operation Enduring Freedom IV, the supply methods did not. Jet A fuel was refined in Pakistan and delivered overland by truck, usually in 10 days, to Kandahar Airfield, where it was converted into JP8. MOGAS (motor gasoline) also was used but to a lesser extent. The JLC's forward element tracked increases in fuel consumption (for example, during relief-in-place operations when increased aircraft traffic led to greater demands for fuel) and forecast upcoming deliveries accordingly.

As a part of the conversion to a steady-state operation, Kandahar Airfield transitioned to the Defense Logistics Agency's Fuel Automated System. This caused some initial difficulties with non-Department of Defense customers, such as the International Committee of the Red Cross and the United Nations, who flew regularly to Kandahar Airfield and required refueling. However, repayment programs were implemented quickly.

Class V (ammunition). Whether it was intratheater or intertheater, all ammunition was shipped by air. The key to success was an accurate weapons density listing that permitted issue of the appropriate basic

A 25th Infantry Division (Light) soldier, shortly after arrival in theater, watches his high-mobility, multipurpose, wheeled vehicle (HMMWV) being loaded on an Afghan jingle truck at Kandahar Airfield for delivery to an outlying firebase.

load to each unit. The ammunition supply point (ASP) was centrally located at Kandahar Airfield. Flexibility in rapidly delivering ammunition to outlying firebases was crucial because mortars and howitzers were emplaced throughout the theater.

Class IX (repair parts). The FSB relied on timely information to manage parts support instead of relying on masses of supplies. For instance, it identified sources of supplies and requested parts rather than maintaining a supply stockpile on hand. Space limitations in both strategic lift and ground space at the firebases precluded a buildup of supplies at Kandahar. As a result, a harmonious relationship with JLC was essential. JLC leveraged its reach capabilities to expedite high-priority parts and commodities whether they were from elsewhere in the CJOA, Europe, or the continental United States.

Services

A critical support multiplier was the Army Materiel Command's Logistics Support Element (AMC–LSE) that was collocated with the 10th FSB Tactical Operations Center. The AMC–LSE provided expertise in expediting parts shipments, assessing ammunition serviceability, sustaining communications, and conducting other logistics operations. For example, the quality assurance specialist ammunition surveillance representative redesigned the ASP so that it complied with Army and Department of Defense standards for storing ammunition.

The Defense Logistics Agency periodically deployed staff from its subordinate agencies, such as the Defense Energy Support Center and the Defense Supply Center–Philadelphia, to support the 10th FSB. For example, when the 10th FSB's bulk fuel section converted to the Fuel Automated System to manage fuel use and payments, DLA contractors facilitated the changeover. DLA personnel trained class I commodity supervisors on using various information systems to manage food shipments from port. Other contractors and Department of Defense civilians at Kandahar Airfield also provided services, such as power generation and equipment maintenance.

Coordination

As the focal point for CSS in the CJOA, JLC's function was akin to that of a division materiel management center (DMMC). In fact, personnel from the 10th Mountain Division's DMMC staffed the JLC. They assisted CSS units in Karshi-Khanabad, Uzbekistan, and at Bagram Airfield. Guided by in-theater visibility, they surged assets and supplies to support the main effort. Because the location of the main effort varied, the support element in that location had to provide support. (The main effort refers to various operations during Operation Enduring Freedom IV. Because of the noncontiguous and nonlinear nature of the battlefield, operations were focused in particular areas at different times. For example, Operation Mountain Resolve was centered in the northeast area of Jalabad in December 2003. Other operations, such as Mountain Storm in the spring of 2004, were centered in Khowst.) The JLC coordinated with CJTF–180's CJ–4, which was involved in planning, monitoring logistics performance, and preparing relief-in-place operations.

In Kandahar, the Romanian 151st Infantry Battalion—succeeded by the Romanian 208th Infantry Battalion—and Task Group Ares, a French Special Forces detachment, were partners in the war on terrorism. Although the Romanians deployed with a small support element, they depended on U.S. Army assistance for class I, bulk class III, and electric power. The French forces, based in the southern Kandahar Province village of Spin Buldak, similarly depended on American assistance. In both cases, coalition costs were captured monthly in the acquisition and cross-servicing agreement. At the end of the month, representatives from each force reviewed the costs incurred before the charges were submitted to CJTF–180 and then to the respective countries.

Area and Habitual Support

Afghanistan is divided into three sectors for area support. This permits the support battalions at Karshi-Khanabad, Bagram Airfield, and Kandahar Airfield to support one another if necessary. For example, when problems at a Pakistani refinery delayed fuel shipments to Kandahar Airfield, the 129th Logistics Task Force at Bagram provided a 150,000-gallon emergency resupply.

[The 129th Logistics Task Force consisted of the 129th Corps Support Battalion of the 10th Corps Support Group from Fort Campbell, Kentucky.] When distribution troubles prevented a supply of unitized group rations from reaching Bagram Airfield, the 10th FSB provided excess rations. The area support sector concept enables units such as Special Forces and those involved in provincial reconstruction teams to access local support assets without deploying their own direct support units.

The 10th FSB provided direct support to the 1st Brigade Combat Team (BCT) of the 10th Mountain Division. However, when the 2-87th Infantry Battalion (subordinate to the BCT) was stationed at Bagram Airfield to engage in northern operations, the 129th Logistics Task Force provided supply, maintenance, and medical support to the battalion. The 129th Logistics Task Force also supported the 1-501st Infantry Task Force, which was stationed at the Salerno firebase, just north of Khowst. These arrangements provided the maneuver commander with flexibility to mass CSS without the cost of moving CSS assets forward. During Operation Mountain Resolve in the fall of 2003, the 129th Logistics Task Force, augmented by a 10th FSB detachment, responsively supported the warfighters. [The 1-501st Infantry Task Force, a component of the 172d Infantry Brigade (Separate) at Fort Wainwright, Alaska, was attached to the 1st BCT of the 10th Mountain Division.]

Ceding the Airfield

U.S. forces expect to move their operations from the northeastern half of Kandahar Airfield late this year so the Afghan Government can develop commercial air service. As a result, the 10th FSB had to move its class III fuel point. This move required close coordination with the facility engineers; the airfield support task force; the Air Expeditionary Group Commander, who represented the Air Force; and installation contractors. After reviewing cost, safety, and time factors, the FSB determined that the best course of action would be to establish a bag farm and have fuel trucks, manned by installation contractors, transport the fuel to the aircraft, rather than to install a complex piping system. Vehicle refueling remained the same since the retail point was at the bag farm.

The reconfiguration of Kandahar Air Field compelled a number of other movements that had secondary or tertiary effects on logistics support.

Because outlying firebases have limited hoisting capabilities, host nation cranes such as this one are sent to the firebases to facilitate container downloading.

An FSB "on Steroids"

The most remarkable aspect of the CSS mission was the fact that the FSB performed a largely nondoctrinal mission. A light infantry FSB normally consists of 145 personnel who provide quartermaster, ordnance, and medical support to a light infantry brigade. However, to support a population of 5,000 soldiers, airmen, civilians, and contractors, additional CSS troops and new tactics, techniques, and procedures were needed.

A typical light division forward support operations office would be incapable of planning, coordinating, and executing the number of missions that were to be sustained in the 1st BCT's area of operations. To remedy this situation, personnel from the DMMC were attached to the FSB to provide class I, III, and V commodity oversight, automation repair, and parts requisition assistance. This robust capability enabled the FSB to have key support personnel on duty 24 hours a day, 7 days a week.

By doctrine, the FSB maintains an ammunition transfer point, which is a temporary way station for ammunition before it is released to the warfighters. However, when provided with a fixed base of operations, the FSB managed both an ASP and an ammunition holding area. This was beyond the capability of the six authorized ammunition handlers in the supply company. Therefore, an Army Reserve ammunition platoon (from the 395th Ordnance Company in Appleton, Wisconsin, which managed the other ASPs and ammunition holding areas in the CJOA) was attached to the FSB to operate its ASP and holding area.

Class I operations usually consist of a breakbulk point where food is issued to battalions and separate companies. However, the supply company became a virtual troop issue subsistence activity consisting of over 200 dry and frozen containers. The company also had to break rations for three installation dining facilities and for deliveries to a number of outlying firebases.

A Pakistani driver works atop his fuel truck to download fuel.

An FSB usually provides about 5,000 gallons of JP8 fuel a day to a BCT. Yet, in Afghanistan, the fuel section, with the assistance of an Army Reserve unit, the 877th Quartermaster Company from Albuquerque, New Mexico, handled over 45,000 gallons daily. This mission included the daily refueling of Air Force cargo aircraft, which definitely does not occur in the brigade support area.

The FSB's maintenance company found itself similarly tested. By establishing mobile maintenance teams, the unit could rapidly deploy mechanics to outlying firebases to perform services and emergency repairs. Their ingenuity frequently was tested when they were tasked to repair nonstandard equipment, such as Special Forces vehicles.

A forward surgical team augmented the FSB's medical support company and provided valuable expertise during a mass-casualty mission involving over 30 wounded Afghan civilians in January 2004. Mortuary affairs; parachute rigger; and test, measurement, and diagnostic equipment components also were attached to the battalion to provide the full spectrum of support.

Installation Contractors

When the 10th FSB arrived at Kandahar Airfield, installation contractors were already providing life support services. Halliburton Kellogg Brown & Root (KBR) contractors performed housekeeping missions ranging from laundry to base camp maintenance. Their mission gradually expanded to include preparing meals in the dining facility and operating the class I supply point. The purpose of this change was to free CSS soldiers for other, more pressing missions. The immediate impact was the return of soldiers attached to the 10th FSB to their original units. When the 10th FSB departed, KBR contractors operated the class III supply point, the multiclass warehouse, and other post facilities. However, the Army still was responsible for mission accomplishment because military personnel held accountable officer positions, and only soldiers performed missions outside the Kandahar Airfield perimeter, such as vehicle recovery.

The Road Ahead

On 16 October 2003, Secretary of Defense Donald Rumsfeld wrote, "It is pretty clear that the coalition can win in Afghanistan . . . one way or another, but it will be a long, hard slog." This forecast suggested that U.S. and coalition forces are likely to remain in Afghanistan for the near future. In turn, Kandahar Airfield, the base of operations for southern Afghanistan, is likely to continue transforming from an expeditionary bulwark to a steady-state installation. While the CSS functions of fixing, arming, and sustaining will remain unchanged, it is unlikely that soldiers will continue to perform those missions exclusively. Soldiers will be used when there is a possibility of enemy contact. For the most part, however, contractors will perform most logistics functions.

To most effectively manage these operations, it is conceivable that CSS command and control functions could be subsumed under an area support group structure in which the Army manages, rather than executes, logistics. This reorganization is more probable in the event that operations in the CJOA are downgraded from low-intensity conflict to stability and support. This prediction depends on the abatement of threat and a strengthened national government in Afghanistan. Regardless of the situation, contractors are likely to play a large role in future CSS missions.

The lessons learned in Afghanistan will play a key role in the transformation of the 10th Mountain Division as it redeploys and reconstitutes at its home station at Fort Drum, New York. The division will convert to a Unit of Action/Unit of Employment table of organization and equipment. As of April 2004, plans for the conversion indicate that the FSB (rechristened as a brigade support battalion) will have far more robust capabilities. For instance, in the past, the main support battalion detached its capabilities, such as transportation and water production, to the FSB for deployment; now these resources will be organic to the FSB. The support operations office will have additional personnel much like the one in Afghanistan that was bolstered by the DMMC. The 10th FSB knows from its experience in Afghanistan that it can adapt to the coming changes. **ALOG**

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The authors would like to thank Captain Glen Keith, the 10th Forward Support Battalion S–3, for his assistance in preparing this article.

The Changing Face of Medical Logistics in Afghanistan

BY FIRST LIEUTENANT JERRY D. VANVACTOR

With each succeeding rotation to Operation Enduring Freedom in Afghanistan, troops are assuming more of a support, stability, and nation-building role and less of a combat operation. As a result, processes are in place for organizations sent to Kandahar Airfield to support a more clearly defined nation-building mission. While combat patrols still are dispatched periodically to austere locations such as Deh Rawod, Qalat, and Kandahar City to search for the remnants of the Taliban and Al Qaeda networks, the garrison environment is being improved for the personnel assigned to Kandahar Airfield.

At first glance, all of the construction and changes at Kandahar Airfield yield an impression of chaos. In fact, the chaos is part of a larger plan implemented in a timely and efficient manner. Changes within the medical community are part of a plan to create an environment that provides optimal health care for as many people as possible. This plan was embraced by the chains of command of the Airfield Support Task Force, Brigade Task Force units, and coalition forces operating in and around Kandahar Airfield. Commensurate with the changes to combat health support are changes to the medical logistics support provided at Kandahar Airfield.

***Before* the renovation of the class VIII storage and distribution area, materials are exposed to the elements and items are not organized.**

Medical Logistics Organization and Operations

Units assigned or attached to Kandahar Airfield acquire their medical supplies through a medical logistics cell that is staffed by a handful of personnel. From July 2003 to May 2004, the Division Medical Supply Office (DMSO) of the 10th Mountain Division (Light Infantry) Main Support Battalion from Fort Drum, New York, served as a single integrated medical logistics management agency that provided the medical logistics node at Kandahar Airfield. This complement consisted of one senior noncommissioned officer, two medical logistics specialists, and two medical maintenance technicians. This small group was responsible for over 400 lines of supply, including various types of medical materiel ranging from infant medical and surgical supplies to hospital equipment.

The DMSO also managed the logistics requirements of approximately 20 diverse military organizations, including several Army National Guard, Army Reserve, and Active Army and Air Force units; civilian organizations; and independent contractors. Several international forces, such as French and Romanian units, also received medical logistics support through acquisition and cross-servicing agreements (ACSAs). (An ACSA is a legal agreement that establishes a binding contract between U.S. and coalition forces. Title 10 of the U.S. Code prohibits coalition nations from receiving free logistics support from the United States. The ACSA serves as a tool for the United States to be reimbursed for logistics support and services.)

Medical materiel was used frequently in support of humanitarian and civil assistance missions throughout

southern Afghanistan, where coalition troops were operating. Routinely, soldiers would travel into communities around Kandahar to provide medical assistance to local people who ordinarily would not have received such care. The medical rules of eligibility for Afghanistan operations, which were established in 2002 by Joint Task Force 180, state that medical materiel can be provided to local nationals under the following conditions—

• Units must obtain approval from the chain of command operating in Afghanistan before using military medical supplies for civilian relief. Exceptions are authorized as emergency measures to relieve starvation and hardship, restore law and order, protect public health, reestablish public services, or restore civil administration. Civil affairs units may distribute medical supplies for civilian relief.

• Minimal expenditures may be incurred for incidental humanitarian medical services provided on a limited basis in conjunction with contingency operations. An example of limited humanitarian medical assistance is a unit medic or doctor examining villagers for a few hours, administering several shots, and issuing some medicine to villagers during a visit.

***After* renovation of the class VIII storage area, supplies are stored in MILVANs.**

Strategy for Improving Services

James B. Ayers states in his book, *Handbook of Supply Chain Management,* that logistics is the part of the supply chain that plans, implements, and controls the efficient, effective flow and storage of goods, services, and related information from the point of origin to the point of consumption in order to meet the customer's requirements. This requires a strategy for distributing materiel accurately. The failure to implement some form of strategy implies that none exists.

Too often medical logisticians try to be everything good to all of their customers. However, to provide the correct method of delivery of resources, different levels of accessibility must be available for customers. For example, the DMSO allowed units to request supplies in a variety of ways that were not part of their operating procedures, to include paper and pencil orders, email requests, and in-person requests. As Ayers states in his book, "Thinking in terms of supply chain management instead of individual operations or departments [units in this case] leads to more competitive strategies."

The plan implemented by DMSO to improve the services it provided was based on four basic steps: obtain storage space, organize existing stocks, identify shortfalls, and order needed materiel.

Obtaining storage space. Improving available assets and resources became a DMSO priority. The first step was to obtain more storage space. The class VIII (medical materiel) receiving and distribution area was a concrete slab surrounded by a 1,000-square-foot dirt lot. One 60-by-20-foot tent, four 20-foot MILVANs (military-owned demountable containers), and two ISU–96 refrigeration units were available for storage. The refrigeration units were unreliable, so parts were being salvaged from one to keep the other running. These storage units provided the only available shelter for storing everything being used by the medical staff. Oxygen, litters, exam gloves, and other supplies were stored outside of these storage units with no protective covering, completely exposed to the elements and the intense heat of Afghanistan, and with no security measures in place for pilferable items.

No tents were available for a warehouse, so DMSO requested six additional 20-foot MILVANs and two 20-foot refrigerated MILVANs. The existing concrete slab was used as a receiving area, and the MILVANs were placed in a row to facilitate access to supplies and improve organization and security.

Organizing existing stocks. The second step was to organize existing stocks. After acquiring the additional MILVANS, one of the logistics soldiers used his carpentry skills to build shelving units inside each of the MILVANS. All chemical defense medications, fluids, and medications requiring cool, dry storage were placed inside the two refrigerated units. Next, all supplies were organized by category of use, such as surgery, fluid management, airway management, and extremity injury management.

In the process of realigning the stocks on hand, many of the supplies were packaged for delivery to a local hospital as part of a humanitarian assistance initiative. Expired drugs and supplies, such as rubber exam gloves that were severely degraded because of prolonged exposure to harsh weather, were identified and packaged for destruction. Other supplies were identified for one-for-one exchanges through the U.S. Army Medical Materiel Center, Europe (USAMMCE) and other organizations. Finally, other supplies were identified for use during local humanitarian assistance visits to villages in support of ongoing brigade-level combat missions.

Identifying shortfalls. As DMSO personnel filled each MILVAN with available stocks, they identified shortfalls and critiqued the requirements for a variety of physician-preferred items. As First Lieutenant Donald J. McNeil stated in his January–February 2004 *Army Logistician* article, "A Conventional Class VIII System for an Unconventional War," "Lack of physician-preferred brands does not constitute a patient risk."

However, not knowing what stocks are available and what lines of supply are needed within the clinical environment does constitute patient risk. A patient's death caused by the unavailability of appropriate and necessary supplies is unacceptable. In this respect, the class VIII manager becomes a crisis manager. As McNeil said, ". . . it is okay to have stocks on the shelves; combat health logistics is not just-in-time logistics. A CHL [combat health logistician] does not have the luxury of a 24- to 72-hour turnaround time using a prime vendor, as the medical logistician does in garrison. To avoid becoming a crisis manager, the CHL should establish realistic reorder points to ensure he does not run out of supplies."

By identifying and having the proper supplies on hand, even if they are viewed as excess by other commodity managers, the medical logistician can help avert crises before they occur. Beneath every seemingly routine medical plan is the possibility of a mass casualty (MASCAL) episode during which the medical system may become overwhelmed with a large number of casualties, stretching routine healthcare assets to the limits. CHLs play a pivotal role in preparing for this type of scenario.

Ordering needed materiel. Shortfalls were defined as depleted supplies, the absence of which would impede the daily operation of the clinic. Included in this list were items such as blankets, intravenous solutions, bandages of various sizes and types, and a variety of bandaging tapes. The DMSO noncommissioned officer in charge also looked at the most recent orders made by maneuver units to determine items needed at forward bases. Their needs included items such as casualty blankets, spine boards, specific drugs for treating various ailments endemic to that region of the world, as well as other durable and expendable goods. Once all shortfalls had been identified, a massive order was entered into the Army Medical Management Information System Customer Assistance Module.

When supply operations in Kandahar became steadier, the support infrastructure and the supply chain management being employed by logistics personnel became more solid. While awaiting the arrival of replenishment stocks, DMSO personnel conducted location surveys and rearranged materiel within the storage facilities, placing items according to available space. When the replenishment stocks began to arrive, materiel was stored according to established locations on file in the medical supply office. Reorder points and stock objectives for replenishments of materiel also were established.

By identifying and having the proper supplies on hand, even if they are viewed as excess by other commodity managers, the medical logistician can help avert crises before they occur.

Improved Flow of Class VIII

The flow of medical materiel is becoming more consistent and predictable in Afghanistan and the Kandahar area of operations. Resupply currently flows primarily through Al Udeid, Qatar, or Karshi-Khanabad, Uzbekistan. However, many supplies flow through a medical logistics forward distribution team in Bagram, Afghanistan. The forward distribution team passes stocks flowing from Europe into Southwest Asia for both Operations Enduring Freedom and Iraqi Freedom.

A concrete slab is used as a receiving area.

When an order is submitted for replenishing stocks, the CHL can expect to receive the supplies in 2 weeks to a month. Thus, a constant cycle of replenishment is established.

In January 2004, the possibility of a MASCAL became reality when 28 local national victims of an improvised explosive device in Kandahar City came to the Kandahar Airfield clinic for treatment. Ground ambulances brought 21 of the casualties, and medical evacuation helicopters brought in 7 casualties with serious injuries. A MASCAL plan was activated, and medical soldiers treated the casualties—mostly children—with little concern about the types or quantities of materiel being expended.

No area of the clinic ever experienced a shortfall because of a lack of adequate supplies. As soon as the MASCAL ended, the shelves were restocked and the clinic was operational even as the last casualty was being evacuated to the next level of care. CHLs were critical to the success of the event.

Sharing the Plan

The importance of command emphasis to the CHL role at Kandahar Airfield cannot be overstated. As the units assigned to Kandahar Airfield prepared for transition, they shared information with incoming units about the need to include medical logistics personnel in the task organization. Without the proper emphasis by incoming nonmedical chains of command, the CHL system could fail. This would present a serious shortfall for the medical community supporting Kandahar Airfield.

Many changes are still underway for the CHL personnel at Kandahar Airfield. Recently, the medical logistics personnel saw the biggest modification to their normal business operation when 15 pallets of medical supplies arrived at the supply yard on a host-nation tractor-trailer truck instead of a military aircraft. After giving this delivery method due consideration, USAMMCE became an advocate of using third-party logistics to expedite the receipt of medical supplies in the theater of operations. From its point of origin in Pirmasens, Germany, materiel flowed by Menlo Worldwide Trucking to Frankfurt, Germany, where it was loaded on an Ariana Afghan Airlines flight to Kabul, Afghanistan. From Kabul, the supplies were loaded onto a truck and brought to Kandahar Airfield. The total shipping time involved from order submission to delivery was approximately 14 days, eliminating approximately 7 days from the delivery process.

Change is happening faster than the CHL personnel expected. Change is good, though, and the CHL community is adapting to the change.

A basic concept taught to soldiers is to always leave a place better than you found it. This concept also should hold true during a deployment. The DMSO of the 10th Mountain Division's Main Support Battalion did just that. They improved the medical logistics area of Kandahar Airfield by organizing and increasing storage facilities and establishing a system for replenishing supplies when they are needed. **ALOG**

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Names, Numbers, and Nomenclatures

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

Finding the right name for an item in the supply system is not as easy as it may seem. Here is the author's guide to navigating the names and numbers of Defense cataloging.

Has this ever happened to you? You're deployed somewhere as part of a joint task force, and someone quite senior to you—a mean, grouchy, nonlogistician type—points to an object and says, "I want one of those!" Your first inclination is to respond, "Sure, no problem. What's the stock number?" But you remain silent because you know his reply probably will be, "How the heck am I supposed to know? That's your job. You're the logistician." The senior nonlogistician then walks away as he growls, "Order one, and let me know when it comes in. I need it now. If I wanted it tomorrow, I'd order it tomorrow."

You're left alone scratching your head. You not only don't know what the item's national stock number (NSN) is, you're not even sure what the darn thing is called. Of course, the first step in ordering the item from the supply system is to find out its identifying number (an NSN, line item number, or some other identifier). But to find a number, you first need a name. Determining the item's correct name is hardly a simple matter.

Let's say the item is a widget. It is round, the size of a donut, and made out of some type of metal, probably steel. You wonder what its military name is. Is it a "round widget?" Is it a "steel widget?" A "round, steel, widget?" A "widget, round?" A "widget, steel?" Is it even called a widget, or is the word "widget" slang for some other, technical name?

Because of your experience, you know that using a logistics database is similar to looking up definitions in a dictionary. You have to know the exact (or nearly exact) spelling of a word or phrasing of a term in order to uncover its meaning. You won't be able to find logistics information about a "round widget" if the large database you consult lists the item as a "widget, round." Since you're part of a joint task force, you wonder if the Marine Corps, Air Force, or Navy unit down the road has one. You also question if the Defense Logistics Agency (DLA), Army, Navy, Air Force, and Marine Corps all identify the item by the same name. (Unfortunately, they don't.)

With no help available from within the joint task force, what's your next step? If you're going to identify your item and satisfy your impatient customer, you're going to have to do some research. Obtaining the right name and number for an item is much more difficult than it appears. Nonetheless, a solid understanding of the complexities of the naming and numbering systems used by the Army, the other services, and DLA will help you obtain the information you need, not only to requisition an item but also to track the onhand and in-transit balances of that item worldwide.

The subject of the author's search is a high-mobility multipurpose wheeled vehicle (NSN 2320–01–371–9577).

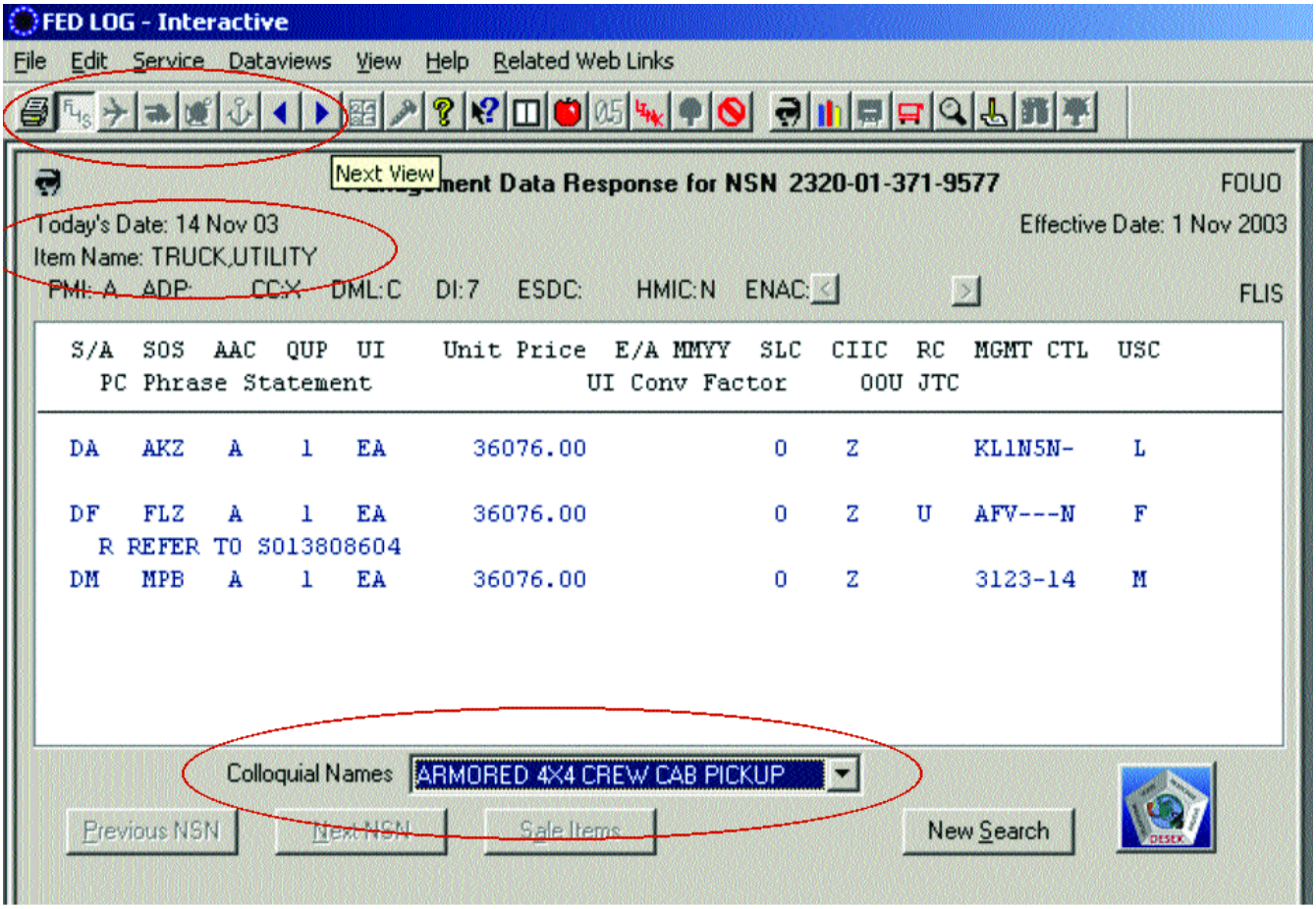
Starting With FED LOG

Rather than the proverbial widget, let's take a more concrete example. Let's assume the request is for the vehicle shown in the photo to the left. What is its name? What is its identifying number? Both its name and its number depend on which database you search. Yes, the NSN for the vehicle is standardized and thus remains the same, but the NSN is not always easy to determine. Besides, the NSN often is not included in some of the more important databases, such as The Army Authorization Documents System (TAADS), the Army Prepostioned Stocks (APS) Program, the Global Status of Resources and Training System (GSORTS), and the Joint Operation Planning and Execution System (JOPES). Many of these programs instead use the line item number (LIN) as the means of numerically identifying an item.

In your search to uncover the item's name, you probably will use DLA's Federal Logistics Information System (FLIS). DLA's Defense Logistics Information Service (DLIS) at Battle Creek, Michigan, oversees the FLIS. A byproduct of FLIS is a database known as FED LOG, which is updated monthly and is available in CD ROM (six disks) or DVD (one disk) formats. FED LOG also can be accessed on the World Wide Web using disk 1 of an up-to-date (that is, less than 2 months' old) CD ROM set. (To learn more about FED LOG, visit the FED LOG Information Center Web site at www.fedlog.com).

The FED LOG-Interactive screen shown above right displays one of the many data sets available within the FED LOG program. The screen depicts five related but distinct databases, one for DLA and one for each of the armed services. These databases are indicated by the five icons circled by the red oval at the top of the screen: FLIS, an Air Force jet, an Army tank, a Marine Corps buoy, and a Navy anchor.

Within the FED LOG database, a particular item is identified by numerous names and numbers. The types



The FED LOG-Interactive screen displays the vehicle's NSN, item name, and colloquial name.

of names include the approved item name (AIN), generic nomenclature, NSN nomenclature, colloquial names, and end item identification. The types of identifying numbers include the NSN, LIN, item name code, item designator number, end item code, model number, and part number; the part number must include the 5-digit Commercial and Government Entity (CAGE) code for identification purposes.

The good news is that the NSN and the approved item name are standard among the services and DLA. The bad news is that the databases of the services do not always use the NSN or the approved item name. Moreover, the approved item name that is shown in the FED LOG database typically displays a maximum of 19 characters; that field length often is too short to describe the item so a user can quickly grasp what it really is. The item name in our example does not indicate if the vehicle is a 5-ton truck or a 1¼-ton truck; it just says "Truck, Utility." (See the second red oval on the screen.)

More information about an item can be included if the data field permits the display of more characters.

- Truck,Utility (13 characters).
- Truck,Utility:Cargo (19 characters).
- Truck,Utility:Cargo/Troop,1-1/ (30 characters).
- Truck,Utility:Cargo/Troop,1-1/4 Ton, 4x4 (40 characters).
- Truck,Utility:Cargo/Troop,1-1/4 Ton, 4x4,M998,High (50 characters).
- Truck,Utility:Cargo/Troop,1-1/4 Ton, 4x4,M998,High Mobility Multi (64 characters).

Selecting Names

Let's take a look at the methods used to select names for equipment and supplies. The FLIS uses what it calls the "item name" as its standard naming convention. The item name consists of three parts: an item name prefix (which is allotted a maximum of 10 characters), a short name (allotted a maximum of 19 characters), and a name root (allotted a maximum of 1,743 characters). In FED LOG, the item name prefix and the short name are identified in the "Item Name" block. The full name (including the name root) is shown in the "Characteristics Segment" (Segment V) under the Master Requirements Code (MRC) "name" block. The lengthier

full name typically incorporates the 19-character (or less) short name. For the purposes of this article, the term "item name" will be used for "short name."

The character length used to identify an item in the data field is important because a name becomes more precise as it gets longer. This is illustrated in the chart on page 21. A character can be a letter, a digit, a space, a punctuation mark, or a symbol. In these examples, a data-field length of only 13 characters simply indicates that the item is a utility truck. However, look how much more information about the truck is included in a name that is 64 characters long. On the other hand, a character length much longer than 64 characters would be unwieldy and too long to fit on a single line of an Excel or a Word document file.

DLIS assigns item names based on the recommendations of the services, other Federal agencies (such as the General Services Administration), and North Atlantic Treaty Organization (NATO) members. DLIS also assigns a 5-digit item name code (INC) for each item name it approves. There are currently over 42,000 approved item names. Item names that have not yet been approved are assigned the 5-digit code of 77777.

Referring back to our example, the NSN for the vehicle in the photo is 2320–01–371–9577. Its approved item name is "Truck, Utility," and its INC is 11354. If you were authorized to order this item and were lucky enough to know its NSN, you could use FED LOG to find out all types of information about it, including its source of supply and related management, transportation, and characteristics data.

Military Names Have Not Yet Been Standardized

Besides the AIN, other ways are used to identify the name of an item, not all of which are shown in FED LOG. Although DLA uses the item name in its FLIS database, the Army and Marine Corps typically use a naming convention called "nomenclature." "Item name" and "nomenclature" are not interchangeable terms; they can be quite different, although in some instances an item's nomenclature will be based on its item name.

The Army nomenclature refers to the vehicle in our example as a "Trk, Util M998A." The Marine Corps nomenclature is different from the Army's. The Marine nomenclature for this item is "Truck, Utility," which, in this case, is the same as the item name. NSN 2320–01–371–9577 also has colloquial names associated with it, such as "High Mobility Multi-purpose Wheeled Vehicle," "HMMWV," or "Armored 4x4 Crew Cab Pickup." (See the red oval at the bottom of the screen.) It also is called a "Truck, Utility: Cargo/Troop Carrier, 1¼ Ton, 4x4, M998" in the Army's Technical Manual 9–2320–280–10.

Different logistics-related databases within the Army itself use different nomenclatures for this specific NSN. Department of the Army (DA) Pamphlet 708–3, Cataloging Supplies and Equipment, Army Adopted Items of Materiel and List of Reportable Items, identifies both an Army "generic nomenclature" and an "NSN nomenclature." The generic nomenclature is restricted to 64 characters and consists of the FLIS item name followed by a colon and additional descriptive information. The NSN nomenclature is restricted to 21 characters and contains the basic noun that identifies the item along with other data that describe its make, model, size, and so forth.

Besides the NSN, this item also can be identified by its INC of 11354, an Army LIN of T61494, a Marine Corps item designator number (IDN) of 08770B, an end item code (EIC) of BBN, and a CAGE part number of 8750297. Unfortunately, this variety of naming and numbering methods reduces the usefulness of logistics databases across the Department of Defense (DOD), requires users to consult several different databases in order to retrieve item information, and prevents the integration of logistics data into an all-encompassing, interoperable, user-friendly database.

Navigating the Data Sources

In many cases, uncovering logistics information is detective work. Knowing how to navigate through the search features of FED LOG will assist you with your efforts. For instance, you can use FED LOG to obtain the NSN for an item when you only know the LIN. A search of Supply Bulletin (SB) 708–21, Cataloging Handbook H2 (which can be accessed via www.dlis.dla.mil/forms/forms.asp), lists name-related titles of Federal supply classifications (FSCs). These can provide you with the corresponding FSC, which is the same as the first four digits of the NSN (2320 in our example). You then can use the FSC as a FED LOG search criterion to determine the appropriate item name, nomenclature, and national item identification number (NIIN). The NIIN is the same as the last nine digits of the NSN (01–371–9577 in our example).

DLA's Cataloging Handbook H6 (which can be found at http://www.dlis.dla.mil/h6/h6_guide.asp) provides several ways to search its database, including a keyword search, an FSC search, and an INC search. In other words, you can use one of these three data elements to find the other two. (The H6 handbook also provides Federal Item Identification Group information, but that is beyond the scope of this article.)

When you have neither the name nor the identification number for an item, a good place to begin your search for both is SB 708–21 (the H2 handbook). As noted, an FSC has four digits (the same as the first four digits of the NSN). The first two digits of an FSC refer to the Federal Supply Group. The title of Group 23 is "Ground Effect Vehicles, Motor Vehicles, Trailers, and Cycles." The last two digits of the FSC are known as the "Federal Supply Class," which provides even more detailed information than contained in the group. For example, an FSC of 2320 (consisting of Group 23 and Class 20) includes wheeled trucks and truck tractors (see chart above right).

GROUP 23

Ground Effect Vehicles, Motor Vehicles, Trailers, and Cycles
2320 Trucks and Truck Tractors, Wheeled

Note-This class includes only complete wheel mounted trucks and truck tractors, and chassis therefor. Any end items, assemblies, parts, attachments, or accessories other than complete chassis, for use in or on such trucks or truck tractors are classified in classes other than this class.The combined chassis and body of a special purpose truck, such as a machine shop, mobile laundry, or dental laboratory, is classified in this class. The complete mobile unit, consisting of chassis, body, and additional equipment, as in an equipped truck mounted machine shop, is excluded from this class.
Includes Panel, Delivery and Pick Up Trucks, Tactical and Administrative Military Cargo Carrying Vehicles, including Wheel Mounted Amphibian Vehicles; Truck Tractors and Trailer Combinations; Armored Cars.
Excludes Fire Trucks; Special Construction Type Earth and Rock Hauling Trucks; Motorized Air Compressors; Motorized Concrete Mixers; Construction Specialized Machinery Generally; Specially designed trucks for use in and around airfields, hangers, and warehouses; Tracked and Halftracked Vehicles.

This is the listing for the Federal Supply Classification (2320) for our vehicle as found in Supply Bulletin 708–21, Cataloging Handbook H2.

This FSC could be used to find the appropriate NSN, though this is not necessarily a simple process since each FSC can include thousands and thousands of different NSNs. Of course, the more information you have about an item, the easier your search will be.

If the FLIS expanded its database to include a standard "approved nomenclature" (which would incorporate the item name but also include appropriate modifiers so that the data field length approached but did not exceed 64 characters), and if all pertinent DOD logistics databases used approved nomenclatures along with the corresponding NSNs, many of the data incompatibility issues plaguing DOD would be resolved. According to DLIS personnel, many standardized nomenclatures are already in use in some areas, such as electronics and aerospace. If item managers for vehicles and other major items would standardize their naming practices, a new data element for "nomenclature" could be appended to the AIN, thereby standardizing the name. The services would still be free to use other naming and numbering conventions within their databases, as long as they used the approved nomenclatures and NSNs as well.

As this article demonstrates, the two most important pieces of data needed in order to retrieve supply information are the names of items and their identifying numbers. Logisticians who master the H2, H6, and FED LOG databases will be able to find the appropriate NSN, LIN, item name, and nomenclature for the items they need. These critical data then can be used to exploit the logistics information found in TAADS, JOPES, and Joint Total Asset Visibility (JTAV), as well as other databases such as the Global Transportation Network's (GTN's) in-transit visibility (ITV) systems.

Let's return to our scenario to finish the story. After lengthy research, you find out that the crusty nonlogistician's Army unit is not authorized this type of widget on its modification table of organization and equipment (MTOE). So there is no sense in ordering the widget now, since the transaction would only be rejected by the supply system. However, you help the unit write up a DA Form 2028, Recommended Changes to Publications and Blank Forms, and a DA Form 4610–R, Equipment Changes in MTOE/TDA [table of distribution and allowances], so that the Department of the Army can review whether or not the unit should be authorized this item. You also conduct a JTAV search, which shows that a Marine Corps unit located nearby has an "extra" widget, which it agrees to loan to the Army unit you've been supporting. You then assist the Army unit in completing the temporary hand receipt.

When all is done, you feel good about yourself. Your knowledge of supply helped a supported unit, even though one of the leaders of that unit was only vaguely aware of the substantial effort it took on your part to do so. Almost on cue, the grouchy nonlogistician pushes by you, picks up the widget, and prepares to leave. However, just before he does, he notices that his boss' vehicle parked nearby has a new, eye-catching antenna. "Hey, supply guy," he says to you as he departs. "I don't know what it's called, but get me one of those deals too." So it is back to your research. **ALOG**

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The author wishes to thank the subject matter experts at the Defense Logistics Information Service for their invaluable assistance in the writing of this article.

COMMENTARY

Toward a Union of Deployment and Distribution

BY COLONEL ROBERT F. CARPENTER, USAR

Operation Iraqi Freedom once again proved that our current doctrine and automated systems for planning and executing the deployment and sustainment of forces are inadequate to the needs of the Army and the combatant commanders. Our systems continue to be stovepiped, service centric, and guarded like the rice bowl of a starving man. Worse, our processes are too complex—so complex they almost defy even the best attempts at peacetime training. We have a lack of data sharing and systems integration, both within and across the services, and a lack of will within the Department of Defense (DOD) to force the necessary changes. Data often cannot be shared or integrated because data sets between services and between DOD systems are incompatible.

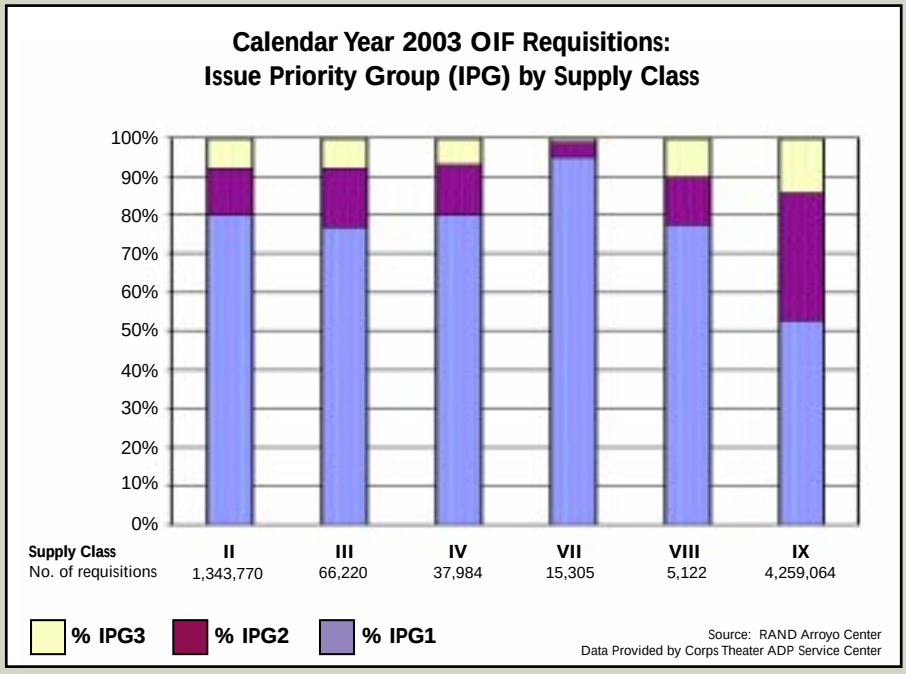
We also do not conduct proper logistics planning with the operations community before opening a battle. For example, during planning, the warfighter often will not give up space in the force flow so logistics units can move with their combat force customers. Instead, the logistics units are placed late in the force flow and, when they arrive in theater, must play catchup. This means that once combat begins, logisticians operate in a reactive mode, flying too much of what the warfighter needs as priority 1 (see chart below).

What follows are a few thoughts on what we have and what we need to plan and execute deployment and sustainment successfully.

Before Hostilities Begin

During the planning phase of an operation, logisticians first must be "read in" to the plan, including the roles of the Army Materiel Command, the Defense Logistics Agency (DLA), and Logistics Civilian Augmentation Program (LOGCAP) contractors. These logisticians and their transportation and distribution partners in the U.S. Transportation Command (TRANSCOM) must map the distribution system based on the warfighters' operational plan, the larger area of operations, its air and sea ports, road and rail lines, bridges, and the assets available to handle and transport cargo to and within the theater.

Getting materiel to the requesting units depends on the available transportation infrastructure (the pipelines and their nodes), the conveyances available to carry the materiel, and the supporting units' ability to support the conveyances and process the materiel for onward movement, final distribution, or storage. (The road and rail network, waterways, and usable airspace are the pipelines, and the ports, railheads, and other facilities are the nodes. The various military and commercial assets, such as aircraft, vessels, trucks, railcars,



This chart shows the designated priorities of customer requests submitted through the Standard Army Retail Supply System by Army units participating in Operation Iraqi Freedom during 2003.

rail engines, barges and tugs, and containers are the conveyances.)

An analysis is needed to determine the size of the overall distribution pipeline and the limits of both the pipeline and its supporting nodes. Identifying these limits is vital because the throughput of a given pipeline and its nodes cannot be increased without knowing the limiting factors. Planners also must remember that the capacity of these pipelines and nodes will decrease with time and use as the infrastructure deteriorates. However, repairs and improvements can be made to the infrastructure to maintain or increase the carrying capacity of a pipeline and its nodes. The available carrying capacity also may be affected by competition with civilian businesses for use of the pipeline and nodes.

The availability of conveyances must be determined. These can be military or civilian assets, but their use may be limited by the combat situation, the pipeline and its nodes, and the priority assigned to the combatant commander in worldwide operations. Commercial conveyances may not be available during periods of combat because of force-protection concerns, competing civilian use, or infrastructure constraints at a node. Use of nodes and pipelines may be limited also because of competing civilian use. If the pipeline, nodes, and support units and equipment can handle extra conveyances, throughput can be increased by adding more military or civilian conveyances.

The available military and civilian support units and equipment must be determined based on the physical constraints of the pipeline and its nodes or the desired capacity. These constraints can result from inadequate container- and materials-handling equipment, conveyance support equipment (the many pieces of equipment needed to support aircraft, vessels, trucks, railcars, rail engines, and barges), and automated logistics systems. Adding more units or equipment does not increase capacity unless they are the limiting factors.

We now have an idea of the capacity of the transportation pipelines and nodes, the limiting factor in each pipeline and node, and the expected speed of movement through a given pipeline. We also may be able to determine if the capacity can be increased if necessary by adding resources or opening new pipelines.

Once the distribution system is mapped, we need to estimate—by force or capability module, unit, and weapon system—the materiel needed each week to support the warfighter. Conducting this analysis before hostilities begin allows the Army Materiel Command and DLA to locate required stocks by storage location or to order what is needed from suppliers. As the plan matures, this materiel should be packaged for shipment and moved to ports of embarkation. If the plan is mature and the units are resourced, this packaging could be done by force or capability module, the unit Department of Defense Activity Address Code (DODAAC) in a configured load, or by expected usage per weapon system for a given period of time (per week, for example). When hostilities start, or before when possible, this materiel should be loaded onto ships and sent to the combatant commander's area of operations so it is ready when needed and will not compete with deploying units for air transport space.

Wartime ASLs

The larger issue is that we support the force with peacetime authorized stockage lists (ASLs) and do not have real wartime ASLs. Thus, when we go to war, we strip the shelves of stocks and leave nothing for follow-on sustainment. Past initiatives by the Office of the Secretary of Defense (OSD) to make peacetime class IX (spare and repair parts) supply cost efficient proved not to be cost effective for wartime. However, if we do the analysis, we may actually find that using air transport in wartime is far less expensive than storing a huge stockpile of parts for years and years so they will be available for surface shipment during war. The Global War on Terrorism has changed everything. During this new kind of war, there may be no intervals between uses for many key systems, but constant war instead, which will increase the need for stocks and escalate their cost. For some other systems, there still could be long intervals between periods of high use.

For example, during Operation Iraqi Freedom, we knew the approximate distances to be covered by units and the expected consumption of items such as tank tracks and pads and truck tires. The expected requirements could have been packaged in advance and sent by sea as soon as hostilities began so the materiel would be on hand in Kuwait when needed. At the same time, replenishment orders from suppliers could have been placed. While not a perfect solution, it would have placed materiel in the area of operations ready for issue to the warfighter and reduced the amount of materiel shipped as priority 1 by air at 10 times the cost of ocean shipment.

Automated Ordering, Packing, and Shipping

Ordering, packing, and shipping actions involve the allocation of funds, which is always problematic before the actual beginning of an operation. However, being proactive at this point can provide increased capability to support the warfighter, save large sums of money in air shipping costs, and reduce potential war-disrupting distribution bottlenecks later.

To assist in the ordering, packing, and shipping processes, DLA has created an Integrated Consumable

A U.S. service member displays nuts and bolts improvised for emergency use because a resupply shipment had not arrived on time at Tallil Air Base in Iraq.

Item Support (ICIS) model (currently undergoing further development). The ICIS simulation accepts usage data by national stock number (NSN) for supply classes I (subsistence), IIIP (packaged petroleum), VII (major end items), and IX. These usage data are based on historical data from combat operations and include factors for climate, terrain, and operating tempo. The output is the required quantity of items listed by NSN. If ICIS is used, its output can be checked against available stocks by type of stock at each storage location and against any shortfalls. Requirements identified by ICIS then can be packaged for shipment or consolidation at Defense Distribution Center Susquehanna, Pennsylvania (DDSP). Storage locations can reorder as necessary to refill stocks and meet expected increases in demand based on combat operations.

At DDSP, stocks can be packed by NSN, weapon system, or the DODAAC of the expected user of a push package. The containers used for this packaging should be considered for purchase or long-term lease to avoid detention charges. Containers then could be shipped via commercial carriers to the theater. ICIS model output can be entered into the Joint Operation Planning and Execution System (JOPES) as cargo increment numbers (CINs) for modeling with the Joint Flow Analysis System for Transportation (JFAST). If shipment is by liner service, it may not be necessary to generate CINs.

In theater, materiel will be held for issue as ordered or, if communication through the Standard Army Retail Supply System (SARSS) is not available and packaging is by configured load, a radio communication from a unit can release a specified load for that unit's DODAAC.

The ICIS simulation also can be used to locate potential bottlenecks in the distribution system before an operation begins. This ability to forecast bottlenecks is vital. Using JOPES deployment data, JFAST modeling, ICIS, and information on actual or scheduled moves of units and resupply, a picture of the distribution system can be built and bottlenecks identified before they occur. Planners and operators badly need an automated system that can compare data from JOPES, JFAST, and ICIS to the constraints of the distribution system and provide warnings of bottlenecks.

Linking Resupply to TPFDD

Most supply data are not shown in Time Phased Force Deployment Data (TPFDD) or JOPES. The automated system used by the Distribution Process Owner (TRANSCOM) to track supplies moving through the Defense Transportation System is the Global Transportation Network (GTN) (to be replaced in 2004 with GTN 21). To view supply data in GTN, the user must know the transportation control numbers (TCNs) of the cargo or the DODAAC of the receiving unit. The user cannot simply select a unit identification code (UIC), unit line number (ULN), force module, or TPFDD and query on all resupply cargo en route.

JOPES uses UICs and ULNs as key data, while GTN uses TCNs. The relationship of the UIC to the DODAAC is one to many—each UIC has more than one DODAAC. One of these DODAACs is the "ship to" address of the unit and is used in building TCNs. A mobility TCN also can be created using a UIC or ULN instead of a DODAAC. The relationship of UIC to ULN is also one to many—each UIC usually has more than one ULN associated with it. For example, the personnel and equipment for a unit often have different ULNs because the personnel move by air and the equipment moves by sea. Lettered companies in a battalion also usually have separate ULNs.

To match a requisition or cargo shipment to the TPFDD, a cross-reference table is needed between a unit's UIC and ship-to DODAAC. Such a table exists for Army units, but it must be added to GTN and linked to the incoming transactions and the other data tables if it is used. This list also must be maintained carefully because the DODAAC ship-to address changes when a unit moves within or between theaters.

If we can link the UIC in JOPES to the DODAAC in GTN, we may be able to create a query that will allow

users to enter an operation plan or force module identification number and one or more UICs. The query will return in-transit visibility data for resupply cargo moving in the Defense Transportation System, including the receiving unit or units, cargo description, current location, and estimated time of arrival of the cargo. Once such a table is placed in GTN and the necessary links are created, the code in GTN will examine an incoming TCN to determine if it is a resupply TCN or some other type. If it is a resupply TCN, the DODAAC will be cross-checked against the UIC or DODAAC cross-reference table. If the matching UIC is also in the TPFDD, the unit movement dates, locations, and other JOPES data will be available for queries. As an alternative, the requisition number could be used instead of the TCN. This would be more difficult, but it would capture shipments moving by depot. (The DODAAC in the TCN would start with SW.)

Unit Readiness and Movement Planning

Our current operational and movement planning systems are stovepiped and have limited or no data sharing. The JOPES uses data from the Type Unit Characteristics File (TUCHA) for equipment in a unit and data from the Global Status of Resources and Training System (GSORTS) for unit readiness. However, neither of these data sources is current. TUCHA is based on equipment authorizations, not actual equipment on hand, and GSORTS typically is updated only once a month. However, the Army has several other systems that provide current information about equipment on hand in units, including the Standard Property Book System (SPBS) and the Transportation Coordinators' Automated Information for Movements System II (TC–AIMS II). The Unit-Level Logistics System (ULLS) provides unit equipment readiness data that are only a day or two old, not a month old as with the GSORTS. Personnel readiness data should be provided by the Defense Manpower Data Center (DMDC) or the Standard Installation/Division Personnel System (SIDPERS), which show authorized versus assigned personnel. Training readiness data still must come from GSORTS until an automated system is created to replace it.

Data from the SPBS, DMDC, and SIDPERS can be fed into any number of systems, such as the GSORTS, JOPES, TC–AIMS II, or the Combined Forces Data Base, for use in deployment planning. Data from the TC–AIMS II can be fed into the Automated Air Load Planning System (AALPS) to produce information that will assist in planning aircraft loads. The data can be fed into the Integrated Computerized Deployment System (ICODES) to obtain information that can be useful for planning ocean vessel loads. TC–AIMS II can also generate radio frequency identification tags for equipment and supplies.

The current AALPS is not networked. Load plans must be faxed to the Air Mobility Command (AMC). AALPS should be networked so that planning data entered at the installation or received from TC–AIMS II can be transmitted to AMC. AMC then can make final decisions on aircraft types, configurations, and quantities and transmit this information back to both the installation-level AALPS and TC–AIMS II. This AALPS data and the detailed air passenger and equipment manifest data from TC–AIMS II should be transmitted to the Global Air Transportation Execution System (GATES) as planning data. Equipment and cargo manifest data moving by sea should be transmitted to ICODES for use in vessel load planning. As with AALPS, any changes made at the seaport by ICODES should be sent back to TC–AIMS II.

When a unit reports to an airfield, all air movement data are already in GATES. If a vehicle fails the joint inspection or the actual load changes for any reason, this information can be entered into GATES at the airfield and transmitted to both AALPS and TC–AIMS II. If the unit is changing aircraft at an air-to-air interface site, this site should have the ability to see the planning data in GATES or AALPS and make any necessary changes. With these data, AALPS or GATES can be used to plan the onward movement, keeping UIC or ULN integrity as much as possible. This also can work in theater, such as in a change from a C–17 Globemaster to a C–130 Hercules aircraft.

The suggestions I have made require new business rules, policies, procedures, and training that are not service centric and stovepiped. They also require changes to current systems that will enable them to exchange data in specified formats. These types of changes can be made only at the OSD and joint levels, and they must have the complete cooperation of the services.

Our goal should be a Joint Logistics Command run by TRANSCOM. This joint command should own both the deployment and distribution processes and have the necessary authority and required resources. As the DOD Distribution Process Owner, TRANSCOM must take the lead in this effort with substantial backing from the OSD.

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Moving the Force Across Europe: EUCOM's Joint Movement Center

BY LIEUTENANT COLONEL DAVID R. MCCLEAN AND CAPTAIN PHILLIP E. HENSON, TNARNG

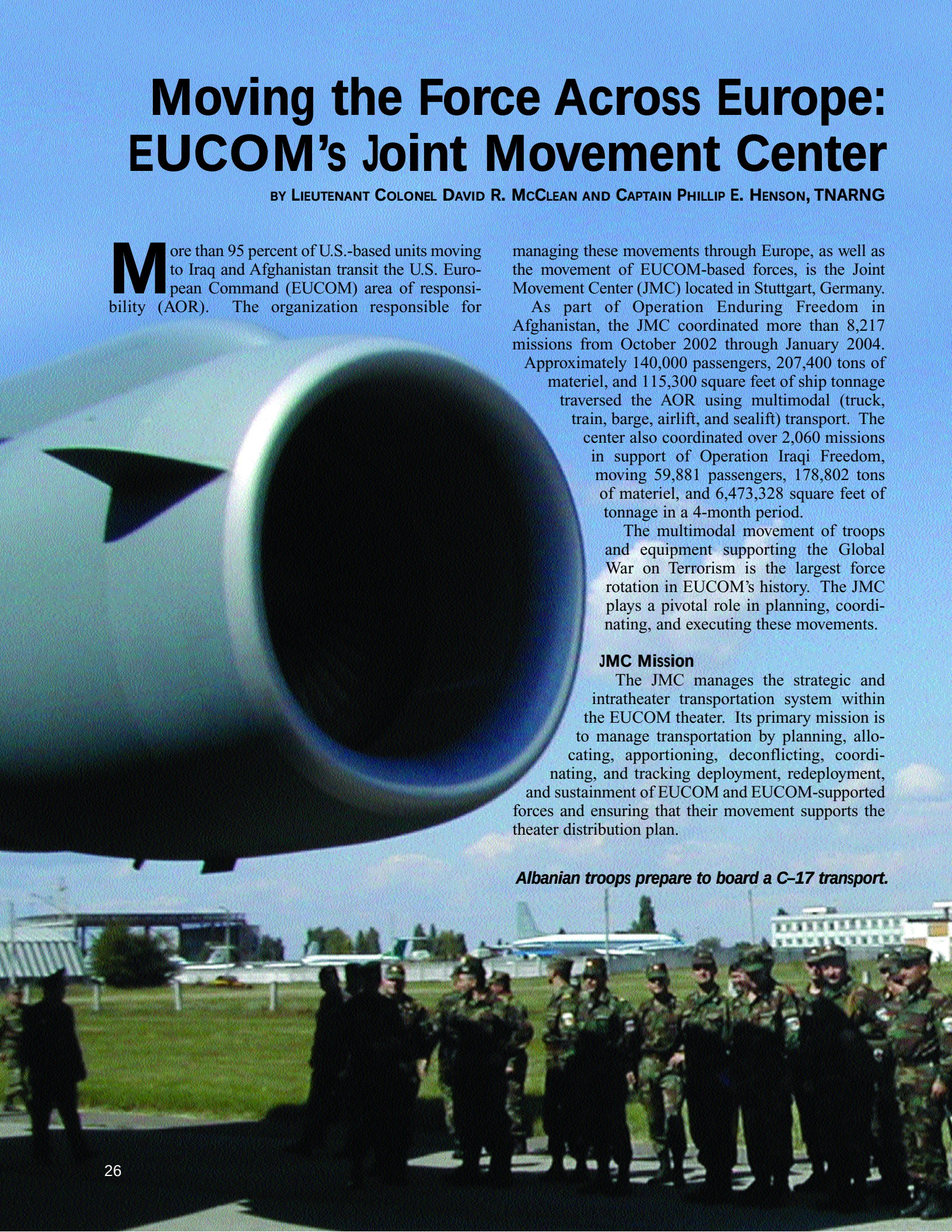
More than 95 percent of U.S.-based units moving to Iraq and Afghanistan transit the U.S. European Command (EUCOM) area of responsibility (AOR). The organization responsible for managing these movements through Europe, as well as the movement of EUCOM-based forces, is the Joint Movement Center (JMC) located in Stuttgart, Germany.

As part of Operation Enduring Freedom in Afghanistan, the JMC coordinated more than 8,217 missions from October 2002 through January 2004. Approximately 140,000 passengers, 207,400 tons of materiel, and 115,300 square feet of ship tonnage traversed the AOR using multimodal (truck, train, barge, airlift, and sealift) transport. The center also coordinated over 2,060 missions in support of Operation Iraqi Freedom, moving 59,881 passengers, 178,802 tons of materiel, and 6,473,328 square feet of tonnage in a 4-month period.

The multimodal movement of troops and equipment supporting the Global War on Terrorism is the largest force rotation in EUCOM's history. The JMC plays a pivotal role in planning, coordinating, and executing these movements.

JMC Mission

The JMC manages the strategic and intratheater transportation system within the EUCOM theater. Its primary mission is to manage transportation by planning, allocating, apportioning, deconflicting, coordinating, and tracking deployment, redeployment, and sustainment of EUCOM and EUCOM-supported forces and ensuring that their movement supports the theater distribution plan.



Albanian troops prepare to board a C–17 transport.

The JMC fully participates in crisis action planning, writes transportation estimates, provides information on airfield and port capabilities and limitations, and contributes to mission analysis and orders preparation for numerous contingency operations. The center's personnel perform these functions around the clock by working closely with the U.S. Transportation Command (TRANSCOM), the U.S. Central Command (CENTCOM), host nation governments, military components, and numerous transportation agencies. The goal is to ensure that all movement is synchronized to meet operations and logistics timelines. The JMC also serves as an interface between U.S. military components and transportation agencies to facilitate planning and resolve mobility issues.

JMC Organization

The JMC is functionally organized based on joint doctrine, and it is designed to expand and contract in response to operational requirements. During normal operations, 26 joint service personnel are assigned to the center. However, during the height of Iraqi Freedom in the winter and spring of 2003, the JMC surged to 53 personnel. Complicating things further, the JMC conducted split-based operations with a forward-deployed organization of 21 personnel at Incirlik Air Base, Turkey. Approximately 70 percent of JMC personnel are Reservists and National Guard augmentees with tours of duty ranging from 90 days to 1 year. The center could not accomplish its mission without mobilized citizen soldiers, sailors, marines, and airmen.

The JMC consists of a Data Transportation Feasibility Section, Plans Section, and Operations Section. The Operations Section is further divided into Sealift, Inland, and Airlift Cells.

The data transportation feasibility section uses 12 automated systems (including the Joint Operation Planning and Execution System, Global Transportation Network, Single Mobility System, Global Decision Support System, and Allied Deployment and Movement System) to track and provide a current and forward view of upcoming movements within the AOR. The section also maintains a database of information on all modes of movement in EUCOM. For example, the database calculates the total number of passengers and tons of materiel moved by each mode of transportation during a given operation. It also provides useful information for tracking mission progress and force closure and a summary of force flow for future planning.

Supporting Iraqi Freedom

The center currently operates the Logistics Sustainment Cell (LSC) at Incirlik. The LSC's primary mission is to coordinate and monitor the movement of sustainment to U.S. Forces and humanitarian efforts in northern Iraq. From April 2003 through January 2004, the LSC coordinated the delivery of more than 62 million liters of water, 3 million pounds of fresh fruits and vegetables, 447 million liters of fuel, 276 measurement tons of liquid propane gas, 1.3 billion liters of benzene and kerosene, and 12 million tons of miscellaneous cargo. [A measurement ton is a measure of volume; 1 measurement ton equals 40 cubic feet.]

Commercial trucks moved all of these supplies over a ground line of communication (GLOC) from several locations in Germany and Turkey into Iraq. This GLOC averages over 5,000 trucks in the transportation system on a daily basis. It extends from central Germany south through Turkey and crosses into northern Iraq through the only crossing point at the Turkey-Iraq border, the Habur Border Gate. Using this vital supply route significantly reduces airlift and sealift costs. In addition to ground resupply, approximately three strategic airlift channels from Ramstein Air Base, Germany, and Moron Air Base, Spain, deliver equipment and sustainment into northern Iraq each week.

Supporting Other Operations

The JMC also manages transportation in numerous other countries throughout the theater ranging from Africa to Russia and the Middle East. Some other

Moldovan troops load pallets for movement to Iraq.

major operations the center supports are the Stabilization Force (SFOR) and the Kosovo Force (KFOR) in the Balkans, humanitarian assistance in Africa, support of North Atlantic Treaty Organization (NATO) member nations participating in multinational exercises, the Georgia Train and Equip Program in the Republic of Georgia, and exercise-related construction programs in West African states. Sustainment into the Balkans includes more than 55 trucks daily, 2 trains per month and 6 C–130 flights a week. The trucks cross eight countries (some trips last more than 3 weeks) to arrive at their destination.

Another elongated movement is the delivery of cargo and sustainment to Operation Enduring Freedom in Afghanistan. In addition to C–17 airlift, materiel moves on trains through Germany, Poland, Ukraine, Russia, Uzbekistan, and Kazakhstan to Bishkek, Kyrgyzstan. Ships carrying cargo to Enduring Freedom sail across the Mediterranean Sea, through the Suez Canal, and over the Indian Ocean to Karachi, Pakistan. The cargo is offloaded at Karachi and transported by truck north into Afghanistan.

A smaller but significant mission was the role played by the JMC in the Joint Task Force (JTF) Liberia operation last year. The JMC deployed personnel to the JTF and assisted in developing and executing a JTF Liberia JMC in support of the humanitarian assistance and stability operation in that war-ravaged West African country.

In addition to contingency movements, the JMC resolves numerous issues, including—

- Airspace and overflight coordination and approval.
- Transit rights through various countries within the EUCOM AOR.
- Force protection for all vessels transiting the Mediterranean and calling at ports in the EUCOM AOR.
- Bed-down locations for aircraft and passengers (air-to-air interface sites).
- Fuel, subsistence, replenishment, and maintenance support for aircraft, ships, and vehicles transiting the EUCOM AOR.

Supporting Allied Forces

One of the center's most challenging missions is planning, coordinating, and executing coalition movements for the Polish-led Multinational Division-Center South (MND–CS) sector in Iraq and other troop-contributing nations in support of Iraqi Freedom and Enduring Freedom. The contributing

The* USNS Brittin *is loaded with equipment bound for Operation Iraqi Freedom.

nations include 17 countries within the EUCOM AOR, while the MND–CS involves 23 countries from around the globe.

In order to effectively execute movements in support of these forces, the JMC established the European Deployment Cell (EDC) in Warsaw, Poland. The EDC is responsible for movements through numerous air and sea ports of embarkation and debarkation to ensure that troop-contributing nations within the EUCOM AOR meet U.S. and NATO standards for movement on U.S. military transports. In addition to NATO countries, the EDC has moved Albanian, Azerbaijani, Georgian, Moldovan, and Ukrainian forces. Teams from the Surface Deployment and Distribution Command augment the EDC to execute port of debarkation operations in countries such as Bulgaria, Poland, Romania, and Spain. U.S. Army Europe (USAREUR) and U.S. Air Forces in Europe (USAFE) operated the EDC during the Iraqi Freedom rotations.

Another JMC initiative was training Polish military personnel for unit movement certification. This certification ensured that allied forces possessed the skills they needed to prepare passengers and cargo for movement according to U.S. and NATO standards. USAREUR's 7th Army Training Command conducted the training, which included unit movement, hazardous materials, and load-planning courses. The 45-day training certified 21 Polish military personnel to perform functions previously executed by the U.S. military, which produced significant cost savings for the U.S. Government. This first-ever training set the standard for future training so that troop-contributing nations can achieve unit movement standards.

Redeploying U.S. Forces

Recently, the JMC was responsible for developing the concept of a forward aerial transload hub at Incirlik. The hub served as an intermediate transfer point for redeploying more than 8,000 U.S. personnel from northern Iraq. This operation expedited the redeployment of personnel and equipment from Operation Iraqi Freedom II to the continental United States and adhered to the "boots on the ground" timeline. It also minimized the use of precious C–130 intratheater air assets and reduced load capacity on the aerial port at Kuwait City International Airport. USAFE's 39th Airlift Wing executed the transload operation, which ran from January through April 2004. Most importantly, the use of the Incirlik hub demonstrated the Turkish commitment to the Global War on Terrorism.

The JMC is a multifaceted, diverse entity that executes short- and long-range movement issues to improve transportation into, out of, and through the EUCOM AOR. The center is committed to meeting every challenge and executing a seamless movement of soldiers, sailors, airmen, and marines and their equipment and sustainment as they transit the EUCOM AOR. The key to its success is a simple movement formula: Planning + Coordinating + More Coordinating + Flexibility in Execution = Success. **ALOG**

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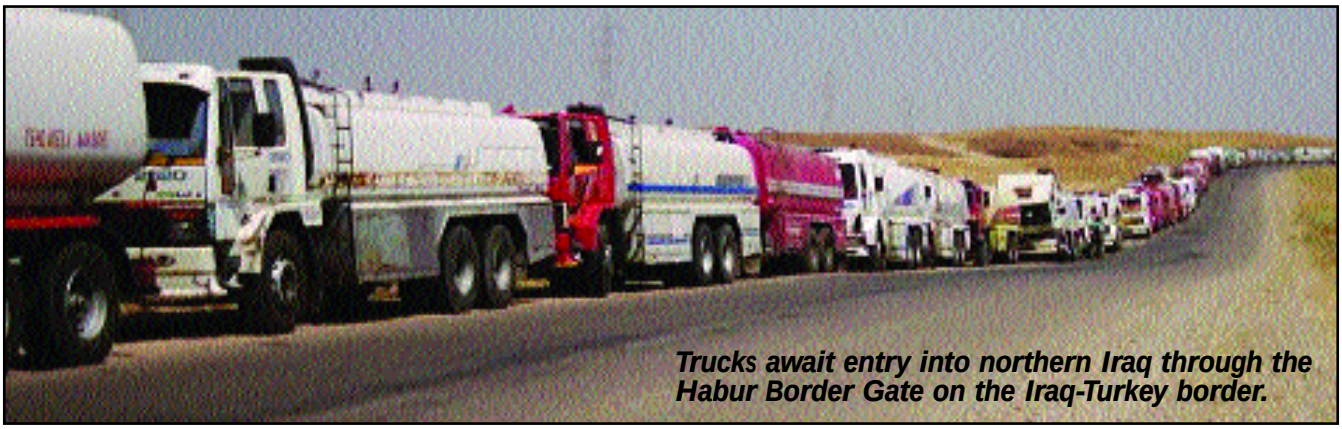

Trucks await entry into northern Iraq through the Habur Border Gate on the Iraq-Turkey border.

Gaining Visibility of Excess Commercial Equipment

BY CLINTON W. MECHAM

IMA's Northwest Region found a way to make commercial, nonstandard items available for extended use before they are reported as excess.

The Army Installation Management Agency (IMA) was established on 1 October 2002 to provide equitable, effective, and efficient management of Army installations worldwide in support of mission readiness and execution. IMA operates through seven regional offices. Four are in the continental United States (CONUS)—the Northeast Region Office at Fort Monroe, Virginia; the Southeast Region Office at Fort McPherson, Georgia; the Northwest Region Office at Rock Island Arsenal, Illinois; and the Southwest Region Office at Fort Sam Houston, Texas. The Pacific Region Office is located at Fort Shafter, Hawaii, the Europe Region Office at Heidelberg, Germany, and the Korean Region Office at Yongsan, South Korea.

When the staff of the Northwest Region (NWR) analyzed garrison operations, we found that we had no way of knowing when commercial, nonstandard major items of equipment (class VII) at region installations became excess. As a result, our ability to redistribute excess equipment within our region was limited. As most supply managers know, excess items are a cost-effective source of supply that saves already limited budget dollars.

Accounting for Noncentrally Managed Items

The property books of IMA garrisons in CONUS predominately contain noncentrally managed commercial equipment. Managers of centrally managed items concentrate on controlling the authorization and accountability of items that support the warfighter, which limits the number of centrally managed items available to nondeployable table of distribution and allowances (TDA) activities, such as garrisons. IMA garrisons have filled this void through commercial procurement.

Only a small percentage of the commercial equipment that is used widely by nondeployable TDA activities is centrally managed. In fact, an analysis of data on all NWR garrison property book items showed that 87 percent were nonstandard and therefore were not centrally managed.

A procured commercial item is exempt from type classification and assignment of a line item number, even when it is a substitute for a centrally managed item valued at less than $100,000. Commercial equipment valued at more than $100,000 must go through a type classification or exemption review before it is procured.

The IMA garrison property book officer (PBO) uses the automated Defense Property Accountability System (DPAS) to maintain formal accountability records. DPAS provides information on all centrally managed reportable items to the Logistics Integrated Database (LIDB), which is the Army's asset visibility tool. However, most nonstandard commercial items are not reported to the LIDB; therefore, asset visibility of commercial items is limited.

Typically, an excess commercial item is turned in to the servicing supply support activity (SSA). Because the item is not centrally managed, the SSA sends the item to the nearest Defense Reutilization and Marketing Office (DRMO), regardless of its condition code. Federal agencies and other qualified buyers may purchase the item from DRMO.

Finding a Fix

The NWR Office, as a steward of Army property, decided to look for a way to broaden the visibility of these nonstandard commercial items so they would be available for extended use by the services before they were reported as excess to the DRMO.

First, we identified criteria for reporting excess items that would attract customers and increase the use of this source of supply. The criteria would have to be flexible, and the items would have to offer substantial value and represent cost savings for our customers.

To limit the reporting of less-than-desirable items, we established criteria for reporting usable commercial items with an original acquisition value over $5,000 that were in condition codes A (serviceable-usable), B (serviceable with qualifications), and F (economically reparable). Dollar values for the items were set at a level that would ensure the gaining garrison a positive

An IMA Northwest Region logistician inspects an excess high-mast lift truck at Rock Island Arsenal, Illinois. Timely inspection and condition coding of excess equipment are important to finding it a new home.

return on its investment, considering the costs of packaging and transportation. We established a screening period of 21 days from the reporting date, during which the items would be available for redistribution before turn-in to the SSA. To categorize commercial equipment properly, we disallowed reporting of all standard Army items that are listed in chapter 2 of Supply Bulletin 700–20, Army Adopted/Other Items Selected for Authorization/List of Reportable Items. Those items have a separate basis of issue and have been separately type-classified.

Next, we identified a program development goal—maximum property reutilization—and objectives to reach it. The first objective was to automate the reporting, request, and redistribution processes. The second objective was to maximize the use of existing automation, and the third was to minimize the impact of the program on the garrison workload.

We reviewed several scenarios to determine the merit and feasibility of our plan. We also reviewed a number of automation asset management tools and selected two: DPAS and the Army Electronic Product Support (AEPS) system and Web site. TDF Corporation, the AEPS software developer, provided a cost-effective scenario for developing the necessary functional processes.

Developing the Process

Ensuring data availability and developing the DPAS process were critical to program success. Our first challenge was to find an easy way for our PBOs to report excess items before they are processed for turn-in. We discovered that DPAS Version 16.3, released in July 2003, allows users to initiate information technology (IT) equipment turn-in transactions directly to the serving DRMO and notify the DRMO of upcoming turn-in actions using an interface with the Defense Logistics Agency's Defense Automated Information System (DAISY).

However, the Army does not allow the turn-in of non-IT assets directly from a property book to the DRMO. To be able to take full advantage of the available DPAS processes, we obtained approval from the Department of the Army Deputy Chief of Staff, G–4, to use the DPAS interface and allow the direct turn-in of our commercial excess equipment. The 25 February 2004 update to AR 710–2, Supply Policy Below the National Level, authorizes IMA garrisons to submit turn-in transactions to transfer commercial nonstandard items directly from their property books to their DRMOs.

We engaged the installation command stakeholders in our region—the Joint Munitions Command (JMC) and the Chemical Materials Agency (CMA)—in the development of the AEPS excess program processes. After reviewing the program and the mutual benefits to be gained, both JMC and CMA elected to bring their Government-owned activities on line in the excess program, even those outside of the NWR. Thus, the program became a multi-command system.

Our final process in the development cycle was a user system acceptance test of the AEPS. Using standard methodology, we developed a test plan and pro-

cedures to trace the reporting, redistribution, and disposition processes. Because AEPS is Web-based, we determined that it was not necessary to gather all participants in one conventional test environment. Instead, we conducted a virtual test, with participants accessing the AEPS developmental server remotely as they would in the user environment. Six PBOs from three commands and four command personnel with authority to approve lateral transfer of personal property participated in the test. The test director orchestrated the actions of each test participant.

TDF Corporation made software programming fixes as the test progressed. A downside to remote testing was a lack of control over the test environment. Communications were sporadic or interrupted at times, and test participants were not always immediately available. However, we persevered and completed the system acceptance test successfully in 2 weeks.

Reporting Excess Items

Here's how the new NWR reporting and redistribution process works. The reporting PBO enters information on excess items into the DAISY/DPAS prenotification excess database. Every Friday, the AEPS application pulls the data, compiles them by unit identification code (UIC) with associated points of contact (POCs), and emails the data to all program participants. If a program participant finds an item that meets his mission requirements, he accesses the AEPS excess program to submit a request for redistribution, or a "hold." A hold action generates an email notification to the approving command POC requesting that he access the program to approve or disapprove the redistribution request.

When a decision is made, an e-mail is sent to the reporting and requesting PBOs to notify them of the disposition of the redistribution (hold) request. If the request is approved, the e-mail notification provides an electronic Department of the Army Form 3161, Request for Issue or Turn-In, with the UIC, item description, and electronic command approval signatures. If no claim for an item is received during the 21-day screening period, a disposition email is sent to the reporting PBO with instructions to process the item to the SSA for disposal.

AEPS also has a "want list" capability that allows unit POCs to submit, by Federal stock class and nomenclature, requests for AEPS to search the database. When a reported item's Federal stock class or nomenclature matches that of a requested item, the requester is notified by e-mail of the item's availability.

AEPS has a metrics reporting function that commands can use to monitor the effectiveness and return on investment of the excess program. This feature is linked directly to the e-mail engine and reports generator, so data can be updated automatically.

Fielding

Because the AEPS system is Web-based, no additional software or hardware was required to field the excess program. We established an implementation schedule and determined associated actions. Fielding consisted of publishing command policy and procedures, identifying all program participants, establishing user restrictions on AEPS, providing a training compact disk (CD), and scheduling video teleconferences (VTCs) with installation PBOs and command POCs. We provided them with NWR program guidance on 3 October 2003. JMC and CMA subsequently endorsed this guidance, and the training CD was shipped to all program participants. By VTC, each command participated in reviewing program responsibilities and answering operational and system fielding questions.

The PBOs began submitting information on excess items to the DPAS prenotification excess database during the first week in November, and the first generation of excess listings and subsequent automatic emailing to all program participants occurred the following week.

To date, our established objectives have been met. We have gained visibility of excess items on the garrison property book, maximized use of current automation, and minimized the workload impact on garrison personnel. Since implementation of this program, we have redistributed excess items valued at more than $4 million. We expect this figure to rise to $10 million by the end of this fiscal year as the value of redistributed items continues to be high. This represents direct cost avoidance for program participants and extends the usefulness of items. To provide good stewardship of Army and IMA resources, we are planning to field our excess system to the remaining three IMA CONUS regions. Non-IMA installations and tenant activities will be able to participate in the programs at the discretion of their command and garrison hosts.

As the Army moves toward implementation of Enterprise Resource Planning under the Global Combat Support System, resources for current systems are limited, and we will be challenged to provide interim solutions to maintain the Army's logistics edge. **ALOG**

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Configured Loads: A New Look at an Old Concept

BY MAJOR K. ERIC DRUMMOND, USAR

Configured loads on the ready line at Travis Air Force Base, California, await shipment.

Units around the Army have used configured loads for years. Standard packages for barrier materials can be found in the tactical standing operating procedures in just about every division and brigade across the Army. What has not been done until now is to create tailored packages for all applicable classes of supply and making them accessible to all units through the standard supply system.

Institutionalizing a configured-load concept across the Army is vital to achieving a more reactive, rapidly deployable, and sustainable force. With standardized configured loads, units will need to carry less in their basic loads. They will be able to depart from their home stations while logistics planners program numerous days of supply through alternate, even multiple, ports of debarkation. The most important aspect of this initial push is that continental United States (CONUS) depots can build sustainment loads for the smallest unit in the battle space. With little or no need to reconfigure supplies when they reach the theater of operations, the Army can reduce the number of soldiers needed to perform supply activities. The bare essentials required to provide supplies using configured loads would be equipment for intermodal transfer and adequate transportation assets to conduct battlefield distribution.

Concept Development

Imagine a unit ordering 3 days of supply for all of its basic needs through its Standard Army Management Information Systems computers using at most 20, as opposed to 60 to 80, national stock numbers. Furthermore, imagine these supplies being delivered to the unit's location from a CONUS depot with little or no reconfiguration required. A team made up of members from the Department of the Army G–4, the Logistics Transformation Agency, the Army Forces Command, the Army Combined Arms Support Command, the Army Materiel Command, I Corps, and the Army Training and Doctrine Command has been working on this concept for the past 3 years. The team's objective is to make the "factory to foxhole" concept a reality. Configured loads can be used by all Army units and eventually may be used by all of the services.

A unit may receive slightly more supplies in a module than it needs. Compromises may have to be made to increase efficiency. Items within the supply system have a set unit of issue, such as each, box, case, pallet, or roll. It may be necessary at times to break into a unit of issue to make a module that will satisfy the requirement of the requesting unit. Cost effectiveness will influence this decision. As planners gain experience and have more demand history, they can make better-educated decisions about how to refine the loads.

Module Size

The basic building block for any configured load is a module. The two primary types of modules are commodity and capability. A commodity module contains items from the same supply class and can be used in multiples or mixed with other commodity modules to build a mission- or unit-configured load. A capability module may contain items from different supply classes designed to support a specific mission or function and can be used in multiples or mixed with other modules to build a mission- or unit-configured load.

The team found that constructing configured loads would be much easier using standard dimensions. They decided to use a common 40-by-48-inch warehouse pallet as the building block. Because four warehouse pallets fit onto a 463L air pallet and two 463L pallets fit onto an M1 flatrack or M3 container roll-in-roll-out platform (CROP) flatrack, it is easier to plan for multiple transportation platforms with minimal reconfiguration. For example, if a CROP is the platform for transportation, simple addition determines that 8 to 16 warehouse pallets will fit on it, depending on whether or not a second level will be used.

A height restriction for modules would be beneficial, but none has been set at this time. Published air-load

This article expresses the views of the author, not the Department of Defense or any of its agencies.

COA	Advantages	Disadvantages
Push configured loads from the CONUS depot through the various support nodes to the gaining units.	• Reduced number of soldiers and equipment deployed to the theater. • Reduced force protection and support requirements because of the lower number of soldiers. • Increased productivity because of a robust infrastructure and availability of supplies.	• Longer lines of communication. • Decreased responsiveness to gaining units' changing requirements. • Increased demand on strategic lift (surface and air).
Establish an intermediate staging base and build configured loads from wholesale pushes of bulk stocks or modules built at a CONUS depot.	• Soldiers remain outside of the battlespace, reducing the force protection and support required. • Increased responsiveness in the supply lines from the first COA due to shorter LOCs.	• Increased number of soldiers in area of responsibility and deployed. • Decreased access to CONUS infrastructure and supply base.
Build configured loads at a forward operating base just behind division or brigade boundary.	• Highest level of responsiveness to unit requirements possible without building the loads in the brigade support area (BSA). • Increased options for modes of delivery to the BSA or for throughput to forward resupply points.	• Increased number of soldiers in close proximity to or in the battlespace, resulting in increased force protection and support requirements. • Increased supplies and materials-handling equipment in close proximity to or in the battlespace.

Possible courses of action for using configured loads.

planner manuals indicate that the maximum height for a 463L pallet is 96 inches. Therefore, it would make sense to set a height restriction for a module at no more than 48 inches so that, if weight allowed, modules could be stacked two high.

As the configured-load concept matures, all logistics planners will need to be intimately familiar with the restrictions imposed by various modes of transportation. As air load planner manuals state, each aircraft has height and weight restrictions. The mode of transportation used to transport a configured load will greatly affect the load's final design and dimensions.

Subsistence Modules

To meet the requirements of all units, the basic modules for subsistence items must be adaptable and applicable across the entire Army. Flexibility has been built into the modules by either finding a common denominator of supplies or making a "break point." A break point is simply a quantity of items that meets the basic dimensional requirements for a module and is instrumental in meeting the supply requirements of a unit.

For example, a pallet of 48 cases of meals, ready to eat (MREs), is a wholesale shipment; it is also one of the modules. It is built on a 40-by-48-inch warehouse pallet and, depending on the ration cycle and days of supply, will meet the needs of a unit with a set number of soldiers. A break point was made by removing one layer (12 cases) of MREs, thus creating a second module of 36 cases. This process was continued until the last module had one layer of 12 MREs on a warehouse pallet. The result was four building blocks, with varying quantities of meals, that could be combined to meet the specific needs of a given unit. MRE modules can be combined with water modules to create a shipment of food and water for a unit for the length of time they need it. For example, combining a module of 48 cases of MREs (576 meals) with a module containing 52 cases of water (624 one-liter bottles) would provide 50 soldiers with food and water for 3 days, with soldiers consuming three MREs and 4 liters of water per day.

More Modules

Capability modules, so far, have been composed primarily of class IV barrier materials. Three class IV modules have been developed. The class IV modules can be ordered in multiple quantities and combinations to give a unit the ability to perform a specific mission or function.

The class IV modules available are the two-man fighting position module, the 100-meter triple-strand concertina wire obstacle module, and the traffic control point module. Each of these is built on a

96-by-40-inch warehouse pallet, which is equivalent to two 48-by-40-inch pallets set side by side. The longer pallet is necessary because of the size of the lumber in the two-man fighting position module and the 6-foot pickets in the other two modules. Pictorial instructions are provided to ensure that the modules are built the same way, no matter who builds them.

Planning for Operations

A Stryker brigade combat team deploys with only its unit basic load, which includes 3 days of supply. Depending on the mission and the theater of operations, supplies could be programmed and pushed to the brigade every 10 days or until no longer needed. This would allow the unit to concentrate on the mission at hand and to get into a battle rhythm.

Once the unit switches to a pull requisition system, there are multiple courses of action (COAs) for supplying it with configured loads. The COAs depend primarily on what actions the combatant commander has directed. Some of the possible COAs and their advantages and disadvantages are shown in the chart at left.

A crucial cog in the sustainment wheel is the beginning of the entire process. To make planning and ordering configured loads simpler, quick-reference matrixes for subsistence items have been developed. The next step is to develop enablers or tools that simplify planning for transportation and distribution of the loads.

Problem Areas

Refrigeration. The only food modules designed so far are for MREs and unitized group rations, heat and serve (UGR H&S) because perishables needed to make complete A and B ration meals must be refrigerated. Modules could be made for the dry-pack portion of meals, and the perishables could be integrated into the load to the using unit at the brigade support area or earlier, depending on the situation and available assets. The most likely option is to continue to have the perishables delivered as they currently are instead of integrating them into configured loads.

Commercial standards. The Army, like the other services, uses commercial products that are packaged in containers of varying dimensions. For example, 1-liter bottles of water are packaged in many shapes and sizes. This variability can cause problems in planning shipments. The problem is not insurmountable, but it is one that needs to be addressed, monitored, and taken into consideration when planning for an operation.

One size may not fit all. Units throughout the Army have different compositions, equipment, and needs. The equipment is the key factor in this instance. Because some units use equipment that is unique to them, supplies for that equipment will not be needed by other units. For example, a heavy unit's M1 Abrams tank requires a mysterious liquid known as "turbo-shaft," which is a unique lubricant for tanks to keep their turbine engines operating, so it is not needed by other types of units. The underlying problem here is in developing unique modules or even configured loads for each unit. This practice needs to be controlled and limited as much as possible.

Load Tracking and Delivery

The configured-load concept is an efficient way to expedite throughput from factory to foxhole while maximizing efficient use of transportation assets. New distribution platforms promise to increase the efficiency of battlefield distribution. Imagine the benefit of a configured load built at a CONUS depot being shipped to an infantry company anywhere in the world on a single intermodal transportation platform, with little or no reconfiguration. To take it a step further, imagine that the same configured load is outfitted with a radio frequency identification (RFID) tag and the gaining unit can track it from CONUS to their location.

The future of distribution and accountability looks even brighter with the advent of RFID. RFID allows information on all items in a load, regardless of supply class, to be "written" on a tag. RFID helps make accountability and tracking easier and more accurate. Industry standards still have to be agreed upon, and a Department of Defense (DOD) infrastructure must be developed and fielded to capitalize on this enabler.

Configured loads and modules could eventually be delivered to units using the Integrated Logistics Aerial Resupply (ILAR) system. This capability would reduce the number of trucks and troops traveling on the roads in all theaters of operations. The combination of configured loads and ILAR will expedite the delivery of supplies to soldiers and significantly reduce soldiers' exposure to the enemy.

Configured loads will remain relevant even as the Army and DOD continue to transform. In fact, a more modular capability-based force may make sustainment planning simpler. Most of the existing configured-load modules were developed for use across DOD, regardless of unit strength or configuration. Class III packaged petroleum products are the only modules that will be tailored to vehicle or equipment density. We owe it to the soldiers to provide them the very best and most timely support possible. **ALOG**

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Development and Execution of the TAMP

BY JOSEPH L. HOMZA

The author discusses how James A. Huston's 16 "Principles of Logistics" played an important role in the operation of the theater aviation maintenance program during the first Gulf War.

The January–February 2004 issue of *Army Logistician* contained an article by Craig A. Simonds on "The Role of Civilians During the First Gulf War." As a defense contractor who participated in Operations Desert Shield and Desert Storm, I was particularly interested in his discussion of the Army Aviation Systems Command's theater aviation maintenance program (TAMP). I agree that contractors are required to support future operations across the spectrum of conflict, and I concur with Simonds' conclusion and suggested challenges. In fact, I would like to corroborate his opinion about the critical and cooperative nature of the development and execution of the TAMP, as I was a contributor to that force multiplier. [Editor's note: The Army Aviation Systems Command (AVSCOM) was merged with the Army Troop Support Command in 1992, creating the Army Aviation and Troop Command (ATCOM). In 1997, ATCOM was merged with the Army Missile Command to form what is now the Army Aviation and Missile Command (AMCOM).]

To refresh my memory about my experiences, I dusted off and reread a paper on the TAMP that I prepared a few years ago for a graduate course. In that paper, I discussed how the 16 "Principles of Logistics" found in Dr. James A. Huston's heralded book, *The Sinews of War: Army Logistics 1775–1953*, played an important role in the operation of the TAMP. Those principles are equivalence, materiel precedence, forward impetus, mobility, dispersion, economy, feasibility, flexibility, relativity, continuity, timeliness, responsibility, unity of command, information, quality, and simplicity.

Although that paper was written in the early 1990's, it confirmed that the TAMP was a creative and cooperative success. Lessons learned from the TAMP are being applied to various degrees in Operations Iraqi Freedom and Enduring Freedom.

Defining Contract Logistics

Logistics support must be adequate, simple, flexible, and efficient to meet the customer's needs. Logistics support provides what is needed, when, where, and in the condition and quantity required, with the minimum expenditure of resources. This definition is the "bottom line" of Huston's principles.

Sikorsky Aircraft Corporation is one of the world's leading manufacturers of helicopters. Through its Total Program Approach to logistics, Sikorsky and its worldwide subsidiaries practice the type of logistics support that is embodied in Huston's Principles of Logistics. Sikorsky provides assistance in areas such as engineering, integrated logistics support, and technical services. These services encompass logistics support analysis, training and technical publication development, supply support, inventory control, security, human resources management, legal support, overhaul and repair, and in-country maintenance teams. Such interfunctional support reflects the application of Huston's principles of equivalence, materiel precedence, dispersion, economy, relativity, continuity, quality, unity of command, and, most importantly, responsibility.

The Total Program Approach to logistics also can be implemented with a key strategic in-country partner, subcontractor, or associate contractor to support localization, training, and industrial cooperation initiatives. Again, Huston's principles—most notably flexibility, feasibility, timeliness, and relativity—can be applied.

Because of economic pricing and legal liability requirements, Sikorsky supports its customers worldwide through its logistics support subsidiaries. One of

The TAMP–SWA Forward in Damman swarms with maintenance activities.

the most important is Sikorsky International Products, Inc. (SIPI). Operating under two foreign military sales (FMS) contracts with the Army, SIPI provided maintenance and personnel support services from 1989 through 1994 to the Royal Saudi Land Forces Army Aviation Command (RSLFAAC).

Making the Contracts Work

To fulfill its contracts, SIPI hired qualified professionals and deployed them to King Khalid Military City (KKMC) and Riyadh in Saudi Arabia. In accordance with U.S. Government requirements to supply and maintain 21 UH–60A/L Desert Hawk helicopters (modified versions of the Black Hawk) and 15 CS–406 Combat Scout helicopters for the RSLFAAC, SIPI developed numerous management, human resources, training, financial, supply, and maintenance operating procedures. SIPI also programmed an automated data processing system to function as an RSLFAAC central inventory control point for supply transactions.

SIPI initiated common-core classroom aviation instruction and continued progressive training of RSLFAAC students. All formal classroom and on-the-job training was based on standard Army programs of instruction that had been specifically tailored by SIPI for RSLFAAC students.

Customer unit managers were able to assess student development using a SIPI-designed student progress tracking system that efficiently linked the manufacturers of the RSLFAAC's aircraft fleet to the students. Using applicable communications security, the system provided performance and maintenance data from KKMC to Sikorsky and other manufacturers and to AVSCOM on a controlled, limited-access basis. These data helped the students and the manufacturers to control aircraft configuration; analyze trends; provide additional spare and support equipment setup and technical assistance when required; and assist in issuing alert bulletins, technical publication updates, training courseware changes, safety of flight messages, and engineering change proposals.

Depot repair data were tracked and retrieved daily through the Supply Tracking and Reparable Returns-Personal Computer (STARR–PC) communications system, which allowed customers to send requisitions, status requests, and messages to the Army Security Assistance Command by modem from a standard personal computer. Every week, SIPI provided customers with a depot repair master list to document all the items in the repair cycle. The computer-based tracking and retrieval system provided an inexpensive, automated way to track the status of parts in the depot repair cycle. Data were transmitted through the Defense Automatic Addressing System Center inquiry system in a secure mode using the Security Assistance Command database to screen users.

SIPI's TAMP Role

Because of the Iraqi invasion of Kuwait in 1990, pertinent United Nations resolutions, and the commitment of U.S. and coalition forces, SIPI, like other contractors operating in Saudi Arabia, would support operations during wartime. SIPI management received a request from AVSCOM to meet immediately in St. Louis, Missouri, to discuss and assess the potential use of SIPI assets to support Army aviation assets in the context of a TAMP. AVSCOM would practice Huston's principle of equivalence by recognizing logistics necessities in all plans and organizations.

Initial meetings between SIPI managers and the AVSCOM command group and emergency operations center personnel took place on 12 August 1990. As discussion topics progressed from high-level concepts to organizational and logistics details, members of the AVSCOM security assistance and procurement communities became involved in the meetings. This was excellent; it meant that the real implementers of the TAMP-related activities were on board early (a demonstration by AVSCOM of Huston's unity of command and responsibility principles).

By the morning of 13 August, conceptual templates for operations and logistics estimates and preliminary statements of work had been drawn up. AVSCOM hastily drafted and staffed correspondence in which the Chief of the U.S. Military Training Mission in Saudi Arabia was asked to request that the Commanding General of the RSLFAAC authorize AVSCOM to modify the FMS contract with SIPI in support of the soon-to-be-named Operation Desert Shield.

Response to this message was swift and affirmative. By 15 August, AVSCOM emergency operations center planners had notified the Army Deputy Chief of Staff for Logistics of AVSCOM's roles and missions in developing the TAMP and its intention to use SIPI to assist with the effort. Major "hard-to-do" issues included the segregation of RSLFAAC FMS case funds and U.S. Army costs in one contract, emergency-essential contractual provisions, and hazardous duty pay.

For AVSCOM, expansion of the FMS personnel support services subcontract to include the TAMP operation was unusual and construction of housing units, heliports, and security systems was unfamiliar. Nonetheless, the AVSCOM–SIPI team persevered.

AVSCOM and Security Assistance Command legal and procurement professionals had to separate the FMS contract under which SIPI was already performing and the TAMP effort that it was to undertake. Starting with a statement of work and contract line item numbers, the AVSCOM and SIPI managers

carved out a bilateral modification to the existing contract that would effectively sequester these two efforts from each other. Once the terms of the modification were understood, SIPI divided its workforce to account appropriately for each project. It changed its financial disclosure statement for the benefit of future U.S. Government and Saudi tax audits, revised numerous functional department procedures to process requirements for the new project, rapidly hired additional personnel, and, most importantly, amended the security procedures. Various subcontracts were modified, including the personnel support services subcontract. SIPI required the personnel support services subcontractor to establish and use a separate subsidiary to perform TAMP-related efforts.

SIPI management staffs in the continental United States (CONUS) and Riyadh came together as one cohesive unit, sometimes geographically, but always in spirit. Unity of command, centralized planning, and decentralized execution were standard practices. Such fusion was essential to the success of SIPI's overall mission in a crisis-management scenario and in keeping up with the ever-increasing and never fully anticipated workload.

Emergency Essential Clause

AVSCOM planners were faced with another contractual dilemma: They could contract with SIPI and other contractors for services in support of Operations Desert Shield and Desert Storm, but how could AVSCOM assure its customers, such as the U.S. Army Central Command (ARCENT) and the 22nd Support Command, that the contractors would perform in the Kuwaiti theater of operations in the event of hostilities? This was a very sensitive issue during August and September.

Contractors consulted with one another; information flow was critical. SIPI discussed this issue with McDonnell Douglas Services, the Boeing Corporation, BDM Corporation, DynCorp, and others and consulted various Department of Defense (DOD) and Department of State components on the subject. Equipped with legal guidance from the Security Assistance Command, AVSCOM devised contractual language that complied with Federal Acquisition Regulations and DOD guidance concerning continued performance during crisis situations. This clause in the contract, which came to be known as the "emergency-essential" clause, directed SIPI to comply with the requirement. It caused extreme debate among Sikorsky senior legal and executive-level management personnel about the liabilities that Sikorsky might incur by placing its civilian workforce in potential jeopardy.

Other contractors also had to assess the risk potential involved. The debate continued as SIPI briefed its workforce at KKMC on the new requirement for them to continue to perform in the event of hostilities and continued to increase its TAMP operations. AVSCOM also had difficulty administering the SIPI FMS contract in light of the emergency-essential clause. Although the clause provided for the necessary travel, access, and protection of SIPI and other contractors and allowed them to conduct business in the Kuwaiti theater of operations, many security assistance and procurement personnel did not know how to implement it.

From an operational perspective, SIPI had an extensive statement of work to perform in a compressed timeframe—mid-August through December. Starting with a four-page requirements document drafted by personnel of AVSCOM's Maintenance Directorate and SIPI planners in St. Louis, the TAMP was forged. Huston's principles of flexibility, economy, forward impetus, continuity, timeliness, quality, and simplicity were the watchwords throughout this process.

TAMP Mission and Organization

The TAMP mission was to provide organizational, intermediate, and limited depot-level maintenance of aircraft and their engines and components; implement modification work orders; provide technical assistance to aviation units; establish special repair activities; provide supply and personnel support services; and control Army aviation intensively managed items.

To perform this mission, the TAMP-Southwest Asia (SWA) would be divided into three distinct operating units based on geography and technical capabilities and the Army's time-honored, effective method of supplying from the rear.

As a part of the TAMP mission, select SIPI managers and technical experts performed several site surveys in Riyadh, Dhahran, Jubail, and Damman, Saudi Arabia, in August. SIPI sent photographs and site drawings of potential TAMP locations back to the AVSCOM decisionmakers and briefed deployed AVSCOM TAMP program management personnel in Dhahran and the staff of ARCENT.

TAMP–SWA Base. TAMP–SWA Base, which was located in Abu Dhabi in the United Arab Emirates, functioned as the inventory control point for U.S. Army aviation stocks in the theater. TAMP–SWA Base had large, new hangar facilities provided by another AVSCOM contractor. A host nation company had support shops there and secure access to ramps and runways for rapid movement of supplies arriving from CONUS. The site also included a high-value special repair activity and engine test-cell equipment, as well as an expansive stockage of spare, consumable, and repair parts for helicopters.

TAMP–SWA Forward. Once Damman was chosen as the location for the TAMP–SWA Forward, the site

had to be leased and improved to accommodate helicopter operations and maintenance activities. SIPI worked with its subcontractor, a Saudi-owned company with dedicated leaders and a technically proficient staff knowledgeable in U.S. Government procurement regulations, to accomplish the improvements. The transformation of the site, which had been used as a heavy vehicle maintenance garage, a precast cement-forming yard, and a plumbing supply warehouse, went well. The subcontracting and host nation support AVSCOM received through SIPI was hectic but better than some other Army contracting experiences involving Saudi companies.

TAMP–SWA Forward-KKMC. TAMP–SWA Forward-KKMC was the third SIPI operations site. There, SIPI's mission was to provide facilities; personnel support; freight forwarding services; vehicles, including motor pool operations; housing; computer equipment; security; telecommunications; water; waste removal; petroleum, oils, and lubricants; construction services; supply personnel to manage the aviation intensively managed items; and other services related to aviation support. DynCorp field team personnel performed aviation maintenance, and the 1109th Aviation Classification Repair Activity Depot (AVCRAD), an Army National Guard unit from Groton, Connecticut, performed doctrinal duties. Other defense contractors, Army Materiel Command logistics assistance representatives, and AVSCOM personnel also assisted in the operation.

Before Operation Desert Shield, the entire U.S. presence at KKMC consisted of 80 SIPI employees and a 15-member technical assistance field team (TAFT) from the Army. Since it was only 70 kilometers from the Iraq-Saudi Arabia border, KKMC was a lonely and insecure place during the initial phases of Operation Desert Shield.

KKMC quickly evolved into what the Saudi Arabian Ministry of Defense and Aviation had envisioned—a vast logistics base from which to defend Saudi Arabia. A seemingly endless number of U.S., French, Moroccan, and Saudi convoys and contracted vehicles traversed the base access roads, as well as the two main supply routes—Dodge and Sultan—which were 522 and 442 kilometers long, respectively. These convoys and others that brought the VII Corps to KKMC, along with airlift traffic, were all dedicated to preparing KKMC and nearby logistics bases for the ground offensive that was to take place in February 1991.

The whole process—from conceptual development, through site surveys, proposals, negotiations, award of contractual modifications, and the start of work to the first aircraft flight into the TAMP–SWA Forward–KKMC—took 45 days. Huston's principle of timeliness was pushed to the extreme of its definition. The job could not have been accomplished if SIPI and its associated contractors, such as DynCorp, had not possessed the experience and flexibility to respond to a somewhat vague and always developing requirement from the Army. Nor could this operation have stood up without the unheralded efforts of the AVSCOM procurement and logistics professionals. These professional civil servants and their military counterparts received little recognition, yet they worked alongside SIPI and other contractors 7 days a week, 24 hours a day, both in CONUS and Saudi Arabia. They thought beyond the conventional paradigms, yet they embodied the Principles of Logistics. These personnel were innovative and empowered; they honored their commitments to the contractors and to their Nation. The TAMP was a success because of the camaraderie, trust, and speed of execution that existed among the members of the AVSCOM–SIPI team.

Desert Storm Operations

As Desert Shield transformed into Desert Storm, SIPI was again called on to perform according to the provisions of its FMS TAMP–SWA Forward contract. The RSLFAAC was required by the Ministry of Defense and Aviation to move one of its small helicopter battalions forward to a point west of the Wadi Al Batin near the intersection of the Saudi, Kuwaiti, and Iraqi borders. (A wadi is a valley, gully, or streambed that is dry except during the rainy season.) The RSLFAAC called on SIPI and the TAFT for assistance in establishing two forward area rearming and refueling points (FARPs). SIPI surveyed possible locations and recommended two sites approximately 10 kilometers from the border area (again demonstrating the principles of flexibility, feasibility, and forward impetus).

Revising their security plans again, SIPI and the TAFT set up two FARPs to support the RSLFAAC. SIPI employees and the TAFT developed the equipment packages needed to maintain the RSLFAAC helicopters in the field. Once communication codes were established, SIPI employee volunteers deployed to the FARPs with the TAFT and the RSLFAAC to maintain the aircraft. The FARP support was quite successful, and the RSLFAAC was credited with destroying a number of Iraqi bunkers with their tube-launched, optically tracked, wire-guided missiles fired from CS–406 helicopters. The RSLFAAC also launched UH–60 A/L Desert Hawk helicopters from these FARPs, and they were the first Saudi troops to enter the Kuwait Airport area during the ground campaign.

In Damman, the AVSCOM TAMP–SWA Forward commander realized that the distance to KKMC and

the density of Army aircraft in the surrounding vicinity excessively stretched his lines of communication. Offloading of newly arriving VII Corps assets also was becoming a strain on TAMP operations. To become more efficient and serve its customers better, the TAMP–SWA Forward moved certain of its elements to KKMC and to an area known as the west heliport in Dhahran.

Adapting once again to changing logistics requirements, SIPI and other TAMP contractors, with the concurrence of the TAMP–SWA Forward commander and the AVSCOM procurement community, moved assets into an area on a vacant airstrip adjacent to the SIPI–KKMC housing compound. During Operations Desert Shield and Desert Storm, this airstrip was reconstituted and used first by French helicopter units and then by U.S. Army aviation units. Because of its location, TAMP–SWA Forward-KKMC provided excellent maintenance, resupply, and retrograde capabilities (demonstrating economy, forward impetus, relativity, mobility, timeliness, and flexibility.) SIPI erected clamshell buildings, portable offices, and security and communication systems at TAMP–SWA Forward-KKMC for use by AVSCOM, maintenance contractors, and the onsite AVCRAD.

SIPI also was charged with similar tasks at the west heliport in Dhahran. Additional long-haul vehicles were leased and managed by SIPI to support these unforeseen requirements. SIPI's partnership with the Army proved to be a true, steadfast relationship. No requirement AVSCOM envisioned was impossible for SIPI, including construction services. Despite the tempo of operations, the AVSCOM managers also always came through for SIPI, such as when SIPI needed additional global positioning systems for the FARPs, more mission-orientated protective posture equipment for the personnel support services subcontractor, and additional funds for unanticipated overtime costs and the movement of dependents.

With discipline and controlled improvisation, SIPI continued to support TAMP operations, including retrograding inventory, dismantling clamshells, and washing aircraft before demobilization from Saudi Arabia, until final contract closeout in September 1991.

The coalition won the Gulf War for many reasons much less visible than those portrayed widely in the media. Among them were superior training, superior command and control, and superior logistics. None of these factors are easy to evaluate objectively or numerically. Numerical assessments reveal how many lines of supply were handled, how many aircraft were maintained, how many modification work orders were executed, and how many vehicles traveled how many miles carrying how many tons. However, it is difficult to codify the corporate strength of a contractor for staying in a hostile environment and having its employees come under attack by SCUD missiles or be taken hostage, all the while responding to increased and unanticipated customer demands. (A SCUD missile was destroyed by a Patriot missile over the SIPI housing compound in February 1991, and the remains fell into the compound. SIPI had two personnel in Kuwait at the time of the Iraqi invasion, and they became hostages until their return in December 1990.)

For its support of Operations Desert Shield and Desert Storm and the RSLFAAC, SIPI received awards from the 22d Support Command and the Army Aviation Association of America, and several SIPI employees received AVSCOM Commander's Medals for their performance at the TAMP. SIPI received high award fee ratings on the maintenance support services contract, which was a cost-plus-award-fee contract, as well as praise from AVSCOM.

SIPI was asked to submit after-action reports so Army aviation logisticians could benefit in the future from the information they contained. One such report detailed the TAMP–SWA Forward operation in Damman, noted deficiencies, and made recommendations on a broad range of topics, including supply, security, communications, cultural issues, and procurement. However, the overarching recommendation was that the TAMP concept be included in contingency planning for all operations involving Army aviation assets in a theater of operations.

This recommendation was echoed by Joseph P. Cribbins, who was then Special Assistant to the Deputy Chief of Staff for Logistics. When asked by the AVSCOM Command Historian if he thought the Army should incorporate the TAMP in future operations, Cribbins replied that he thought the TAMP was "one hell of a good idea; a precursor for the way to do things [in Army aviation] in the future." It obviously was. **ALOG**

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Managing Soldiers in the Theater Support Command

BY MAJOR GENERAL GEORGE WILLIAM WELLS, JR., USAR

In the second article of a three-part series, the author examines the foundation of the theater support command—its people—and what the Army needs to do to keep them and make them into an integrated team.

As I stated in an earlier article on the theater support command (TSC), "The heart of the TSC organization is its people." Teamwork and continuous improvement become empty concepts if TSC leaders cannot rely on the personal integrity of each member of the organization. The Army must foster those qualities in individuals that facilitate team achievement. Teamwork is the key to organizational harmony and improvement in the TSC, particularly since the TSC brings together personnel from the different cultures of the Active and Reserve components.

To repeat another point I made in an earlier article—

> As a TSC organization, we must strive for an attitude of professionalism in dealing within our structure and with other professional logisticians. Professionalism of the organization, founded on the integrity of the individual, provides the clear sense of mission loyalty and the "can do" attitude requisite for quality service.

A TSC is not the place for individuals to advance their personal agendas. Leaders must control the actions and attitudes of their subordinates for the good of the organization. When personal agendas are allowed to grow, the organization can be adversely affected. Negative statements by Active component TSC personnel directed toward Reserve component personnel can lead the Reserve component personnel to question their loyalty to the TSC and to seek other challenges. The result obviously is less than optimal.

Personnel Management

The Army continues to maintain separate personnel management systems for the Active and Reserve components. This situation can foster confusion because members of one component do not know, understand, and acknowledge the other component's personnel policies and processes. The simple act of filling in the correct heading on an Officer Evaluation Report (OER) can be confusing to administrative personnel from a different component. They struggle to determine which rules and regulatory guides apply to which component.

The Regional Level Application Software (RLAS) is the system used by the Army Reserve for soldier personnel actions. However, it has no interface with the Active component's Standard Installation and Division Personnel System (SIDPERS) database. Since the Army's recent mobilizations for the Global War on Terrorism, multicomponent Reserve units have been challenged to maintain their soldiers' pay, careers, and personnel actions while deployed. The Reserve elements of TSCs must request authorization from their Regional Reserve Command or the U.S. Army Reserve Command to deploy RLAS. Complicating such a deployment is the fact that RLAS is structurally coded to specific regions, not globally. When a non-regionally aligned Reserve element is located with other RLAS users, it cannot use the local RLAS configuration.

Many soldiers do not recognize that manning reports change frequently for Reserve component soldiers but remain relatively stable on the Active component side of the TSC. For example, when a Reserve lieutenant colonel is selected for promotion, he has 90 days to find a new assignment; however, unlike his active-duty counterpart, he does not have to wait for an extended period of time to pin on the eagles of a colonel.

Another common misunderstanding arises from the fact that Reserve component personnel, as citizen-soldiers, can be transferred in their civilian

jobs between drills. They can come in to drill, and, by the close of that drill, they have been transferred to another job. This complicates the tracking of soldiers and positions in the Reserve components and can be hard for active-duty soldiers to grasp. Resolving these challenges is critical to the successful administration of a dual-component headquarters and the interaction of staff principles, especially those involved in personnel management.

Down the road, the Army may create one personnel system. However, TSCs cannot wait for that. TSC leaders and administrative personnel must learn to use the respective Active and Reserve component personnel management systems. If TSCs are to have mixed, integrated headquarters, this is a must.

Career Progression

Arbitrary changes in modification tables of organization and equipment (MTOEs) create problems for Reserve component soldiers.

Like Active component soldiers, Reserve component personnel need to move to different positions to qualify for promotion and acquire leadership skills. When a position is eliminated in the Active ranks, the personnel system reassigns the soldier. However, when a Reserve position is deleted, the soldier normally needs to find a position in another organization for himself. Reserve component soldiers must be well managed by senior Reserve leaders to enhance the future strength of the Reserve structure. However, to really enhance the career progression of Reservists, the Active and Reserve component leaders of the TSC must work together for the benefit of the Reserve component soldier.

Another challenge for the TSC Reserve element occurs when mid-level officers assigned to a TSC are denied advanced course training opportunities because the Army has already trained them in a combat arms officer functional area. The TSC Reserve element has no funding to send the officers for training, and the Regional Reserve Command is unable to provide support. The result is that a quality officer is denied training for his assigned unit, and his unit's readiness reporting suffers accordingly.

As the TSC matures as an integrated organization, TSC leaders need to look at the challenges facing its assigned personnel. All soldiers, not just those of one component, must receive attention. If a slot is designated for a Reservist, a Reservist should fill it. Likewise, an active-duty soldier must be allowed to perform his skills in his assigned position. When leaders start placing personnel in positions intended for the other component, they begin to toy with a delicate structural balance as well as with the individuals involved. Soldiers should not arrive for duty only to find soldiers from another component performing their duties. The TSC needs to practice total integration, placing personnel where they are officially assigned to perform their missions.

Who should select personnel for the Reserve component positions in a TSC? Currently, senior noncommissioned officers (NCOs) and most enlisted personnel are centrally selected and positioned in Reserve component organizations. However, officer candidates are canvassed and approved for assignment by Reserve component senior leaders. Self-recruiting thus is a necessary activity for Reserve component officers. But making assignments in the TSC can be complicated. For example, who should fill a Reserve slot for a logistics (functional area 90A) officer? What role, if any, should Active component soldiers play in the process? If the senior section chiefs are active-duty soldiers, should they have the authority to make the assignment? If the answer is yes, a problem results because the most interested Reserve component individuals will not wait until this process occurs. The reality is that the TSC's Reserve component leaders should make the final determination of who is qualified to be placed where in the TSC.

Recruiting and Retention

What effect the current mobilizations will have on the retention of TSC Reserve personnel is still not clear. Will they stay, or will they go? Some members who joined for educational or financial reasons had no idea they would be called up for the current extended periods of deployment. Many of these individuals may leave the ranks when they return home.

The Reserve components have, and potentially will continue to have, mid-level management (officer and enlisted) shortages. These soldiers are the backbone of the Army. A TSC should have quality logistics experts holding down every authorized position. The Army cannot just pin on rank and expect logisticians to appear.

Throughout this extended period of deployments to Iraq and Afghanistan, Reserve component personnel will be challenged to adjust to a new and growing reality. Future Reserve drill weekends and annual training periods will require greater commitments. Deployments will remain a given for Reserve personnel. If the Army retains the Tier Rating and Department of the Army Master Priority List (DAMPL) priority procedures, the next time a TSC headquarters is moved forward, it will be faced with the cross-leveling of Troop Program Unit members who have never served in an echelons-above-corps (EAC) logistics organization.

Training

The Reserve component personnel in a TSC must be well trained and logistics minded. In Operation Iraqi Freedom, our logistics soldiers clearly demonstrated their ability to get the job done. Each soldier not only gained experience but also was cross-leveled into a number of other, related logistics skill sets. As a result, they now are more prepared than ever to deliver when called on. Logisticians were successful at the TSC level because TSC leaders prepared them to do their mission. TSC personnel trained hard at all levels through exercises and counterpart training. Once on the ground, they had the skill sets to carry out the daunting challenges that confronted them.

The great problem concerned soldiers who were cross-leveled into the TSC Reserve element as they mobilized before deployment or who reported to TSC units as fill-ins during the operation. The workings of an EAC organization are far different from those of organizations at a lower level. In the midst of preparing for deployment or during the intensity of logistics operations, there is little if any time to train. Those unfamiliar with the TSC's logistics activities had to learn on the go. This created rough edges within the staff and in serving external customers. Fortunately, leaders in most cases were able to provide a task-specific overview to assist new personnel.

Rating Scheme

The rating scheme presents a number of challenges to an integrated, multicomponent organization like a TSC. Ideally, the rating scheme should be fully integrated for both Reserve and Active component personnel. However, accomplishing that integration presents many challenges. The overriding issues are time and distance. How can ratings be fair when raters and those being rated have limited face-to-face interaction? How can face-to-face NCO rating requirements be accomplished? The different cultural and psychological concerns of the Reserve and Active components can form a barrier to achieving fair ratings.

During the current contingency, mobilized Reserve component soldiers received closeout ratings. This created a tremendous workload for Reserve and Active component staffs. As this process was unfolding, Reserve component soldiers were being placed under their Active counterparts' rating schemes. There was confusion about where they fit, and more confusion if they then were launched forward in a split-based operation. As the soldiers were redeploying, they were subjected to another closeout report, which created more confusion. Who was responsible for forwarding the closeout reports to the soldiers' files? What address was used for the senior rater on the OER? The differences in Reserve and Active component cultures added to the confusion.

At a minimum, senior TSC leaders should be part of an integrated rating scheme. This creates cooperation, develops loyalty, enhances integrated teamwork, and improves the functioning of the integrated multicomponent structure. It is to the senior Reserve soldier's advantage to be rated by an Active component leader. It creates more confusion if he is rated by the Reserve chain when he is working almost exclusively for the Active forces.

Active Guard/Reserve (AGR) MTOE soldiers who are positioned in the Active component also must have an integrated rating scheme. The AGR soldier is the senior Reserve component liaison on the ground and must represent the interests of the Reserve components. If the soldier is fully rated by the Active component, Reserve leaders lose any influence over him. In effect, the AGR soldier becomes just another Active component soldier.

A majority of rated Reserve component soldiers should be retained in a compartmentalized Reserve component rating scheme in peacetime. However, when the TSC is deployed in a true active-duty environment in a contingency, all soldiers should convert to an integrated rating scheme. Once the operation is over and the Reserves move back to a Reserve role, the compartmentalized rating scheme should return.

The compartmentalized rating scheme appears to be the best way to rate the majority of TSC Reserve component soldiers in the future. This reduces concerns about cultural turf and the fairness of ratings. However, an integrated rating scheme for senior Reserve component leaders is needed to attain a truly integrated, fully operational TSC headquarters.

Council of Colonels

The challenge of trying to make the multicomponent processes of the TSC work involves all EAC TSCs and a multicomponent council of colonels at the senior levels of the Army. The TSCs represent a unique element of the multicomponent community. The challenge of aligning the components in the TSC is daunting and raises the question of whether or not such an integrated headquarters is even needed. Who should spearhead the challenges of creating a seamless, integrated TSC headquarters?

Since TSC commanding generals usually cannot spend time on this matter, it falls to the TSCs' deputy commanding generals and chiefs of staff to work with the council of colonels to resolve issues affecting the TSCs. They express the immediate concerns of the TSC community to the council of colonels, along with

TSCs should use STAMIS technology to overcome the factors of time and distance that separate TSC elements, communicate and coordinate on a timely basis, and ensure that soldiers' STAMIS skills are used regularly and not allowed to fade with time.

suggested solutions. Providing a clear vision must be the goal of the representatives if the TSC is to be supportive, flexible, and forward leaning in logistics.

STAMIS Technology

For the most part, use of the Standard Army Management Information Systems (STAMIS) has been a TSC success story. TSCs should use STAMIS technology to overcome the factors of time and distance that separate TSC elements, communicate and coordinate on a timely basis, and ensure that soldiers' STAMIS skills are used regularly and not allowed to fade with time. Reserve and Active component leaders in TSCs have worked to ensure that appropriate technology is available to their soldiers.

Reserve component soldiers must be trained and certified in anticipation of an alert and follow-on deployment. Those holding key positions in an integrated staff sometimes need special training and updated technology so they can perform their missions. However, in some instances it appears that the funding of STAMIS training is still hung up in the cultural conflicts between the Reserve and Active components. Regardless of who is going to get STAMIS equipment and training, soldiers from both components must work together. The excuse that the Reserve element should be supported by the Army Reserve Command, even though it is under an Active component flag, makes little sense. Information technology will improve the ability of TSC soldiers to see, prioritize, and assess critical information for the logistics warrior. The Army needs to accept that, regardless of flag affiliation, training resources should be funded adequately for all soldiers in a TSC.

Army Reserve Relevance

Reducing the numbers of personnel in the Army Reserve raises the question of the Reserve's continued relevance. Certainly change is necessary. More important, however, is how we achieve that change. Studies show that a corporation's staying power is diminished as its structure is reduced. What message does the Army send when it continues to reduce personnel numbers? There is a point of no return.

Force structure change does have immediate consequences for a Reserve component member. Normally, Active component soldiers serve their tours and then are moved on to their next assignment by their personnel system. In contrast, Reserve component leaders constantly must be looking out for their soldiers and their future assignments and promotions. In a changing world, it may be harder to meet the logistics needs of an integrated headquarters. High-speed recruiting is critical to retaining vital professional logisticians.

Personnel who use the personnel system to duck alerts must be eliminated. Reservists must show the Army that they are in fact critical to the Armed Forces' logistics needs. The Army Reserve is the backbone component that provides the Army's needed logisticians.

The integrated, multicomponent TSC has been a great success. Unit packages incorporating a separate Reserve or Guard element in their overall structure have worked extremely well. However, an EAC integrated, multicomponent structure embodies tremendous challenges. Many of the issues facing TSCs remain unresolved despite lots of hard work. How does the TSC align itself in its present configuration with the concepts of One Army and transformation? Do we need to make changes? If so, what are they? Here are a few suggested changes to think about.

TSC commanding generals should have their deputy commanding generals get together to discuss, formulate, and share workable solutions to such issues as how to resolve differences in Reserve and Active component regulatory guidance. They need to create a future of better and more seamless internal operations in TSCs.

Collectively, TSCs must influence the various Army headquarters to make changes so TSC daily administrative needs, training, and operational mechanisms perform better. Regulatory guidance must be revised, or exceptions made to regulations, to improve the operations of TSC integrated headquarters. One clear need is to distinguish the

integrated, multicomponent headquarters structure from other Army multicomponent structures.

Headquarters personnel assigned to TSCs must be committed and must bring an attitude of teamwork and cooperation. Personal agendas can damage a fluid environment that needs teamwork and cooperation to function successfully.

Effective integration of the TSC multicomponent headquarters requires the integration of the rating schemes of Active component, Reserve component, and civilian personnel. To ensure that TSC personnel are loyal to the combined components of the TSC, Reserve and Active component soldiers need to be rated through an integrated rating mechanism. AGR officers and NCOs also must have an integrated rating scheme. This process must not be a pencil exercise but a meaningful rating process.

The TSC headquarters must enforce monthly exchanges among senior leaders, including routine visits by Active soldiers to Reserve elements on the latter's drill weekends. The exchange of working visits to Active and Reserve locations must be a normal aspect of business. Without these visits, the integration of TSC operations will be stymied by a lack of shared understanding and knowledge.

We must keep in mind that the Reserve components bring a cheap yet highly professional labor pool to the fight. The Reserves are the retention pool of logistics knowledge in the Army, especially for the TSC. The routine rotation of Active component personnel in and out of TSC assignments leaves the Reserve component soldiers in possession of the command's institutional knowledge. Recognizing Reserve component strengths and using techniques and materiel solutions that maximize the TSC's collective abilities will be the TSC's greatest future challenge.

Civilian planners are critical to the success of the TSC. To ensure stable TSC operations, civilians assigned to table of distribution and allowances positions should have job descriptions based on an 18-month tour at the TSC's Reserve element headquarters. Civilian planners provide solid support for the Reserve staff and can be helpful in integrating planning for operations outside of the continental United States.

The Army's proposed unit manning initiative (the practice of keeping soldiers together in a single unit for fixed periods of time) needs to be applied to the TSC. The result would enhance the TSC's capability to meet robust logistics requirements in a theater. Unit manning must apply to the Active as well as the Reserve elements.

Overseas deployment training (ODT) should be conducted by section when feasible. This would force each TSC directorate chief to work in a cohesive environment with all of his logisticians.

Reserve component personnel should receive more than ODT orders; they should be eligible for orders that allow them to operate in danger zones such as the Balkans. This will enhance the use of Reserve soldiers and minimize complaints by Active component soldiers about the value of Reserve soldiers on active duty. Combatant commanders should be authorized to determine policy in this area.

The senior leaders of the TSC headquarters' Reserve and Active elements must develop a memorandum of agreement (MOA) that ensures the headquarters' proper integration and operation. The senior leaders also must understand fully the MOA's contents. In fact, a number of MOAs are needed among the TSC's Active component headquarters, Reserve component headquarters, and senior headquarters above the TSC.

TSC leaders should be focused on organizational goals as opposed to component goals. This would reduce misunderstandings, foster growth within the organization, and influence better cooperation and knowledge.

Our Nation's ongoing military operations will affect the future of the TSC. Soldiers who leave the Army take with them the skills they have learned. No number of new recruits can immediately replace these skilled soldiers. However, with a solid foundation of supportive leadership, future training opportunities, career progression, and high morale, the Army should be able to maintain the numbers of skilled personnel it needs.

TSC leaders must think of the future growth of their personnel. They must forward proposals to move skilled military logisticians into positions of opportunity, in command or at schools. We cannot hold them back—that would be unprofessional. TSC commanders must be leaning forward in thought and action.

Leaders must recognize that, when deployments conclude or are winding down, soldiers must receive appropriate recognition of their sacrifices. Leaders must promote these events to the extent that the command fully engages in an appropriate "thanks." When done correctly, command recognition creates a lasting impression of gratitude in soldiers, which will increase bonding, organizational allegiance, and retention. Sincere leadership and care for the soldier are always the hallmarks of effective leadership. **ALOG**

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Fueling the Force at the JRTC

BY MAJOR STEPHEN R. DAVIS AND CAPTAIN PETER J. CRANDALL

Fueling the force challenges many of the rotational units at the Joint Readiness Training Center (JRTC) at Fort Polk, Louisiana, as they conduct operations on Cortina, the mythical island on which units at the JRTC fight. If not done correctly, fueling can severely distract the forward support battalion support operations officer and the brigade combat team S–4 and can consume most of their time, adversely affecting their ability to complete other mission-related tasks. The fuel challenge begins before the unit enters the training area and continues until the end of the rotation. A JRTC rotation is therefore an excellent training opportunity for the brigade combat team (BCT) fuel supply specialists—one not always available at the home station.

Fuel Forecast

Each unit must establish a fuel account and submit a fuel forecast during the planning phase of its JRTC rotation. To open a fuel account, the unit must provide the Fort Polk Directorate of Logistics (DOL) with an accounting processing code (APC), a Department of Defense activity address code (DODAAC), a signature card, and assumption of command orders.

The unit must submit its fuel forecast to the JRTC G–4 planner and to the DOL planner by D–60 (60 days before the operation begins). This forecast must include the needs of the BCT, the exercise support group (ESG), the logistics task force (LTF), the medical task force, any attached mechanized elements, and the aviation task force (AVN TF). The forecast must include a day-by-day total of the unit's fuel needs, starting with its first fuel draw and ending with its final draw before departing for home station. When forecasting the first fuel requirements, the unit must consider how its equipment will be transported to the JRTC—by rail, line haul, barge, or convoy. Unit logisticians must carefully coordinate with the AVN TF to estimate the number of hours the AVN TF will fly before entering the training area. Failure to anticipate these AVN TF fuel requirements can result in the consumption of thousands of gallons of unforecasted fuel.

Most units headed for the JRTC have historical data on the amount of fuel that their type of brigade has used during previous rotations. A unit that does not have such data on record can contact the JRTC Plans Division and Exercise Maneuver Control Logistics Plans Office for help in obtaining historical data from previous rotations. A review of the historical data is a good starting point for forecasting fuel needs. Once a unit receives the operation order from its higher headquarters, it can adjust its requirements on the logistics estimate.

The BCT must adjust its fuel forecast as the situation changes. Since Fort Polk's DOL keeps a limited amount of bulk class III on hand, units must notify DOL of changes to the forecast to allow DOL time to order additional fuel or decrease the amount ordered from the contractor. Failure to adjust the fuel forecast is a systemic problem that often occurs within a rotation. This problem may develop if the AVN TF is not monitored and synchronized. After several days of limited or no flying because of vehicle maintenance, safety down days, or adverse weather, a unit must adjust its fuel forecast with the ESG class III manager, who then will adjust it with the DOL. The need to adjust the fuel forecast should be stressed at logistics synchronization meetings.

Empty bladders of an Aerial Bulk Fuel Delivery System are ready for filling aboard an airplane.

At the end of the rotation, a unit must carefully balance fuel requirements against its on-hand stocks to ensure it is not left with thousands of gallons of excess fuel when it leaves Fort Polk.

Required Testing

Units must test their fuel filters before deploying into the training area. Barksdale Air Force Base, Louisiana,

will conduct these tests free of charge. At the D–90 logistics meeting between unit and JRTC representatives, the rotational unit will sign a memorandum of agreement with Barksdale Air Force Base to conduct the tests, which will include analyzing fuel samples from the ESG, LTF, AVN TF tankers, and forward support battalion (FSB). Test results on fuel samples delivered by 0700 will be available by 1300. The unit must submit a copy of the test results to the JRTC Plans Division and Exercise Maneuver Control Logistics Plans Office.

Fuel Types

All fuel available from Fort Polk's South Fort class III (bulk) storage point is JP8, which is certified for use in Army rotary-wing aircraft. Although most of the fuel used by units during a rotation will be JP8, a limited supply of gasoline or diesel fuel may be required. The needed quantities will depend on the type of equipment the unit deploys, such as generators, unmanned aerial vehicles, refrigerated vans, M-Gators, or commercial equipment. Once the fuel estimate is developed for these items, the unit must coordinate with the LTF or ESG to establish how the fuel will be delivered and in what type of container. This may become a challenge for units, particularly when the resupply must be accomplished aerially.

Proper planning and coordination of fuel operations is key to the success of a JRTC operation.

Delivery Means

By D–3, the BCT must submit its fuel resupply plan to the 21st Infantry Division G–4. This plan must show the requested delivery times, dates, and locations. Bulk fuel will be delivered to the BCT by truck from the LTF, by AVN TF rotary-wing slingload operations, or by Air Force fixed-wing flights. [The 21st Infantry Division is the fictional division that the BCT falls under during a rotation. It is made up of the Plans and Exercise Maneuver Control element of the JRTC Operations Group.]

Truck delivery will be used when the ground lines of communication (GLOCs) are open. When they are closed, bulk fuel will be delivered to the FSB by Air Force fixed-wing C–130 or C–17 aircraft to one of the JRTC's operational flight landing strips (FLSs). During the initial flow into the maneuver area, the BCT will receive a predetermined number of C–130 or C–17 sorties. In the past, units have used some of these sorties to deliver fuel blivets with the forward area refuel equipment.

Units must plan their fixed-wing fuel deliveries to be conducted by one of two methods—the Aerial Bulk Fuel Delivery System (ABFDS, or "bladder bird") or the wet-wing method. When the ABFDS is used, the bladders for the system are loaded into the cargo space of an aircraft. During this operation, no other cargo can be transported by the aircraft. Units should plan for the first bladder bird—on a fixed-wing aircraft or a replicated aircraft—to arrive on D+1. (A replicated aircraft is a fuel tanker from either the LTF or the ESG that is escorted by observer-controllers to the FLS.)

Based on the BCT fuel resupply plan, either the LTF or the ESG transports the fuel from Fort Polk to the aircraft staging airfield at the intermediate staging base in Alexandria, Louisiana, where it is transloaded into the ABFDS. The loaded aircraft then fly to the BCT area of operations, where the rotational unit has 20 minutes to download the 2,200 gallons of fuel from each aircraft. Once the fuel is downloaded, observer-controllers escort the tanker out of the area of operations. Units can expect two actual bladder bird missions per rotation. The remaining missions will be conducted using replicated aircraft until the GLOCs are open. No special equipment is required for the FSB or AVN TF to download the fuel when using the ABFDS.

The wet-wing defuel operation is another method for delivering fuel to a forward area when the GLOCs are not open for convoy operations. During this operation, fuel is transferred from C–130 or C–17 fuel tanks into the rotational unit's tankers. The amount of fuel that can be transferred depends on several factors, including the amount of fuel in the aircraft when it lands, the plane's follow-on mission, and the distance the plane will have to travel to refuel.

The advantage of wet-wing defueling is that additional cargo can be placed in the cargo space of the aircraft. During a May 2003 JRTC rotation, a C–130 that arrived with replacement personnel for the BCT conducted the wet-wing operation and left carrying casualties out of the BCT's area of operations. For many years, wet-wing operations were conducted primarily by Special Operations Forces; but, with recent requirements to move fuel forward without GLOCs, conventional forces have begun to use this method of fuel delivery.

The Petroleum and Water Department of the Army Quartermaster Center and School at Fort Lee, Virginia, published the "Joint Petroleum Logistics Planning Guide" that provides excellent information on the layouts and equipment required to conduct a wet-wing operation. Units planning wet-wing operations at the JRTC should practice conducting them beforehand.

Fuel tankers arrive at the flight landing strip to download fuel from the airplane.

If this is not possible, they should discuss the operation with airlift planners from the Air Mobility Warfare Center at Little Rock Air Force Base, Arkansas. These airlift planners arrange the airlift operations conducted during JRTC rotations and are a good source of information on how to arrange this type of training.

Fuel Synchronization

The BCT must address and synchronize fuel requirements at the daily logistics synchronization meeting. Needed adjustments to the fuel resupply plan must then be made with the 21st Infantry Division G–4 so that he can adjust the requirements he sends to the LTF. When the BCT does not know exactly how much fuel is on hand at the FSB, it may draw only a fraction of what was requested from the LTF tankers when they arrive at the FLS or brigade support area (BSA).

Synchronization is also an issue when the fuel tankers of the FSB leave the BSA to refuel elements of the BCT. If the fuel resupply is not synchronized, fuel may arrive from the LTF when the FSB tankers are not available to transfer it. This causes the backhaul of thousands of gallons of fuel by the LTF tankers, places a valuable asset at risk of enemy contact, and wastes assets needed to support other brigades that actually need the fuel.

Assuming positive control of fuel resupply is another area units must plan for in the daily synchronization meeting. The fuel resupply that arrives at the FLS at 0600 on D+3 may be intended for the AVN TF. However, if fuel resupply is not coordinated correctly, it becomes a first-come, first-served operation. For example, the S–4 and the support operations officer may think that the AVN TF received their fuel resupply when the fuel tankers of the heavy task force actually received the fuel. The bottom line is that the support operations officer should be the single point of contact, and all requirements should go through the Support Operations Section.

LTF Roles and Responsibilities

The LTF that deploys to the JRTC in support of the BCT is responsible for delivering bulk fuel to the brigade and supporting the medical task force. Before it deploys, the LTF must know what is expected of it and what equipment it will need to support the BCT. The LTF, BCT S–4, and FSB support operations officer must discuss this subject before they arrive at the JRTC. Army Forces Command (FORSCOM) Regulation 350–50–2, Training at the JRTC, authorizes the LTF to deploy with a petroleum, oils, and lubricants (POL) truck platoon. The success of the operation depends on units deploying with the equipment authorized for this function. The pre-positioned equipment fleet at the JRTC offers tank pump units and M967 tankers but no M978 or M969 tankers.

Units should continue to take advantage of the multiple training opportunities in fuel operations that become available during a rotation. If a unit has specific training objectives in mind, such as setting up and operating their fuel system supply point or providing multiple wet-wing opportunities, it should address them with the JRTC Plans Division at the D–210 logistics meeting between unit and JRTC representatives. This will give both the rotational unit and the JRTC Operations Group time to fit the training objective into the rotation.

Proper planning and coordination of fuel operations is key to the success of a JRTC rotation. Starting early in the planning process and keeping fuel requirements updated and synchronized throughout the exercise will help ensure that the BCT has the fuel it needs when it needs it. Ensuring that the BCT is fully fueled for the fight will remain an important aspect of the logistics battle, whether the unit is at the JRTC or deployed in support of an actual combat operation. **ALOG**

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Captain Peter J. Crandall is the Senior Supply Company Observer-Controller at the JRTC at Fort Polk, Louisiana. He has a bachelor's degree in business administration from Concordia College in Moorhead, Minnesota, and is a graduate of the Quartermaster Officer Basic Course, the Combined Logistics Officers Advanced Course, and the Combined Arms and Services Staff School.

LOG NOTES

Single Fuel Characteristics

Your July–August 2004 issue contains a well-written and very informative article that warrants some clarification. The article "Analyzing the Lessons of OIF Distribution" gave considerable insight on how to apply lessons learned. However, two statements in the Fuel Supply paragraph should be clarified.

The statement ". . . using a single fuel (JP8, with additives as needed) and having that fuel available in Kuwait" is questioned. JP8 already contains three mandatory additives that transform commercial ASTM Jet A–1 into JP8. No other additives have been officially approved for JP8 when it is the single fuel used on the battlefield.

The second statement in question is "Not only did the use of JP8 save lives because it is less combustible than most other fuels (which kept tanker fires to a minimum . . .)." When the single fuel concept was introduced in the late 1980s and early 1990s, the potential vulnerability of JP8 surfaced, as JP8 has a slightly lower "flash point" than conventional diesel fuel (Grade DF2). Comparative flammability testing was conducted in early 1991, using both laboratory flammability testing and ballistic testing with 20-millimeter HEIT ammunition. In comparing Jet A–1 to diesel fuel (Grade DF2) in three operational scenarios (logistics and handling, peacetime vehicular use, and combat hostilities), the tests revealed that using JP8 or Jet A–1 would create no increase in hazards during peacetime logistics and handling, a slight increase in hazards during peacetime vehicular use, and some increase in hazards during combat. This report did recommend additional full-scale testing to confirm these findings.

Maurice E. Le Pera
Harrisonburg, Virginia

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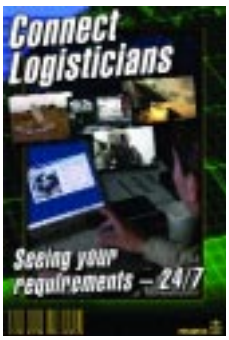
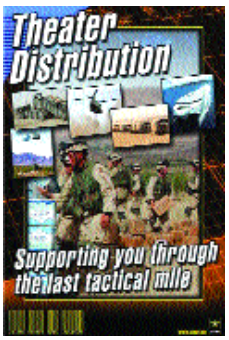
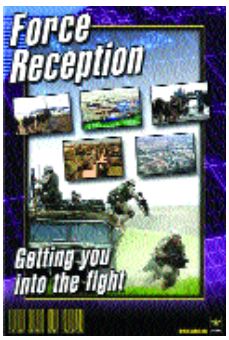
Order Logistics Transformation Posters

Army logisticians and other interested parties can obtain copies of the five posters on Army Logistics Transformation created by the Office of the Army Deputy Chief of Staff, G–4. To order a particular poster or the entire series of five, call the G–4 at (703) 697–6666 or email tellarmyg4@hqda.army.mil. A USPS address must be provided to facilitate mailing. The posters will be mailed to requestors in tubes. The posters also can be downloaded from the Web at www.hqda.army.mil/logweb (click on "Our Focus"). The first poster in the series was included in the July-August issue of *Army Logistician*.







ALOG NEWS

(continued from page 1)

SENSE-AND-RESPOND PROTOTYPE COULD TRANSFORM RESUPPLY

The Department of Defense (DOD) Office of Force Transformation, in partnership with a Washington-based company, Synergy Inc., is testing a prototype resupply system that may help solve the type of resupply problems experienced in the early days of Operation Iraqi Freedom. The new resupply prototype views all military units—both combat and support—as potential resuppliers for forward-deployed forces.

During the military's rapid march to Baghdad, Iraq, early last year, logistics trains found it difficult to keep up with the fast-moving combat troops. Necessary maintenance and the delivery of urgently needed spare parts and supplies were delayed as a result.

Resupply problems have heightened since asymmetric warfare has become the norm for military engagements. Logistics systems that were designed to resupply units engaged in force-on-force battles have difficulty supporting combat units that are battling terrorists and other unpredictable threats.

"The more we operate using our traditional processes, our traditional structures and attrition-based [logistics] models, parts of our machinery are getting less effective on the battlefield," said Navy Captain Linda Lewandowski, who heads the new Sense-and-Respond Logistics (SARL) project in the DOD Office of Force Transformation.

The prototype being tested uses a version of SARL. When a field commander requests more ammunition, for example, the logistics network will query all nearby combat and support units to see where ammunition might be located. The units will respond, either automatically or manually, and the system will decide which units can best fill the order based on distance, time required, mission priority, and other variables.

The prototype has gone through six limited technical assessments and was tested in July by elements of the I and III Marine Expeditionary Forces of Marine Forces, Pacific. According to Fred Czerner, Vice President of Technology Services at Synergy, Inc., the experiment, although small in scale, will demonstrate the system's ability to sense a need and respond to it. Czerner believes that a major exercise that is oriented specifically toward sense-and-respond concepts and technologies will be conducted some time in the future. "Logistics does not play in most of the exercises, wargames, and experiments today to any large measure. Normally, it's an operational result that you're seeking, and logistics sometimes gets in the way of doing an operational training event."

The steep cultural learning curve involved in the logistics transformation effort also has delayed larger DOD experiments. "The other reason for doing small and . . . relatively simple [testing] is that's what the culture can bear right now," Lewandowski said. "Can the technology do more? Yes."

AMC OFFERS LESSONS LEARNED SYSTEM

To improve its support to soldiers, Army civilians, and contractors and to the development of new technologies, the Army Materiel Command (AMC) has created an online system for recording the critical observations and comments of personnel in the field. Originally focused on lessons learned from Operations Enduring Freedom and Iraqi Freedom, the new system—AMC Lessons Learned (AMCLL)—allows all Army personnel to submit their comments using a Non-secure Internet Protocol Router Network (NIPRNET) or Secure Internet Protocol Router Network (SIPRNET) connection on any outstanding materiel or logistics issue. Those with SIPRNET access also can view the action plans and progress of proponent agencies in finding adequate solutions to the challenges facing warfighters and their civilian supporters.

Using a modified and expanded Joint Universal Lessons Learned System (JULLS) format, the AMC Lessons Learned Team created Web-based collection tools that gathered 267 separate observations from across AMC from July to September 2003. These results were presented to the AMC Lessons Learned Conference held in September at Redstone Arsenal, Alabama. The team then grouped similar observations into action plans. With many of these action plans assigned to AMC proponents for development, the entire command has been able to participate in developing future doctrine and policy.

The NIPRNET and SIPRNET collection tools went live in January 2004. The AMC Lessons Learned Team has continued its collection efforts on Enduring Freedom and Iraqi Freedom planning and

on the execution of such programs as the Logistics Civil Augmentation Program (LOGCAP), Army Pre-positioned Stocks (APS) quality and sustainment, and contractors on the battlefield. The team is working to expand the system's scope by collecting data on the Army's equipment Reset program, AMC support of Stryker combat vehicle deployment, AMC actions supporting the Army's transition to Unit of Action and Unit of Employment modularity, and continuing support of contingency operations overseas and at home.

AMC is seeking more input from military and civilian personnel across the Army to expand on the project's initial success. The AMC G–3 has already begun to use the AMCLL system to both evaluate and develop solutions to operational observations and to reevaluate those solutions and action plans through the use of data collected during subsequent AMC exercises.

Personnel may submit observations and comments based on their field experiences and view the action plans and lessons learned database on the SIPRNET connection at hqamc-web.army.smil.mil/AMCLL/SecurityMsg.aspx. Those using the NIPRNET-based site can contribute their observations by reaching the data collection site at www.amc.army.mil/G3/AMC-LL/SecurityMsg.aspx. At this time, only SIPRNET users may view the database and action plans.

For more information, send an email to charles.baldwin@us.army.mil or david.muhlenkamp@us.army.mil or call (703) 806–9340 or –9341 (DSN 656–9340 or –9341).

CSS VSAT CONNECTS LOGISTICIANS

A prototype satellite communications system promises to give forward-deployed combat service support (CSS) units communications capabilities equal to those used in garrison. The system, CSS Very Small Aperture Terminal (VSAT), can be operational within an hour of a unit's arrival in the theater.

CSS VSAT, when used in connection with the Multi-Media Communications System and the CSS Automated Information Systems Interface, provides worldwide voice, video, and data communications capability for forward operating bases. With this system, CSS units can share documents, process requisitions, conduct online meetings, send and receive text messages, and use the system as a short-range telephone. The system acts as a combat multiplier by increasing operational readiness while reducing the downtime of combat systems.

Packaged in five transit cases, the VSAT system includes built-in global positioning system receivers, a motorized satellite antenna, and a laptop computer that runs the CSS VSAT software program. The software enables the user to set up a satellite communications link and acquire Non-secure Internet Protocol Router Network (NIPRNET) access almost anywhere in the world by automatically orienting the antenna using a global positioning system, determining which satellite will be used, configuring the modem, and pointing the antenna.

The Army Product Manager for Defense Wide Transmission Systems (PM DWTS) developed the CSS VSAT system using commercial off-the-shelf technology and fielded a prototype of the system to the 3d Infantry Division (Mechanized) (3ID) at Fort Stewart, Georgia, in early May. The PM DWTS fielding team trained the soldiers on how to assemble and operate CSS VSAT before they deployed to the National Training Center (NTC) at Fort Irwin, California, where they would test the system. Once the division had the system up and operating at the NTC, the fielding team went to each unit and added capabilities beyond the transmission of data. These included text messaging, text conferencing, collaboration software, and Voice Over Internet Protocol (VOIP) telephone capability. These capabilities allowed soldiers to conduct meetings, request assistance, and confer with one another without having to travel, saving them the time and effort of arranging transportation and traveling, and increasing their safety by keeping them off of roads.

Major Geoff DeTingo, G–4 planner for 3ID, was very impressed with CSS VSAT, saying, "This system is amazing. You want to talk performance indicators? Generally speaking, on rotation, it's 1 to 4 days before there are communications and everybody's talking. With VSATs, everybody was up on the first day within hours. Over the first four days, more than 2,500 electronic parts requisitions were sent via VSATs—more than double the normal requisition data flow."

PM DWTS had previously fielded a limited number of the prototype CSS VSAT to forward-deployed CSS units in Operation Iraqi Freedom, where the system also received high marks. "The reliability and performance of the VSAT has truly been extraordinary," Chief Warrant Officer (W–2) Brian Wimmer, automation management officer for the 4th Infantry Division in Iraq, said. "The benefits of

having dedicated VSAT resources are undeniable." The fielding of production terminals to support 3ID transformation is scheduled for completion in September.

SDDC IMPROVES WEB SITE FOR TRANSPORTATION CALCULATIONS

The Military Surface Deployment and Distribution Command (SDDC) is making several improvements to the Defense Table of Official Distances (DTOD) Web site. The DTOD program provides official distance mileage calculations for Department of Defense (DOD) activities worldwide. SDDC operates and maintains the DTOD program for all of the armed services and Defense agencies. DTOD mileage calculations support payments of temporary duty (TDY) and permanent change of station (PCS) moves and movements of DOD cargo and household goods. Commercial freight and household goods carriers use DTOD mileage information to calculate their rate submissions.

The improvements to the DTOD Web site will allow users to—

- Change the font size initially shown for more comfortable viewing without having to reconfigure their browser options or change Web pages.
- Ask questions through a new, dynamic help system that displays links to frequently asked questions ("FAQs") and "Help Topics" on every page of the Web site. These features will put answers and assistance on the same page with the question.
- Access a new "Quick Trip" window that puts an authenticated user one click away from obtaining a distance.
- Use a new "Route History" capability that saves the last 10 routes calculated for each user. Users can fill out the "Trip Entry Form" with just one click if they are pulling the route from their individual route history. This gives users greater flexibility for comparing routes and computing more than one leg of a trip without needing to open multiple browsers.
- Transition more easily between regions and route types by using an enhanced "Trip Entry Form."
- Benefit from enhanced "Maps" support. Maps will be easier to use because of "point-and-click" panning, removal of confusing symbols on maps, and simplified directions that will make comparisons of directions easier to perform.

SDDC expects to implement all of the enhancements by 1 October. The DTOD Web site is at http://dtod.sddc.army.mil.

BDU REPLACEMENT INTRODUCED

After two decades as the Army's standard field clothing, the battledress uniform (BDU) will be replaced. In June, the Army unveiled its successor, the Army combat uniform (ACU), a new design based on input from noncommissioned officers and enlisted soldiers. The wrinkle-free uniform with a digitized camouflage pattern was field tested by Stryker brigade soldiers at Army training centers and in Iraq.

The ACU incorporates 18 changes to the BDU, and the camouflage pattern was changed to a green and sandy brown adaptation of the Marine Corps uniform digital print.

The ACU will consist of a blouse, trousers, moisture wicking t-shirt, and brown combat boots. It will replace both versions of the BDU and the desert camouflage uniform. Although the black beret will be the normal headgear for the ACU, a matching patrol cap is available to be worn at the commander's discretion.

The changes include—

- A mandarin collar that can be worn up or down.
- Rank insignia centered on the front of the jacket.
- Velcro for attaching the unit patch, skill tabs, and recognition devices.
- Zippered front closure that opens from the top and bottom.
- Elbow pouch for internal elbow pad inserts.
- Knee pouch for internal knee pad inserts.
- Drawstring leg tie.
- Tilted chest pockets with Velcro closure.
- Three-slot pen pocket on bottom of sleeve.
- Velcro sleeve cuff closure.
- Shoulder pockets with Velcro.
- Forward tilted cargo pockets.
- Integrated blouse bellows for increased upper body mobility.
- Integrated friend or foe identification square on both left and right shoulder pocket flaps.

The Army combat uniform's design is based on soldier recommendations.

• Bellowed calf storage pocket on left and right leg.
• Moisture-wicking desert tan t-shirt.
• Patrol cap with double-thick bill and internal pocket.
• Improved hot-weather desert boot or temperate-weather desert boot.

Each change was made for a specific purpose. For example, the bottom pockets were removed from the jacket and placed on the shoulders so soldiers can access them while wearing body armor. "This isn't about a cosmetic redesign of the uniform," said Colonel John Norwood, the Project Manager for Clothing and Individual Equipment at Program Executive Office Soldier. "It's a functionality change of the uniform that will improve the ability of soldiers to execute their combat mission."

The Army will begin fielding the ACU to deploying units in April 2005, with a completion date of December 2007 for fielding to the entire Army. The ACU will cost $88, which is $30 more than the BDU. However, since the ACU is made of permanent press fabric, and soldiers will no longer have to pay to have patches sewn on, uniform maintenance costs are expected to be lower than they are for BDUs.

ARMY MODULARIZATION SCHEDULE SET

As the Army transforms, it is converting its active divisions to modular, brigade-plus-sized units of action. The first division to complete this conversion was the 3d Infantry Division (Mechanized) at Fort Stewart, Georgia, which grew from three brigade combat teams to four as it became a modular combat force. The Army plans to convert the nine remaining divisions to units of action by fiscal year 2007.

The conversions will be completed as follows: The 101st Airborne Division (Air Assault) at Fort Campbell, Kentucky, will convert this fiscal year. In fiscal year 2005, the 4th Infantry Division (Mechanized) at Fort Carson, Colorado, and the 10th Mountain Division (Light Infantry) at Fort Drum, New York, will convert. The 1st Cavalry Division at Fort Hood, Texas, the 25th Infantry Division (Light) at Schofield Barracks, Hawaii, and the 82d Airborne Division at Fort Bragg, North Carolina, will convert in fiscal year 2006. Pending funding and approval by the Department of Defense, the 2nd Infantry Division in South Korea, the 1st Infantry Division (Mechanized) in Wurzburg, Germany, and the 1st Armored Division in Wiesbaden, Germany, are scheduled for conversion in fiscal year 2007.

The Army National Guard also will begin modularizing its brigade combat teams into units of action, starting next year with three brigades. Six additional National Guard brigades are slated for modularization each year between fiscal years 2006 and 2010.

Modularization will affect about 100,000 positions. Many soldiers in less needed Cold War specialties, such as field artillery and air defense, will have to retrain for positions in greater demand today, such as infantrymen, military police, civil affairs specialists, and truck drivers.

The modularization is the largest restructure the Army has made in 50 years.

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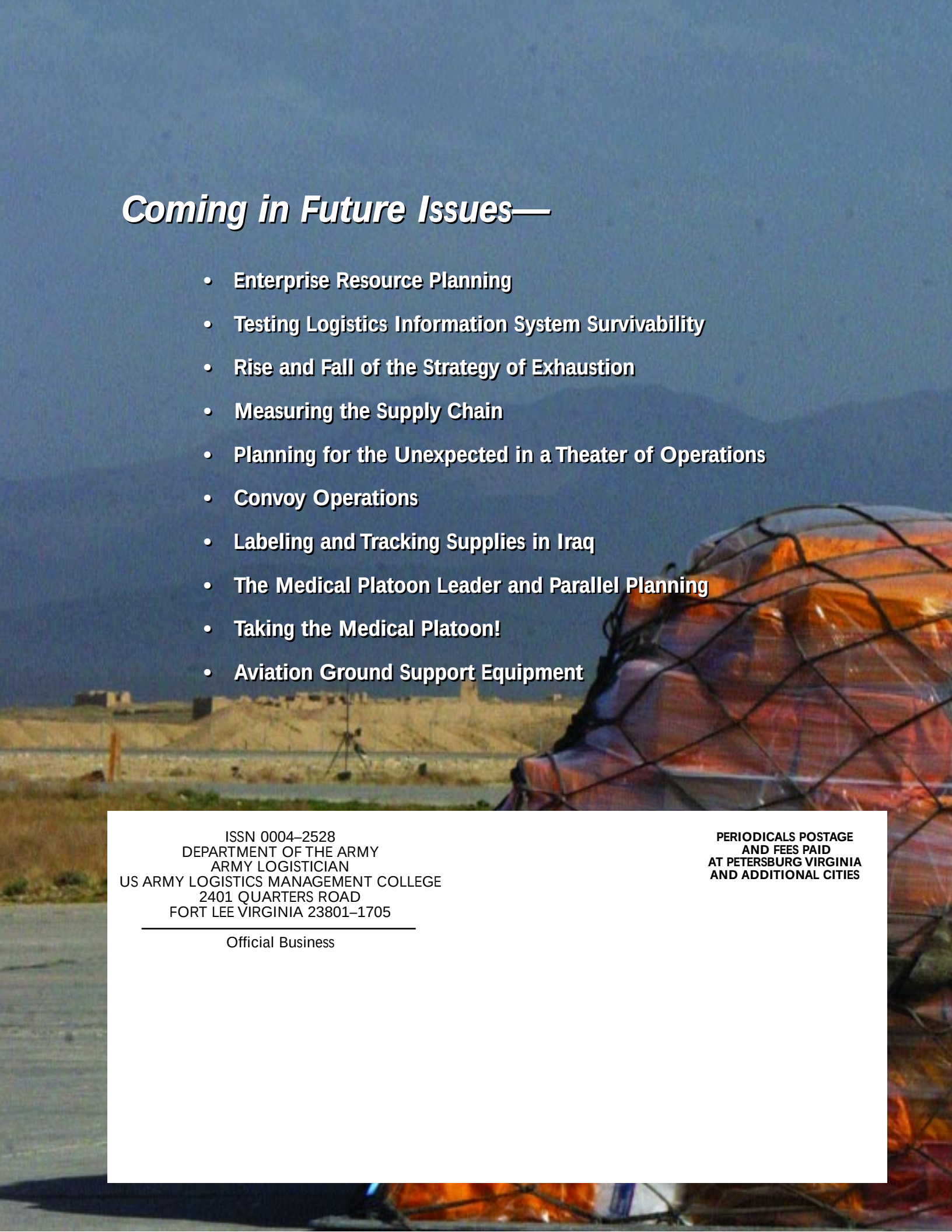

Coming in Future Issues—

- Enterprise Resource Planning
- Testing Logistics Information System Survivability
- Rise and Fall of the Strategy of Exhaustion
- Measuring the Supply Chain
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