

ARMY LOGISTICIAN

40 YEARS 1969-2009

MARCH-APRIL 2009

Joint Logistics Over-the-Shore: Pacific Strike

Convoy, Not CLP:
Defining a Logistics
Core Competency

Preparing
for the SBCT's Blue
to Green Transition

First Female
CW5 in the
Transportation Corps

ARMY LOGISTICIAN

PROFESSIONAL BULLETIN OF UNITED STATES ARMY LOGISTICS

PB 700-09-02
VOLUME 41, ISSUE 2
MARCH-APRIL 2009

BOARD OF DIRECTORS

Chairman

Major General James E. Chambers
Commander
Army Combined Arms Support Command

Members

The Honorable Dean G. Poppo
Acting Assistant Secretary of the Army
Acquisition, Logistics, and Technology

Lieutenant General Mitchell H. Stevenson
Deputy Chief of Staff, G-4
Department of the Army

General Ann E. Dunwoody
Commander
Army Materiel Command

ARMY LOGISTICS MANAGEMENT COLLEGE

Colonel Shelley A. Richardson
Commandant

Barbara G. Mroczkowski
Assistant Commandant

STAFF

Robert D. Paulus, Editor
Kari J. Chenault, Associate Editor
April K. Morgan, Assistant Editor
Julianne E. Cochran, Assistant Editor
Louanne E. Birkner, Administrative Assistant

Graphic arts and layout by
RCW Communication Design Inc.

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

By Order of the Secretary of the Army:

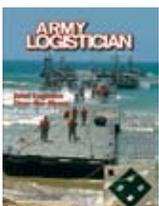
GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:


JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army
0900802

World Wide Web address:
www.almc.army.mil/alog

- 1 **From CASCOM: Convoy, Not CLP: Defining a Logistics Core Competency**
—Major General James E. Chambers
- 4 **Lean Fielding: Reducing Equipment Redundancy**
—Major Todd J. Wright
- 7 **Acquisition and PBUSE**—Pablo A. Brown and John E. Laudan
- 10 **The Army's Impact on the Fuel and Lubricant Industry**
—Maurice E. Le Pera
- 16 **RSR and CSR: Why the Confusion?**—Dr. Thomas E. Ward II
- 20 **Expeditionary Logistics in Its Truest Form**
—Lieutenant Commander Richard A. Paquette, USN
- 24 **The 8th Theater Sustainment Command Leads the Way During Pacific Strike 2008**—Brigadier General Mark MacCarley and Lieutenant Colonel Brian F. Coleman
- 29 **Logistics Transition Team**—Captain David A. Betancourt
- 30 **Preparing for the SBCT's Blue to Green Transition**
—Chief Warrant Officer (W-3) Adam S. Hagenston
- Spectrum**
- 32 **Army Logistics Knowledge Management and SALE: A Paradigm for Military Logistics Transformation**—D r. Nicholas J. Anderson
- 38 **Commentary: Contingency Contracting Ruminations and Recommendations**—Lieutenant Colonel Russ Dunford
- 43 **R & R: Reading and Reviews**
- 45 **News**
- 49 **Writing for Army Logistician**



Cover: Since World War II, the Army often has faced the challenge of deploying troops and materiel onto undeveloped shores or to areas without usable port facilities. The solution has been joint logistics over-the-shore (JLOTS) operations, in which the Army and the Navy work together to move a ground force directly from ship to shore. The articles beginning on pages 20 and 24 describe the largest JLOTS exercise ever held in peacetime, the U.S. Transportation Command's Pacific Strike 2008 in California. A JLOTS operation requires much specialized equipment, including the Army's floating causeway trident pier shown on the cover. The trident pier allows Army and some Navy watercraft to unload rolling stock across the surf zone onto a beach.

Convoy, Not CLP: Defining a Logistics Core Competency

BY MAJOR GENERAL JAMES E. CHAMBERS



The dispersed nature of operations and the asymmetric character of the battlefield in Iraq and Afghanistan have dissolved the traditional distinction between the front and the rear and exposed logisticians to the enemy as never before. Nowhere in Operations Enduring Freedom and Iraqi Freedom has this elevated level of exposure been more evident than on convoys moving supplies, equipment and personnel across a widespread area of operations.

These operational conditions have led to the coining of a new term, “combat logistics patrol,” or “CLP.” Many commanders believe that use of the term CLP has brought focus within the theater that a convoy is not an administrative movement of supplies but instead a combat operation. The intent is good; however, using the term “CLP” can lead to confusion and unintended consequences.

A review of doctrine, together with consideration of historical and recent lessons learned, supports the conclusion that there are significant and compelling reasons to reinforce the use of the simple doctrinal term “convoy.” Let’s look at some of them.

The most significant reason supporting the use of the term “convoy” is to prevent mission confusion. According to Joint Publication 1–02, Department of Defense Dictionary of Military and Associated Terms, dated 12 April 2001 (as amended through 17 October 2008), a convoy is defined as “a group of vehicles organized for the purpose of control and orderly movement with

Soldiers of the 703d Brigade Support Battalion, 4th Brigade Combat Team, 3d Infantry Division, conduct a logistics convoy to Forward Operating Base Endeavor, Iraq. Such convoys are a logistics core competency. (Photo by LTC John Chadbourne, 4th Brigade Combat Team, 3d Infantry Division, PAO)

or without escort protection that moves over the same route at the same time and under one commander.” The same publication defines a patrol as “a detachment of ground, sea, or air forces sent out for the purpose of gathering information or carrying out a destructive, harassing, mopping-up, or security mission.”

While it is true that gathering information is an important specified task of a convoy operation, as shown in the above definitions, the objective of a convoy is not to “carry out a destructive, harassing, mopping-up, or security mission”; therefore, by definition, a convoy is not a patrol. When you also consider the fact that there is no Department of Defense-recognized definition of CLP, you get a recipe for mission confusion, with potentially disastrous results. While the convoy mission-essential task list (METL) requires Soldiers to defend the convoy and neutralize the enemy, there is also a very real possibility that convoy commanders may lose focus that the primary objective of a convoy is delivery of supplies to the right place, at the right time, and in the right quantities. Failure to accomplish that mission can lead

to catastrophic results. From a historical perspective, the term “convoy” originally referred to any column of vessels or vehicles under an armed escort. A column of vehicles without an armed escort was referred to as a “train.” When the linear battlefield evolved with its front line and relatively safe rear during World War I, armed escorts were not needed for supply trains, but the term “convoy” remained in vogue.

Convoys in the past have been the target of attacks by an elusive enemy. The 8th Transportation Group, while conducting operations in South Vietnam, employed the first gun trucks to effectively repel the attacks of a deceptive and determined enemy. Gun trucks escorted convoys in Vietnam for 5 years without adopting a new term to replace “convoy.” This history underscores the fact that there is no doctrinal gap in conducting tactical convoy operations and no need to add to, or modify, the doctrinal term “convoy.”

Two more important reasons to continue to use the term “convoy” are to limit redundancy and maintain

consistent doctrinal taxonomy. The qualifier “combat” is not used to describe any other logistics operations in theater that face the same threats, such as “combat feeding,” “combat re-supply/tailgate operations,” or “combat vehicle recovery,” so “combat” should not be used in doctrine to replace or unnecessarily qualify the root taxonomy (the simple term “convoy”) when discussing convoys. Terminology becomes a Pandora’s Box when opened for anyone who wants to “leave their mark” by coining a new phrase.

The Combined Arms Support Command (CAS-COM) is taking steps to reinforce the doctrinal term “convoy” and to eliminate the use of the term “CLP.” These measures include—

- Ensuring that all Army field manuals only use the doctrinal term “convoy.”
- Ensuring that the combat training centers and Army Training and Doctrine Command schools coach, teach, and mentor that convoys executed in a hostile environment are to be treated, planned, and resourced

A logistics convoy of the 782d Brigade Support Battalion, 4th Brigade Combat Team, 82d Airborne Division, returns from a mission in Paktika Province, Afghanistan. Current operations in both Afghanistan and Iraq have reinforced the reality that logisticians can face danger every time they head out on the road. (SPC Micah Clare, 4th Brigade Combat Team, 82d Airborne Division, PAO)





At top, military and contracted vehicles await to depart on logistics convoys in Kuwait. Convoys crossing often difficult and dangerous terrain have become a salient feature of Operations Iraqi Freedom and Enduring Freedom. Above, logistics convoys prepare for departure in South Vietnam. Convoys in the Vietnam War, like those in Iraq and Afghanistan today, were potential targets of a deceptive enemy.

like any other form of maneuver or combat operation—troop-leading procedures are key.

All leaders need to emphasize in training and enforce in the field that convoys are a logistics core competency and that, like the jobs of all Soldiers, they are inherently dangerous and can lead to deadly encounters with the enemy. Logisticians, like all Soldiers, face danger every time they head out on the road—a reality recognized by their eligibility for the Army’s new Combat Action Badge.

Professions have some common characteristics. Among them are a seriousness of discourse and a unique lexicon. A doctor who routinely used inexact

terms in his diagnosis would rightfully risk both the lives of his patients and his professional reputation. Our standards should be no less exacting. A patrol is no more a convoy than a heart attack is a stroke. The term “convoy” does not need modification or addition; it can stand alone as embodying the logistician’s professionalism and willingness to face danger to accomplish the mission.

ALOG

MAJOR GENERAL JAMES E. CHAMBERS IS THE COMMANDING GENERAL OF THE ARMY COMBINED ARMS SUPPORT COMMAND AND FORT LEE, VIRGINIA.

Lean Fielding: Reducing Equipment Redundancy

BY MAJOR TODD J. WRIGHT

When Soldiers reported that they were receiving duplicate equipment under the Rapid Fielding Initiative, Program Executive Office Soldier responded by developing a new process to ensure that they receive exactly what they need—no more and no less.

The Army created Program Executive Office (PEO) Soldier to develop the best equipment for the best Soldiers in the world, and the central focus of PEO Soldier has always been exclusively on Soldier needs. Whether it is the mobility, survivability, or lethality equipment that PEO Soldier develops, tests, and procures, or the process PEO Soldier uses to field its equipment to meet force demand, it is the Soldiers who ultimately define quality in products and services. In Lean Six Sigma (LSS) terms, the “voice of the customer” is critical to PEO Soldier’s success in meeting Soldier requirements. PEO Soldier’s Rapid Fielding Initiative (RFI) office, from the director to each member of each fielding team, follows this principle as it seeks to improve its services to Soldiers. The development of PEO Soldier’s new “Lean Fielding” process stems directly from adhering to the principle of listening to Soldiers.

Growth of RFI

In 2002, the Chief of Staff of the Army directed PEO Soldier to create a quick-fielding process for deploying units. PEO Soldier responded with a centralized rapid-fielding arm for critical modernization equipment—the RFI office. At the start of the Global War on Terrorism in Afghanistan, Soldiers and units bought equipment out of their own pockets to fill their required combat capabilities. From after-action reviews and lessons learned, Soldiers indicated that they wanted the most modern equipment made available through the supply system before they deployed. Their voice was the genesis of the RFI.

As part of its mission, the RFI has continually evolved to meet individual, unit, and Army requirements. Over time, the number of items fielded and the processes used by the RFI have changed to meet the dynamic requirements of the battlefield.

The initial RFI list consisted of 15 nonstandard items. Later, the Army Training and Doctrine Com-

mand identified and standardized 49 essential items of equipment required by forces in theater, and it continued to modify the RFI list through the Soldier-as-a-System Integrated Concept Team. Under the direction of Department of the Army headquarters, RFI streamlined the process for distributing equipment and ensuring that all deploying Soldiers—Active Army, Army National Guard, and Army Reserve—were equipped with the most advanced individual and unit equipment available.

In 2004, the Chief of Staff expanded the RFI mission to equip the operating Army by the end of fiscal year 2007. By December 2007, RFI had fielded items to over 1 million Soldiers, equipping the entire Active Army at least once and 60 percent of the Reserve component. The equipment list had grown to 84 items to meet the equipping and modernization requirements of our Soldiers to fight and win in the dynamic environment of full-spectrum military operations. The expansion of the RFI equipment list and its truly remarkable reception by Soldiers and units led to further evolution. RFI has been extended indefinitely beyond its scheduled completion date of the end of fiscal year 2007 to provide continuing support for the Global War on Terrorism.

Applying Lean Six Sigma to Process Improvement

While Soldiers have embraced the RFI process, they recently identified one noteworthy problem area in the RFI process: Their clothing records having duplicate items that were previously issued. In response to this message from Soldiers, RFI’s deputy director, and Lean Fielding Project sponsor, created an LSS team to identify the underlying problem that was causing redundancies in equipping Soldiers, especially with recoverable items. The methodology used by the RFI LSS team combines the principles of Lean (reducing and eliminating non-value activities) with Six Sigma (reducing variation and increasing quality) to improve process efficiency and effectiveness. This



Soldiers of the 10th Mountain Division (Light Infantry) at Fort Drum, New York, receive equipment through the Rapid Fielding Initiative.

industry-proven process improvement methodology focuses on providing the customer with speed and quality, improving processes, working with stakeholders, and basing decisions on data and facts using the “DMAIC” (define, measure, analyze, improve, and control) roadmap.

The “define” phase establishes the foundation for the project and the path forward. RFI defined the underlying problem as, “Soldiers are receiving duplicate fieldings of serviceable equipment that they already possess. This problem begins with coordination with the unit receiving RFI and finishes at the completion of the fielding.” The goal was to reduce duplicate fielding of Soldier equipment, at an estimated savings of \$18 million a year. RFI conducted stakeholder analyses, mapped out the process to determine all the steps involved in the RFI fielding process, and defined activities as “non-value,” “value-added,” and “required.” RFI then determined what was most important to the customer and the financial benefits.

The purpose of the “measure” phase is to find metrics that reflect the magnitude of the problem identified in the define phase. RFI also had to identify

the starting point of the process. RFI determined the important inputs, the output variables (what we are trying to improve) such as the existing defects in the system, the cost of the current process, and the RFI fielding cycle-time and collected data from surveys and multiple fieldings.

In the “analyze” phase, RFI analyzed the data collected in the measure phase, studied the process flow, pinpointed and verified the causes affecting the key input and output variables tied to the project goals, and determined which process steps were value-added and which were non-value-added. The LSS team used tools, such as process mapping, SIPOC (suppliers, inputs, process, outputs, customers), value stream mapping, and cause-and-effect analysis, to narrow the potential contributors to the root cause, since the fixed, automated template no longer met the fielding requirements for some deploying Soldiers.

In the “improve” phase, the RFI office determined that the initial solution required a flexible template, additional coordination measures, key involvement by noncommissioned officers, and an automated global fielding system to facilitate distribution and accountability of individual Soldier equipment. The RFI office

conducted three separate pilot programs, each producing significant results and key lessons learned. The lessons learned provided the basis that allowed the RFI to reduce the fielding of duplicate items and increase both customer satisfaction and dollar savings to the Army.

One of the keys to ensuring that process improvements are maintained is the last phase of the LSS DMAIC methodology, “control.” RFI took the lessons learned from the three pilots, developed training plans to ensure that RFI coordinators, fielding teams, and support elements were prepared for success, and implemented process changes and controls, such as standing operating procedures and pre-coordination, coordination, in-brief, and out-brief checklists.

Process Change: Lean Fielding

As a result of this LSS project, RFI recently implemented its improved Lean Fielding process to reduce duplicate distribution of RFI equipment to deploying Soldiers. Now units can elect to decline previously fielded RFI equipment items. Declining duplicate items is currently voluntary for both the gaining command and the individual Soldier.

During the coordination visit to the unit several months before actual fielding of equipment, RFI discusses the Lean Fielding process and the unit’s options for executing the fielding event. The gaining command may elect to mandate full distribution of an item or set of items (the unit may be a “new build”), mandate no distribution of an item or set of items it knows that everyone has on hand, permit individual Soldiers to decline any item during distribution, or implement any combination of those options. Whatever form of Lean Fielding the gaining command chooses, the PEO Soldier fielding team provides multiple control measures on site throughout the entire process to ensure that the commander’s request is met. To enable this process change to work, RFI modified existing software to allow the reduction of duplicate fielding of items to Soldiers.

Here is how the Lean Fielding process actually works. At the fielding event, a Soldier in-processes and hands off his common access card to be scanned into the system. The RFI fielding team explains the commander’s guidance on what equipment is optional and what is mandated, and the Soldier receives a bar code. The Soldier then is scanned at in-processing, the equipment stations, and finally at out-processing, where the RFI fielding team reviews the printout with the Soldier to confirm compliance with the command’s guidance and with the Soldier’s wishes. At the end of the fielding, the unit receives a list of all declined items, by Soldier, in addition to the normal joint inventory report detailing the RFI equipment fielded. For the individual Soldier, the whole process is quick, taking under 30 minutes from door to door.

Lean Fielding Results

RFI’s first official Lean Fielding was with the 3d Brigade Combat Team (BCT), 82d Airborne Division (Air Assault), in May 2008. The BCT’s participation in Lean Fielding allowed it to decline more than 20,000 Soldier equipment items it already had on hand, saving the Army over \$2 million in future materiel procurements. This fielding event became the basis for future full-scale implementation of Lean Fielding and for changes to existing standing operating procedures and communications plans needed to institutionalize Lean Fielding throughout the Army.

Survey feedback from the 3d BCT showed that 82 percent of its Soldiers were either “very satisfied” or “extremely satisfied” with the Lean Fielding process; the brigade’s assessment of the original fielding process was only 29 percent “very satisfied” or “extremely satisfied.” The results demonstrated at a level of statistical significance that the Lean Fielding process constituted a definite improvement over the original process.

Lean Fielding with the brigade not only realized a cost avoidance of more than \$2 million, but its broader application also achieved results over the entire month of \$4.4 million. The RFI has already achieved a cost avoidance of \$32 million—almost twice as much as the original project estimate of \$18 million in the first 6 months. Of equal significance, the Lean Fielding process reduced the number of defects in the fielding process by almost 80 percent. The Sigma Quality Level (SQL), which is the official LSS measure of process performance, reflected significant improvement: SQL went from 2.06 Sigma (71 percent yield) to 3.05 Sigma (94 percent yield).

The key for a materiel provider to maintaining strong ties with the warfighter can be as simple as listening to the voice of the customer, in this case the Soldier. RFI’s continuous process improvement mindset and attention to Soldier requirements are critical to effectively meeting the Army’s needs now and into the future. PEO Soldier’s RFI office will remain responsive and flexible to the equipping needs of Soldiers as they continue to fight the Global War on Terrorism. **ALOG**

MAJOR TODD J. WRIGHT CURRENTLY WORKS AT THE PROGRAM EXECUTIVE OFFICE SOLDIER AS THE ASSISTANT PROJECT MANAGER OF THE RAPID FIELDING INITIATIVE. HE IS A GRADUATE OF THE ARMY COMMAND AND GENERAL STAFF COLLEGE. HE HOLDS A BACHELOR’S DEGREE IN SCIENCE FROM THE UNITED STATES MILITARY ACADEMY AND A MASTER’S DEGREE IN EDUCATION FROM THE UNIVERSITY OF VIRGINIA. HE IS A CERTIFIED LEAN SIX SIGMA GREEN BELT AND A GRADUATE OF THE ARMY BLACK BELT LEAN SIX SIGMA COURSE.

Acquisition and PBUSE

BY PABLO A. BROWN AND JOHN E. LAUDAN

To improve accountability and accuracy throughout the equipment fielding process, all program managers and program executive offices are now required to use the same property accountability system that tactical units use.

The acquisition community has come a long way in implementing and institutionalizing innovative and agile acquisition and sustainment initiatives to improve the fielding of equipment to the warfighter. While much progress has been made with the use of information technology to facilitate rapid distribution, the materiel fielding process continues to be burdened with an in-transit document closure weakness and an inefficient end-to-end audit trail. These shortcomings have led to the accountability loss of 1.45 billion dollars' worth of major items.

Total Package Fielding

The Army uses the Total Package Fielding (TPF) process to ensure that units are provided with fully supportable materiel systems with minimal disruption to the unit's day-to-day missions. TPF minimizes the workload associated with the fielding of a new system. It requires the materiel developer and the fielding command to determine all requirements up front, fund and requisition nearly all needed equipment, consolidate support items into unit-level packages, and coordinate the distribution of the major system, the associated support items of equipment, and support packages to a central staging site or to the gaining unit itself.

Two hybrids of the TPF process, Rapid Equipping Force (REF) and Rapid Fielding Initiative (RFI), are Army initiatives developed to bridge capability gaps outside the traditional acquisition cycle and successfully combat an adaptive enemy in wartime. Supported through significant amounts of Global War on Terrorism supplemental funding, REF and RFI expeditiously provide necessary equipment to operational commanders. The Property Book Unit Supply Enhanced (PBUSE) system provides the missing accountability and asset visibility requirement for these initiatives.

Problems With the Existing Process

During the existing materiel fielding process, the fielding command provides a tailored customer documentation package to each gaining unit. This package is provided at the time of handoff and allows the unit

Soldiers assemble at a staging site and wait to be issued equipment.

to establish property accountability and post a receipt for the TPF materiel. The transactions documented in the package are tailored to the specific supply system in use at the unit. Processing instructions are provided with each package, and personal assistance may be available when requested. The fielding command also provides a shortage list and the documentation needed to establish a due-in for all items not provided in the handoff.

Each unit can choose one of three types of media for receiving their documentation package: hard copy, compact disc, or digital video disc. This process leaves the door open for equipment losses, noncompliance and misstatements in financial records, and poor property accountability procedures at the tactical level.

RFI property sometimes is distributed to individual Soldiers without unit supply representatives present and without immediate certainty of the exact unit of assignment. Most often, this occurs when replacement personnel are deployed into theater after a unit deployment. Moreover, the lack of an automated system interface between the acquisition community and tactical units causes a significant portion of the in-transit records displayed in the Logistics Support Activity's (LOGSA's) Logistics Information Warehouse (LIW) to be invalid.

Equipment being sent to a fielding team should be packaged for issue to a single unit, but in some cases multiple units' equipment is being packaged and shipped instead. The Army G-4 and auditors cannot recognize that the equipment is intended for multiple units when



the transactions state that the equipment is to be issued to a single unit. The equipment involved is received and reported as “on hand” by the receiving units, but the receipt transactions do not close out the shipment records because the unit document does not match the shipping document. As a result, the Army does not have reliable data about the value of in-transit equipment, so the value of in-transit equipment reported in the Army’s financial statements is inaccurate.

Mandating the Use of PBUSE

PBUSE is the Army’s first web-based logistics property accountability system. PBUSE provides a responsive and efficient means to maintain accountable records for the Army’s inventory of property for over 14,855 users in modification table of organization and equipment and table of distribution and allowances units in the Active Army, Army National Guard, and Army Reserve. PBUSE interfaces with several other critical logistics systems, including LOGSA LIW, the Standard Army Retail Supply System, the Defense Finance and Accounting Service Corporate Database, the Army War Reserve Deployment System, the General Funds Enterprise Business System, the Central Issue Facility-Installation Support Module, the Worldwide Ammunition Reporting System, and Program Executive Office (PEO) Soldier’s fielding application. PBUSE feeds critical management and financial data to these systems on a real-time basis.

In January 2007, in response to demands from the field to facilitate the fielding of materiel more accurately and efficiently, the Assistant Secretary of the Army (Acquisition, Logistics, and Technology) (ASA[ALT]) and the Army G-4 mandated that all PEOs and program managers (PMs) use PBUSE

instead of stand-alone spreadsheets to field equipment. The Army G-4 Supply Policy Division and the ASA (ALT), working with PM Logistics Information Systems (LIS) and the PBUSE lead system integrator, created the blueprints for executing the assessment, approval, and implementation of the requirement. Recognizing the benefits that PBUSE had brought to the field command, the ASA(ALT) and the Army G-4 directed PEO Enterprise Information Systems to test PBUSE at PEO Soldier.

PEO Soldier’s Challenge and Results

PEO Soldier has been fielding materiel as part of RFI for several years. PEO Soldier was created by the Army with one primary purpose: to develop the best equipment and field it as quickly as possible so that Soldiers remain second to none in missions that span the full spectrum of military operations. Under PEO Soldier, the Army’s RFI is intended to respond quickly to current individual Soldier equipment requirements and to provide Soldiers engaged in or preparing for operations with state-of-the-art individual equipment, including weapons accessories, organizational clothing and individual equipment, target locators, improved first aid kits, and a variety of other personal gear.

High-volume PEO Soldier materiel distributions resulted in a tremendous amount of additional work for the gaining commands. Equipment fieldings were accomplished using a time-consuming manual process that left the property book officers (PBOs) to update their property book records using irregular accounting practices.

An interface between PEO Soldier’s fielding system and PBUSE was established to provide an automated means of transferring accounting information. The interface eliminates the need for “hand-jamming” thousands of asset records and serial numbers into PBUSE and automates the lateral transfer process.

PEO Soldier benefited tremendously by transferring its assets from its fielding application directly to the field’s gaining PBOs. This was done through a universal extensible markup language (XML) interface. The successful implementation of

Soldiers are issued their organizational clothing and individual equipment, which comprise the minimum essential items a Soldier requires on the battlefield.



the web-based application quickly drew considerable attention. Based on the success of this initiative, the ASA(ALT) directed the 12 other Army PEOs to employ PBUSE by 31 March 2009. Working with the PBUSE lead system integrator, PM LIS worked diligently to meet the ASA(ALT)'s intent.

Because PBUSE is a web-based application, the PEOs and PMs are not required to have any additional hardware. They use their existing hardware and have access to the PBUSE functions that pertain to their operations.

Implementing PBUSE

The objective is to laterally transfer PEOs' and PMs' materiel fielding equipment records from their individual spreadsheets and fielding applications to PBUSE, where they would establish accountable records for their equipment at the beginning of the materiel fielding process (during procurement or acceptance of Department of Defense Form 250, Material Inspection and Receiving Report). Establishing accountable records in PBUSE does not mean that a PBO assumes the responsibilities of the PEO or PM. Before the lateral transfer occurs, accountability of equipment still remains with the PEO or PM. Because PBUSE is a web-based application, the PEOs and PMs are not required to have any additional hardware. They use their existing hardware and have access to the PBUSE functions that pertain to their operations.

Benefits of Completing the Initiative

The PBUSE initiative has four benefits. First, it enables Army-wide visibility of equipment status by any organization with access to the LOGSA LIW or PBUSE at the beginning of the materiel fielding process. Second, PEOs and PMs will be using the same system that tactical units use to account for and track their equipment. Third, using a common software system will reduce stovepipe operations, duplication, and the associated training overhead and maintenance costs. Finally, lateral transfers of equipment to units can be done electronically instead of having to rely completely on hardcopy Department of the Army Forms 2062, Hand Receipt and Annex, and 3161, Request for Issue or Turn-In.

The PBUSE XML interface for the PEOs' unique systems will automate the processing of three different types of transactions that add or transfer data to PBUSE. All processes will start with the PEO system generating

a file containing the transaction data that will then be uploaded into the PBUSE enterprise server. PBUSE will then process transactions based on the data provided in the file. The three types of transactions are asset adjustment, serial/registration/lot update, and lateral transfer.

The asset adjustment transaction will be used to increase the on-hand quantity of assets for the unit identification code that represents the PEO or PM in PBUSE. Serial numbers will also be provided if they are available, but they are not required.

The serial/registration/lot update transaction will be used to add serial numbers to assets that have been added previously to PBUSE.

The lateral transfer transaction will enable PEOs to create an electronic issue document when the specified quantities and serial numbers of equipment are fielded. Through the automated functions within the PBUSE software, the gaining PBO is automatically sent an email alerting him to the equipment issue before the transaction actually happens. The PBUSE software then provides the PEO with the PBO's email address, to which the PEO sends the issue document and thus completes the transfer.

The defense acquisition system will benefit from PBUSE. Equipment will be handed over to gaining units more efficiently. Systems will be in the warfighters' hands more quickly. PBUSE will enable total asset visibility using a Standard Army Management Information System. PEOs and PMs will field equipment using the same system that the tactical units use, thereby improving accuracy and accountability throughout the life-cycle process, which includes funding, distribution, fielding equipment, and unit status reporting benefited industry. **ALOG**

PABLO A. BROWN IS AN ACQUISITION SPECIALIST IN THE OFFICE OF THE PROJECT MANAGER, LOGISTICS INFORMATION SYSTEMS, PRODUCT DIRECTOR, TACTICAL LOGISTICS SYSTEMS, WHERE HE IS THE PROJECT OFFICER FOR THE PROPERTY BOOK UNIT SUPPLY ENHANCED. HE HOLDS A MASTER'S DEGREE IN ORGANIZATIONAL MANAGEMENT FROM PHOENIX UNIVERSITY AND A BACHELOR'S DEGREE IN BUSINESS ADMINISTRATION FROM LIBERTY UNIVERSITY. HE IS LEVEL II CERTIFIED IN PROGRAM MANAGEMENT, LEVEL II CERTIFIED IN INFORMATION TECHNOLOGY, AND LEVEL I CERTIFIED IN LIFE-CYCLE LOGISTICS.

JOHN E. LAUDAN IS A SYSTEMS ACQUISITION SPECIALIST AT THE OFFICE OF THE PROJECT MANAGER, GLOBAL COMBAT SUPPORT SYSTEM-ARMY (GCSS-ARMY). AT THE TIME THIS ARTICLE WAS WRITTEN, HE WORKED FOR THE OFFICE OF THE PROJECT MANAGER, LOGISTICS INFORMATION SYSTEMS. HE HOLDS A MASTER'S DEGREE IN ADMINISTRATION FROM CENTRAL MICHIGAN UNIVERSITY AND A BACHELOR'S DEGREE IN HISTORY FROM CANISIUS COLLEGE. HE IS LEVEL III CERTIFIED IN PROGRAM MANAGEMENT AND LEVEL III CERTIFIED IN TESTING AND EVALUATION.

The Army's Impact on the Fuel and Lubricant Industry

BY MAURICE E. LE PERA

The author takes a historical look at the Army's fuel and lubricant program and its effect on commercial lubricants.

Few people may realize that a significant number of advances in fuels and lubricants in the past 50 years are the direct result of Army research, development, and testing. The fuel and lubricant-related problems that occurred in Army ground vehicles and equipment during World War II and the Korean War surfaced a need for sustained funding of petroleum, oils, and lubricants (POL) research and development. These problems included severe vapor locking in tanks and vehicles operating in hot environments, engine malfunctions because of insoluble gum and deposits that formed when gasoline was stored in drums, and the inability of gear lubricants to provide needed wear and moisture corrosion protection for vehicle differential systems.

The importance of fuels and lubricants for the U.S. military's many types of wheeled and tracked vehicles and stationary equipment became evident during World War II and the Korean War. Since the Army had the greatest quantity and diversity of vehicles and equipment systems, its problem was the most critical in the Department of Defense.

For example, when the Army's Ordnance Lubrication Program began in 1941, no standard lubricants existed for military vehicles and equipment. At that time, the Army used 2 types of engine oil, 2 types of gear lubricants, and 3 types of grease, resulting in a total of 22 different grades of lubricant for automotive equipment alone, not including those intended for special purposes. These commercial products were found to be inadequate for meeting the Army's stringent operational requirements. So, the Ordnance Corps and industry began cooperating to develop bench tests, engine dynamometer tests, and rating procedures needed to uniformly define the performance requirements needed for military fuels and lubricants.

Early in 1942, Harry Mougey of General Motors Research and Lew Blanc of Caterpillar Tractor Company realized that the superior quality of engine oils used by the German Army could lead to the Allied Forces losing the war. Armed with this information, they went to the Department of War and strongly recommended that the Army develop improved engine

and gear oils for wheeled and tracked vehicles. This resulted in the initial involvement of the Illinois Institute of Technology Armour Research Foundation to develop the test methods needed to better define the performance of military automotive lubricants. The Army also requested the Coordinating Research Council's (CRC's) assistance in the study. [The CRC is a nonprofit organization that manages engineering and environmental studies on the effects of petroleum products on vehicles.]

Establishing the SwRI Research Facility

Because of the many fuel and lubrication problems that surfaced during World War II and the Korean War, the Army realized that it needed a central activity that could address them and conduct research and development on future fuel and lubricant requirements. Norman L. Klein of the Ordnance Corps was responsible for the Army establishing a dedicated, contractor-operated, Government-owned research laboratory at Southwest Research Institute (SwRI) in San Antonio, Texas, in May 1957.

Klein had been directly involved with addressing many of the operational problems that the Army had experienced with its vehicles and equipment and had actively participated in many of the CRC cooperative projects. While participating in these CRC activities, he met the SwRI vice president responsible for initiating much of the work being conducted by CRC and the Society of Automotive Engineers (SAE) in selecting and standardizing engine dynamometer tests for defining lubricant performance. When Ordnance Corps leaders discussed the idea of having a dedicated activity established specifically to address the requirements for military automotive fuels and lubricants, Klein saw the obvious advantages of such a laboratory.

SwRI had the available space, was very connected with the automotive and petroleum additive industries, and had field-testing capabilities, engine dynamometer stands, and laboratories available. After obtaining concurrence from industry, Klein went to the senior Army management and convinced them of the need to establish such a facility.

This engine-liner test rig was used in the research exploring the tribology needed for low heat rejection engine technology.

When the Army officially opened the Army Ordnance Corps Fuels and Lubricants Research Facility at SwRI, it represented a new approach in Government-sponsored research. Although it was Government-owned, the facility was built on institute land and was completely staffed and operated by SwRI under contract with the Ordnance Corps.

The facility at SwRI has undergone several name changes in the past 50 years: Army Fuels and Lubricants Research Laboratory, Belvoir Fuels and Lubricants Research Facility, and now Tank Automotive Research, Development and Engineering Center Fuels and Lubricants Research Facility. For purpose of simplification, it will be referred to as the Army Fuels and Lubricants Research Laboratory (AFLRL) for the remainder of this article.

Automotive Gasoline

Since the spark-ignition engine powered most of the Army's ground vehicles and equipment during World War II, operational problems with using the commercial gasoline available at that time surfaced early. The two types of major problems affecting the ground forces were related to volatility (such as vapor locking and hard starting) and storage instability (such as gum formation causing valves to stick and abnormally heavy deposits in fuel intake systems). These problems seriously reduced readiness and maintainability. To combat these problems, the Ordnance Corps requested assistance from industry through the CRC. The CRC conducted a number of vehicle tests from 1942 through 1946 at Army locations in southern California to study the volatility and storage instability problems that had been encountered in North Africa and Italy. Much, if not all, of the information that was generated by these test programs eventually became incorporated into the industry standard for gasoline.

A report published in 1953 stated that, without more information on the behavior of gasoline and its components in storage, no method could be developed to predict storage stability accurately. In response to this report, in 1955, the U.S. Bureau of Mines and the Stanford Research Institute began long-range programs of basic research into the mechanisms of gum formation



in gasoline. Much of this Army-sponsored research was later used by the petroleum industry to improve the stability of the commercial gasoline being marketed. One example of this was the Army's development of a gum preventive compound (Federal Specification VV-G-800) in 1962, which was intended to be used for stabilizing gasoline in power generation units and for keeping vehicles operational during standby storage. This gum-preventive compound subsequently found a home in the commercial marketplace when several companies began to market it under a variety of different names.

Automotive Engine and Gear Oils

One of the more significant accomplishments initiated in the early 1940s was the establishment of a process for reviewing, approving, and certifying automotive engine and gear oils. Initially, the qualification of oils under the early Army specifications involved a commercial practice in which suppliers obtained approvals, independently from both Caterpillar Tractor Company and General Motors Corporation, using their separate engine-testing procedures. These test results were then used to develop the qualification list maintained by the Ordnance Corps. Situations arose, however, in which changes to both base stocks and additives were necessary, resulting in formula modifications and subsequent requalifications. Because of this, it became evident that direct supervision by the Ordnance Corps was needed to effect changes as quickly as possible so that adequate supplies of qualified oils were available to meet the wartime requirements.

In 1943, the Ordnance Corps assumed responsibility for the qualification program and established the Ordnance reviewing committee composed of representatives from Caterpillar Tractor Company, General Motors Corporation, the Armour Research Foundation, and the Ordnance Corps. This committee, which initially addressed engine oils, convened its first meeting in May 1943. Later that year, a parallel committee using a different group of industry representatives was established to cover the qualification of gear lubricants. The two Ordnance reviewing committees became known as the Army's engine and gear oil reviewing committees. In July 1959, the meeting location moved from the Armour Research Foundation to the recently established AutoResearch Laboratories, Inc. The Army's engine and gear oil reviewing committees continued to function until 1977, when the Army relinquished its direct sponsorship and contracted the SAE to perform this function. These functions then became part of the SAE Lubricants Review Institute and remain so today.

The military approval process satisfied a need for engine and vehicle manufacturers, other Government agencies, commercial fleet operators, and others for a methodology that both described the performance level of lubricating oils for their vehicles and equipment and provided a means for ensuring or certifying the quality for each approved formulation.

By introducing new combinations of requirements, the Army forced major changes in how engine oils were formulated. These changes included incorporating requirements for both gasoline- and diesel-fueled engines into one specification, adding transmission power-shift requirements to engine oil specifications, and allowing for the use of recycled components. Oil companies that marketed worldwide required their products to be approved and qualified under the military engine and gear oil specifications. Unfortunately, few of these approvals were ever used for their intended purpose—responding to Government bid solicitations—which led to the Army's decision to relinquish its responsibilities to SAE. A significant amount of the procedural methodology used in the past military approval process has since been incorporated into the current American Petroleum Institute (API) Engine Oil Licensing and Certification System. Another contribution somewhat aligned with the military approval process involved using military specifications as a basis for establishing industry's performance standards for automotive engine and gear lubricants. In many cases, the military specifications helped to set the performance requirements for the different API categories.

Gear Lubricants

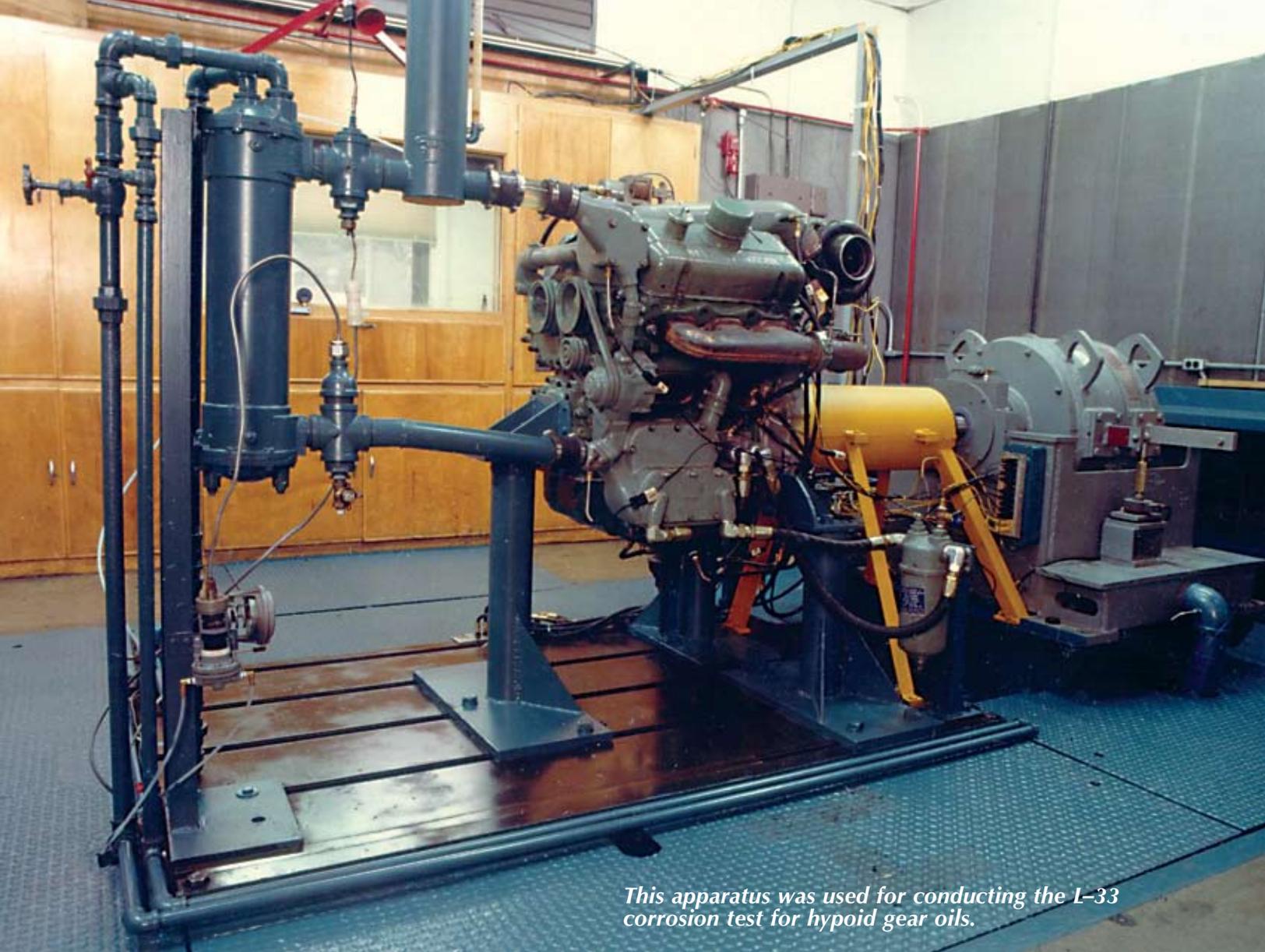
During the early 1950s, the Army had observed that its multipurpose gear lubricant was not providing satisfactory lubrication for some of its vehicles, nor was it providing adequate protection against moisture corrosion. These deficiencies prompted the Army to contract the Armour Research Foundation (and later AutoResearch Laboratories) to develop qualification tests for the Army's multipurpose gear lubricants. This effort, initiated in 1952 and completed in 1960, involved a multiphase project to develop test procedures for the evaluation of hypoid gear lubricants and to study the loading, temperature, and sliding velocity conditions of automotive hypoid gears. [Hypoid gears are gear wheels connecting nonparallel, nonintersecting shafts, usually at right angles.]

The project generated the basic data needed for the CRC's gear lubricants group, which was developing test procedures that eventually became known as the L-37 (evaluation of load-carrying capacity of lubricants under conditions of high speed and low torque, followed by low speed and high torque), the L-42 (evaluation of load-carrying properties of lubricants under conditions of high speed and shock loading), the L-33 (evaluation of moisture corrosion resistance of automotive gear lubricants), and the L-60 (evaluation of the thermal and oxidative stability of lubricating oils used for manual transmission and final drive areas). These four test methods remain the principal "tools" for defining performance of automotive multipurpose gear lubricants used by the military and industry and are generally accepted worldwide.

Automotive Lubricants

Many of the major contributions involving automotive lubricants originated from AFLRL. Those accomplishments include—

- Developing a blow-by diversion piston for cleaner crankcases.
- Developing approaches for extended oil drain intervals.
- Introducing and demonstrating synthetic-based oils for fleet-wide applications.
- Introducing powershift transmission requirements into engine oils.
- Defining lubrication requirements for two-stroke, heavy-duty diesel engines.
- Developing a basic understanding of low temperature sludge deposit formation.
- Establishing acceptability of military engine and gear oils using recycled stocks.
- Defining mechanisms for cylinder bore and piston ring wear in methanol-fueled, spark-ignition engines.
- Demonstrating the usability of military engine oils as power-transmission and hydraulic fluids.



This apparatus was used for conducting the L-33 corrosion test for hypoid gear oils.

SwRI was granted a patent for the blow-by diversion approach. The research revealed that diverting the combustion blow-by from the crankcase reduced the rate of sludge formation, which resulted in cleaner engines, less wear, and extended oil drain intervals. The methodology involved using one or a combination of the four different means for diverting the blow-by, resulting in subsequent modifications to piston and ring configurations. The work on blow-by diversion added to the knowledge of engine oil degradation, which in turn led to the development of improved detergent and dispersant formulations, giving a great understanding of extended oil drains and, ultimately, better long-life engine oils.

This concept was subsequently implemented in a study conducted several years later in which the Army was pursuing approaches for extending oil drain intervals for tactical equipment. In concert with this, AFLRL had proposed a sealed crankcase concept that

embodied reduced blow-by diversion and improved engine oil quality. This concept is used in the Caterpillar I6 7-liter C7 engine for the Stryker vehicle, which is fitted with a special metering device that automatically withdraws used oil to be fed into the combustion chamber while simultaneously adding new oil into the crankcase so the amount of oil in the crankcase remains constant.

Synthetic-based engine oils were introduced in 1967 for all Army vehicles and equipment operating in Alaska using the Aberdeen Proving Ground Purchased Description Number 1 that later was converted into MIL-L-46167, commonly referred to as Arctic Engine Oil (OEA). This engine oil was essentially SAE 0W-20, which was quickly adopted by commercial operators building the Alaska pipeline system during the 1970s.

Because of the successful performance of OEA in a variety of engine and powertrain systems, the Army

subsequently field-tested this oil at several locations in Army tactical and combat vehicles and equipment to assess its applicability in moderate-to-hot temperatures. These tests were conducted at Fort Carson, Colorado; Fort Lewis, Washington; and Fort Bliss, Texas. In each case, OEA performance was satisfactory and no adverse effects were observed even while operating in the high-temperature environments. Although the Army did not pursue a fleet-wide conversion at that time, the successful performance of OEA both in different engine and powertrain systems and in various operating environments demonstrated its feasibility. This success attracted many commercial fleet operators to consider, and later adopt, synthetic-based engine oils.

Fuel Standards

In the late 1960s, an industry task force and Army personnel joint meeting was convened to resolve differences between two gasoline standards: industry's American Society for Testing and Materials (ASTM) gasoline standard, ASTM D439, and the military's post-camp-station automotive gasoline, Federal Specification VV-G-76. The major differences involved the manner in which gasoline volatility classes were established. This and subsequent meetings revealed the need for a more comprehensive temperature study that would provide the information needed to realistically

predict meaningful minimum and maximum temperatures suitable for procurement specifications.

The Army subsequently funded a study in 1972 involving the processing of hourly temperature data from 340 first-order weather stations covering the past 20 to 30 years. These data were then processed by computer, ranked into monthly maximum and minimum percentiles, and presented in tabular form as well as using isothermal maps for defining geographical regions. The Army selected the 10th percentile for predicting the prevailing low temperatures and the 90th percentile for predicting the prevailing high temperatures. This approach was accepted by industry and became the standard methodology for use in specifications covering a wide range of petroleum and related products. For example, the current industry standard for diesel fuel, ASTM D975, references this methodology for selecting cloud point requirements. [The cloud point is the temperature at which the solids in the oil begin to separate, causing a cloudy appearance.]

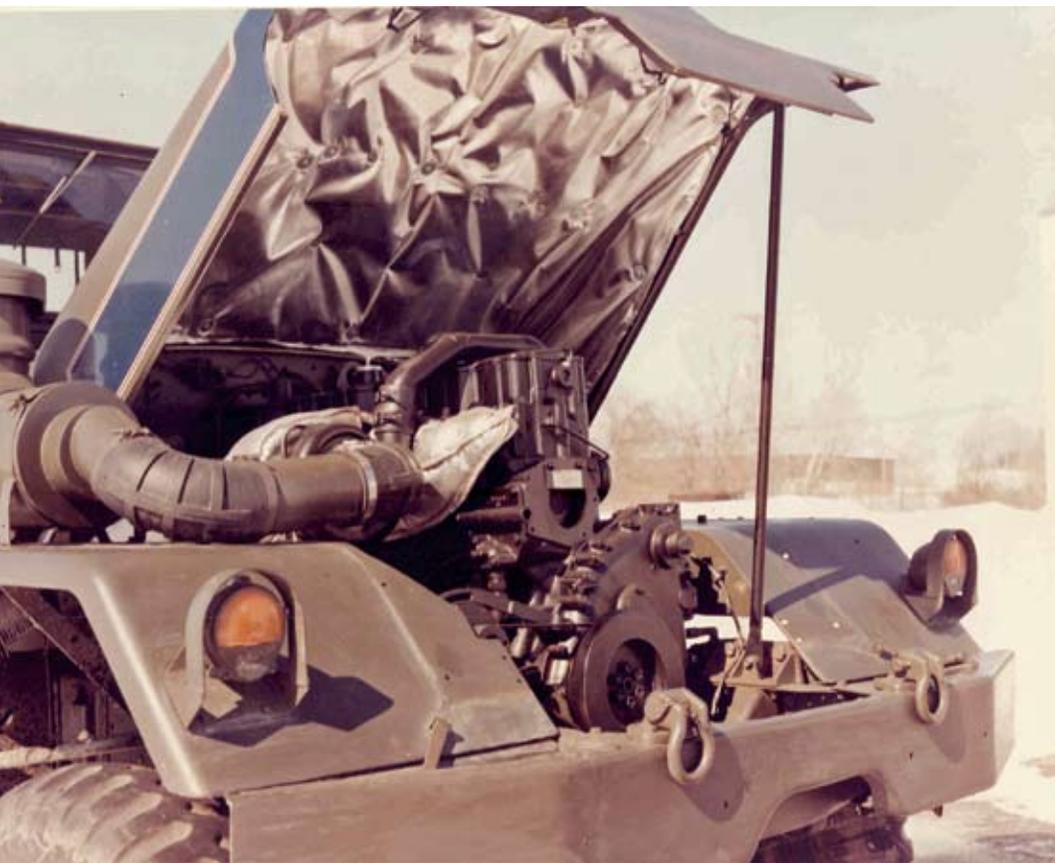
Starting in the late 1970s, the Army did a considerable amount of fleet testing to demonstrate the acceptability of using alternative fuels, beginning with gasohol (10 percent ethyl alcohol in gasoline) and then M85 methanol and JP-8, an aviation kerosene fuel that became the single fuel for the battlefield. Because of the success of the Army's field demonstrations, many commercial operators subsequently adopted these practices.

The initial use of aviation kerosene fuels in diesel engines resulted in the Army's pioneering work to study fuel lubricity requirements, which led to SwRI developing the Scuffing Load Ball-on-Cylinder Lubricity Evaluator in 1991. This procedure was adopted with the introduction of low-sulfur diesel fuels in the United States and became one of the two ASTM methods currently in use for measuring diesel fuel lubricity.

Continuing Contributions

The Army continues to contribute a significant amount of research to further the high-temperature tribology for future diesel engines. [Tribology is the study of the effects of

This heavy-duty Army truck was powered by the experimental adiabatic engine.



friction on moving machine parts and how to eliminate them using lubrication.] Since 1975 when the Army's Tank-Automotive Command (TACOM) and Cummins Engine Company initiated an adiabatic [without loss or gain of heat] engine program, research has continued to promote the tribology needed for low-heat-rejection engine technology. Significant efforts have resulted in formulating several types of high-temperature synthetic engine oils capable of withstanding top ring reversal temperatures that exceed 310 degrees Celsius. Under these severe high-temperature conditions, a liquid lubricant by itself does not fully provide all the lubrication needed.

Other approaches have involved the application of thermal barrier coatings to piston surfaces and the cylinder bore areas. One of the materials showing promise for this application is low-temperature iron titanate (LTIT), which has provided the best performance. Current efforts have focused on bringing this LTIT technology into the commercial marketplace.

Research at the Army Research Laboratory (co-located with the National Aeronautics and Space Administration's Glenn Research Center in Cleveland, Ohio) is underway to develop oil-free turbocharger technology that will improve both the performance and reliability of the Army's diesel-powered vehicles. The turbochargers used on most diesel engines are oil lubricated and prone to maintenance and reliability problems resulting from oil coking, leakage, and consumption. [Oil coking refers to the oil changing into carbon.] This collaborative technology, now under development, involves the use of foil air bearings and tribological coatings that have been developed by industry and Government. As an example of this ongoing work, an oil-free turbocharger is scheduled to be engine-tested for possible future application to the Stryker vehicle.

The Army recently initiated a feasibility study to consider developing a common powertrain lubricant for combat and tactical vehicles and equipment that would reduce life-cycle costs. Since the Army currently has three engine oil specifications (resulting in nine grades), the intent is to reduce these to a single powertrain lubricant that will have only one grade, provide preservative properties, and be capable of operating in arctic to desert environments. This approach involves one oil for use with engines, powershift transmissions, some hydraulics, and nonhypoid final drives. The obvious benefits would be reduced logistics and a significantly reduced potential for misapplication.

Other intended improvements include increased lubricant life and a 2- to 4-percent increase in fuel efficiency. A military-industry working group has been established to assist in this development, with the Army now conducting transmission and wet-brake tests on several current and experimental formulations.

The Army also has been actively contributing in the area of fuels technology. One example is the constant volume combustion bomb apparatus developed by SwRI for measuring the ignition qualities of fuels used in diesel engines. This recently approved technique has become ASTM D7170. The use of this new technology permits more rapid and accurate measuring of the cetane number than can be obtained with any of the existing cetane indexing methods.

The Army also has been actively involved in testing and validating alternative fuels. Although the Army has been using alternative fuels in its non-tactical fleets, it is currently participating in the Secretary of Defense's Assured Fuels Initiative, which is designed to catalyze the industry to produce fuels for the military from domestic sources. Under this initiative, called the Joint Battlespace Use Fuel of the Future, the Army, Navy, and Air Force are working to develop fuel specifications; qualify the use of these fuels for all tactical vehicles and equipment, aircraft, and ships; and eventually provide a transition plan for Department of Defense-wide use of these unconventional fuels. The fuel currently being developed and evaluated is one produced from the gas-to-liquid process.

Many Army fuel initiatives created changes or new directions that were eventually assimilated by industry. One past member of the Engine Oil Reviewing Committee felt that the reviewing committee concept was the Army's biggest contribution because it provided a stability factor that kept the performance levels of commercial automotive lubricants on an even playing field. The Army has contributed significantly in furthering the many technologies associated with automotive fuels and lubricants that have most certainly benefited industry. **ALOG**

MAURICE E. LE PERA IS A CONSULTANT FOR LE PERA AND ASSOCIATES OF HARRISONBURG, VIRGINIA. HE IS A GRADUATE OF THE UNIVERSITY OF DELAWARE AND HAD 36 YEARS OF GOVERNMENT SERVICE. HE IS A MEMBER OF THE SOCIETY OF AUTOMOTIVE ENGINEERS, THE SOCIETY OF TRIBOLOGISTS AND LUBRICATION ENGINEERS, AND THE AMERICAN SOCIETY FOR TESTING AND MATERIALS.

THE AUTHOR WISHES TO ACKNOWLEDGE THE CONTRIBUTIONS OF COLONEL JOSEPH JOHN VOLPE (1930-1995) DURING HIS TENURE AT THE ARMY QUARTERMASTER CENTER AND SCHOOL AT FORT LEE, VIRGINIA, FROM 1977 UNTIL HIS RETIREMENT IN 1983. WHILE AT FORT LEE AS A COMBAT DEVELOPER, COLONEL VOLPE WAS INSTRUMENTAL IN PROMOTING AND ACTIVELY SUPPORTING THE NEEDED FUNDING FOR MANY OF THE RESEARCH, DEVELOPMENT, TEST, AND EVALUATION PROGRAMS IN FUELS AND LUBRICANTS THAT WERE SUBSEQUENTLY CONDUCTED AND MENTIONED IN THIS ARTICLE.

RSR and CSR: Why the Confusion?

BY DR. THOMAS E. WARD II

Army personnel ordering ammunition sometimes confuse the required supply rate and controlled supply rate terms used in determining the amount of ammunition a unit will receive. The author explains how each is determined, how the rates are used, and how they affect the amount of ammunition a unit receives.

Both the concepts and the meanings of “required supply rate” (RSR) and “controlled supply rate” (CSR) continue to be misunderstood and misapplied in our Army—often by people who should know better. These concepts are worth understanding because their application is essential to success in many operating environments. The fundamentals are simple, the players are relatively few but critical, and the application is relatively straightforward.

First, let me put this discussion into context. This article is written primarily from an Army perspective, using Army doctrine and some non-doctrinal publications and tools. It also takes a brief look at the RSR-CSR issue from a joint perspective, addressing what joint doctrine says about it. Other service components have similar issues to deal with, and similar ways to cope with them. The Marine Corps generally employs the same process as the Army because they share basic ammunition distribution principles and train jointly, even if they use significantly different organizations and equipment to execute their missions. Because they use many common weapon systems, a class V (ammunition) supply problem for the Army is usually a problem for the Marine Corps as well. This supply challenge is particularly relevant in an operational- or strategic-level context.

What is RSR?

RSR indicates how much class V is needed for an operation. This is an expression of operational requirements—what the warfighter says he needs. It is a logistics issue, but it is an expression of warfighting requirements, not logistics capabilities. The S-3s and G-3s of the world should be vitally interested in RSR because it expresses what they believe they need to accomplish the mission. Field Manual (FM) 4-30.1, Munitions Distribution in the Theater of Operations, explains it as follows—

To sustain tactical operations for specific periods, units determine their munitions requirements and submit a RSR. The RSR is the amount of ammunition that a maneuver commander estimates will be needed to sustain tactical operations without

ammunition expenditure restrictions over a specified time. The RSR is expressed as rounds per weapon (on-hand) per day, or as a bulk allotment per day or per mission. RSR computations and routing are performed by unit S3s/G3s. As such, it is not a logistics function, but the S4/G4 should assist in the process. RSRs can be computed using manual or automated procedures. Weapon density (WD) and mission are key to determining the RSR.

Who Computes the RSR?

So who usually computes the RSR for an organization? The logistician. This is probably the first step in a long process that causes RSR and CSR to be misunderstood and misapplied. Why does the logistician compute the RSR? Because he knows how. The logistician is the person with the tools and the information to do the initial computations and to consolidate the results as the information is passed up to higher levels of the organization.

Is this bad? Not necessarily. The logistician needs to understand logistics requirements, and RSR is clearly an expression of operational logistics requirements. However, the tactical operators and logisticians should have a truly common understanding in this area. Their points of view are different. The tactician must understand why he needs to express the needed ammunition in the RSR in order to accomplish his mission, and the logistician needs to understand how much the tactician needs in order to ensure that requirements do not exceed capabilities.

How is the RSR Computed?

How does the tactician estimate how much ammunition he needs? What does the logistician use to compute RSR? This can be accomplished in one of two ways: generate an estimate based on historical experience, or use an estimation tool.

An organization that has conducted a similar operation has a historical reference that can be an excellent resource. How much was needed for a similar operation last time? This figure can be used as a baseline and adjusted based on mission analysis.

When no recent similar experience is available for reference, some automated tools are available that can help. The Logistics Estimate Worksheet (LEW) and Operations Logistics (OPLOG) Planner are two that are often mentioned as possibilities. Each has strengths, weaknesses, and limitations. The class V workbook in the “Rates Portal” at <https://www.cascom.army.mil/private/cdi/fdd/multi/PDB/Rates.htm> can also be used.

An in-depth discussion of automated ammunition consumption planning tools is beyond the scope of this article and will be the subject of a future article. In the meantime, use caution when using automated planning tools; make sure to give the results a “common sense” test. LEW provides a good level of detail, but it is complex and fragile, requires significant operator skill, and is useful only up to about the battalion level. LEW is also an unofficial product—it is not supported by the Army. OPLOG Planner is supported by the Army, but it is not suitable for computing an RSR because it is primarily a transportation planning tool. OPLOG Planner does not provide sufficiently detailed information for accurate munitions consumption to identify a true RSR. The problem is that OPLOG Planner, at least in its current form, embeds the weight and cube requirements for the components of separate-loading ammunition (155-millimeter howitzer, for example) but does not list the components, such as propelling charges, fuses, and primers. It also does not compute requirements for ancillary ammunition items, such as grenades or pyrotechnics. If the answer does not make sense, cross-check the results.

At the tactical level, RSR is normally expressed in rounds per weapon per day or rounds per system per day. RSR is a bottom-up fed estimate; at each successively higher headquarters, the requirements are consolidated until they ultimately reach the theater level. This is probably the second step on the path of misunderstanding RSR and CSR. As the quantities of class V requirements are consolidated, “each” starts to disappear from the unit of issue column. Requirements are expressed in terms of short tons rather than individual rounds. It is a convenient and absolutely necessary shorthand for expressing quantities when individual numbers get too large. When ammunition quantities are expressed in terms of short tons, the figure generally includes packaging, which can be a significant contribution to the total weight and a real issue when calculating transportation requirements.

Ultimately, at either the Army force (ARFOR), joint task force (JTF) headquarters, or combatant command (COCOM) level, the RSR totals for an operation are consolidated. This consolidation is usually expressed as the number of short tons required per unit of time. High-value, low-density munitions, such as guided missiles, may be expressed in terms of individual

rounds. The unit of time may be per day, per phase of the operation, or for the operation as a whole, which provides the macro look that is essential for planning.

A micro look, which is normally invisible to all but a few key people, is also required. That micro look is a close examination of every ammunition type individually. Totals may be expressed in short tons or as each (high-value, low-density munitions). Even when expressing the RSR in short tons, an understanding of the total number of rounds in each short ton is essential. For example, 1,000 short tons of linked .50-caliber ammunition sounds like a lot of ammunition. But is it enough to ensure that every system employed in the operation is supplied with enough ammunition to accomplish the mission? This question prompts a comparison of requirements and capabilities in terms of class V supply and distribution.

At the tactical level,
RSR is normally expressed
in rounds per weapon per day
or rounds per system per day.

What is CSR?

If there is a shortfall in the ability to supply any ammunition type, that shortfall needs to be quantified and expressed in a way that is understood clearly and easily. That expression is the CSR. At its most basic level, CSR means, “this is what I can give you.” A CSR is expressed when the requirements (RSR) exceed the capability of the logistics system. CSR is driven by logistics constraints, but it is still an operational consideration. Here is why: the logistician says to the commander, “Sorry, sir, but this is all we have to work with, and it’s less than what your operational guys say they need.” It is up to the commander, advised by his staff, to determine how best to deal with the shortfall. CSR also communicates to subordinates, “Heads up, folks. We are not going to be able to give you everything you say you need. Here’s where we’re short.” CSR is a way of expressing command regulation of a critical supply item and defining how tightly regulated the item will be so subordinates can plan for the constraint.

FM 4–30.1 specifies who establishes a CSR and why as follows—

RSRs are developed by maneuver commanders and submitted to the next higher HQ [headquarters]. HQ at each level reviews, adjusts, and consolidates RSR information and forwards it through command channels. The ARFOR determines the CSR by comparing the total unrestricted ammunition requirements to the total ammunition

assets on hand or due in. Several factors limit the amount of ammunition available for an operation (such as stockage or lift capabilities). Accordingly, ammunition issues are controlled by CSRs. The ARFOR establishes the CSR, which is based on the amount of munitions available for issue. When a munitions item is in short supply, the CSR is low. The commander determines who receives the ammunition.

Who Develops the CSR?

While RSR is a bottom-up expression of requirements, CSR is the commander's top-down expression of what he is able to provide to subordinates and how he will distribute these assets. CSR may identify some hard and fast constraints, but it also allows the commander to provide weight to his designated main effort by providing different CSRs to main and supporting efforts. The expression of CSR is therefore part of the weighting of main and supporting efforts.

One would expect the main effort to receive more of everything, but that may not necessarily prove to be the wisest use of assets. It depends on an analysis of the mission and the risks of subordinates. For example, the logistics distribution system is not likely to be the main effort of an operation, but air defense units providing coverage for key logistics nodes may receive a higher CSR than those that are directly supporting maneuver units. Likewise, a key supporting effort, even a deception operation, might receive more of a specific ammunition type than the designated main effort if that type of ammunition is crucial to the success of the overall effort. For example, a supporting effort might use artillery-delivered smoke to mask its movement or strength in order to prolong the effectiveness of a deception operation.

CSR normally applies to individual items of ammunition rather than to ammunition as a class of supply, so it is typically expressed in terms of rounds per weapon (or system) per day.

How is CSR Computed?

CSR might be computed and expressed early in the planning phases, even before an RSR has been calculated. In what cases might this take place, and why would this action be important? When the availability of a particular type of ammunition is already a concern, early expression of constraints, including CSR, may be vitally important to subordinate planners. If the short-

age is in Hellfire missiles, for example, during the development, comparison, and selection of courses of action (COAs), planners may want to think carefully about making AH-64 Apache helicopters their prime killer of enemy armor. Likewise, if 120-millimeter tank ammunition is constrained, COA development needs to include options that rely less heavily on M1A2 tanks as the primary enemy armor killer.

CSR normally applies to individual items of ammunition rather than to ammunition as a class of supply, so it is typically expressed in terms of rounds per weapon (or system) per day. CSR could be expressed in terms of short tons or applied to the entire class of supply, but it would not have much meaning, except at higher echelons. Theater ammunition requirements tend to be consolidated into manageable terms like short tons.

Early in an operation, especially in the theater opening phase, the ability to deliver ammunition may be constrained. Commanders must make difficult decisions to ensure that the logistics system concentrates on delivering the ammunition types that are most critical in the opening phases of an operation. Service component perspectives may differ here and create significant friction among the components of a joint force. For example, the air component commander is likely to put air-to-air missiles high on his list, while the land component commander is likely to place surface-to-air, air-to-surface, and surface-to-surface munitions first in his priorities. In this situation, it is up to the joint force commander to listen to the rationale of his service or functional component commanders and decide how transportation assets will be allocated to deliver munitions designed to meet the perceived threats.

This example of joint-level decisions also points toward an interesting match of Army and joint doctrine. As discussed previously, FM 4-30.1 states that the ARFOR commander establishes a CSR if one is needed. Interestingly, joint doctrine says almost exactly the same thing. A search of joint doctrine reveals that CSR is described only in the context of an Army component or a joint force land component. Joint Publication (JP) 3-31, Command and Control for Joint Land Operations, and JP 3-09, Joint Fire Support, both mention CSR, but only to describe where to place CSR information in an operation plan or operation order (OPORD). JP 4-09, Joint Doctrine for Global Distribution, discusses CSR, but only as an Army component commander issue. Joint doctrine apparently does not address a joint CSR, in which distribution of available ammunition is allocated among service or functional components. Such a case would be rare, but it could happen, and we must assume that it would be resolved by the joint force commander, based on input from his staff and component commanders.

Except in the very first days of an operation, ammunition is unlikely to be in short supply across the board. Specific types of ammunition are more likely to be in short supply. New items in the inventory are likely candidates; everyone wants the latest, greatest, longest-range ammunition available. New ammunition types with enhanced or special capabilities also are likely to be in high demand and short supply. Older ammunition types also may be the culprits, especially if a weapon system has been designated for phase out but has been pressed back into service.

The simplest, most effective way to state limitations in class V availability is to express the CSR in terms of rounds per weapon (or system) per day. When expressed in these terms, it is easy for anyone at any level to understand what the CSR means in terms of fighting the battle throughout all the phases of a campaign. Expression in short tons tends to limit comprehension of the true meaning of a CSR. Expression in rounds per weapon per day provides a much more meaningful and easily understood expression for the fires and maneuver folks who will actually plan and execute an operation. Any good logistician can use CSR numbers to compute what will actually be coming through the supply pipeline in order to plan for transportation and storage requirements.

Where Is CSR Found?

If you are reading an OPORD to find out if a CSR will affect you, where should you look? On the other hand, if you are writing an OPORD, where is the best place to put CSR information? The answers to these questions may be unclear because different sources of doctrine contain some inconsistent or conflicting information.

FM 5-0, Army Planning and Orders Production, does not help much. The only references to CSR, other than in the glossary, are brief references in two of the annexes. FM 4-0, Combat Service Support, describes CSR development but does not specify where it should be found in an OPORD. FM 4-30.1 provides some real guidance. It states, "The CSR is disseminated to units through the OPORD. The CSR should appear in the OPORD in paragraph 4, or in either the service support or fire support annex."

Some, but not all, Army doctrinal publications say CSR information should be in the fire support and engineer annexes of the OPORD. However, all say CSR should be in Annex I, Service Support. Put CSR information there (Annex I), for sure. CSR information should be considered optional in the engineer and fire support annexes. If you are writing an OPORD that includes CSR information, put a reference to Annex I in paragraph 4 of the basic OPORD. Do the same in Annex D, Fire Support, and Annex F, Engineers. These references help simplify the crosswalk effort

of OPORD review and analysis and prevent having to update multiple sections of the OPORD during its development if information changes. If a CSR is in effect, it always should be found in Annex I; this should be the one-stop, always-reliable answer for all information relating to CSR. For a joint order produced in the Joint Operations Planning and Execution System, the equivalent is Annex D, Service Support.

Why Are RSR and CSR Important?

RSR is an estimate of what will be required to accomplish a particular mission. As an estimate, it can be calculated at any level, but in its ideal form, it is a bottom-up estimate that is consolidated for commanders at each higher level of an organization, all the way to the joint force or theater level. CSR is an expression of what can or will be provided to subordinate units. Both RSR and CSR are operational issues—the commander's business—even though the necessity of having to impose a CSR is driven by logistics constraints.

Commanders, advised by their staffs, are the decisionmakers who determine whether or not a CSR will be imposed and how it will be distributed to subordinates. CSR need not be a fixed number across a given level of command; different subordinates may be given different CSR values in order to weight main and supporting efforts. The imposition of a CSR may have a significant effect on COA development, analysis, and selection. The CSR may also be the factor that drives a need for an operational pause or a culmination point. If units expend ammunition at their RSR estimate rate when a CSR is in effect, they eventually will reach a zero-balance condition or be constrained to an expenditure rate that matches the CSR.

The basic concepts of RSR and CSR are simple, but their execution is complex. The complexity generally derives from the need to consolidate and aggregate RSR information as it goes up the chain and then de-aggregate CSR information and express it in terms that make sense at the user level as it goes back down the chain. It can be a challenge, especially when the conversion from short tons to rounds per weapon (or system) per day involves enormous numbers. Still, the process works. It is a crucial result of mission analysis and a key element of running estimates that are used to generate OPORDs. **ALOG**

DR. THOMAS E. WARD II IS AN ASSISTANT PROFESSOR IN THE DEPARTMENT OF LOGISTICS AND RESOURCE OPERATIONS AT THE ARMY COMMAND AND GENERAL STAFF COLLEGE AT FORT LEAVENWORTH, KANSAS. HE HOLDS A B.A. DEGREE IN POLITICAL SCIENCE FROM THE UNIVERSITY OF OKLAHOMA, AN M.B.A. DEGREE FROM FLORIDA INSTITUTE OF TECHNOLOGY, AND A PH.D. DEGREE IN ORGANIZATION AND MANAGEMENT FROM CAPELLA UNIVERSITY.

Expeditionary Logistics in Its Truest Form

BY LIEUTENANT COMMANDER RICHARD A. PAQUETTE, USN

Along the San Diego freeway (Interstate 5) near the entrance to Marine Corps Base Camp Pendleton, California, sits a dusty field and a bare beach. Sites like these can be found around the globe in all regions of strategic importance to the U.S. military. However, several months ago this barren, open plain and lonely stretch of beach was crowded with over 2,700 military personnel, hundreds of vehicles, and dozens of watercraft conducting Exercise Pacific Strike 2008.

Pacific Strike is the annual U.S. Transportation Command-sponsored joint logistics over-the-shore (JLOTS) exercise. It was carried out at Camp Pendleton from 15 June to 15 August 2008. The commanding officer of the 8th Theater Sustainment Command from Schofield Barracks, Hawaii, served as the joint task force commander. The commander of Naval Beach Group 1 from Coronado, California, served as the JLOTS commander. And the commanding officer of the 45th Sustainment Brigade from Fort Shafter, Hawaii, served as the reception, staging, and onward movement commander.

JLOTS is a key enabler to many combatant command operation plans. It allows a heavy force to be moved from ship to shore without the benefit of a modern deepwater port. In recent military operations, a large modern port in Kuwait has been available for offloading the bulk of the heavy equipment and sup-

plies. However, during World War II and the Korean War, numerous invasions needed to be supported from ship to shore, including the Normandy invasion and General Douglas MacArthur's bold assault on Inchon in Korea.

In planning for both military missions and disaster response or humanitarian assistance missions around the world, JLOTS enables commanders to mass combat power from the sea in regions without a suitable deepwater port or with a port that has been rendered unusable. The strategic flexibility JLOTS offers is critical to keeping adversaries off balance as they attempt to anticipate U.S. military operation planning. Recently, the military has not needed to employ JLOTS in support of combat operations. The lack of necessity, coupled with budget cuts that have hampered JLOTS training exercises, has limited the exposure of many Army and Navy personnel to this critical warfighting skill set.

Exercise Mission

Pacific Strike 2008 was the largest JLOTS exercise ever conducted during peacetime. The mission was to move the 3d Brigade, 25th Infantry Division, from ship to shore and onward to the National Training Center at Fort Irwin, California, for predeployment training before it headed to Iraq. Thus, unlike most exercises, JLOTS 2008 had a real deadline with repercussions if the offload did not go smoothly.

JLOTS planning began in earnest in October 2007, with leaders mapping out command and control nodes, deconflicting timelines, and ensuring an adequate force flow to accomplish the mission. ["Force flow" refers to movement of personnel and equipment from home station to the area of responsibility.]

Major Navy units participating in this exercise included Expeditionary Strike

Seabees from Amphibious Construction Battalion 1 are erecting the metal frame of a tension fabric structure that will be the 700-seat galley (dining facility) for Camp Peguero, the base camp for Pacific Strike 2008.





Seabees from Amphibious Construction Battalion 1 erect the metal frame of a tension fabric structure that will be the 700-seat galley (dining facility) for Camp Peguero, the base camp for Pacific Strike 2008.

Group 3, Naval Beach Group 1, Amphibious Construction Battalions 1 and 2, Beachmaster Unit 1, Assault Craft Unit 1, Expeditionary Health Services Pacific, Naval Cargo Handling Battalions 1 and 12, and Maritime Expeditionary Security Group 1. Army units participating included the 8th Theater Sustainment Command, 45th Sustainment Brigade, 24th Transportation Battalion, 169th Seaport Operations Company, 368th Seaport Operations Company, 331st Causeway Company, 705th Transportation Company, 443rd Transportation Company, 481st Heavy Boat Unit, 175th Floating Craft Maintenance Unit, and 109th Quartermaster Company.

Systems Used

Pacific Strike used all of the JLOTS technology available to support ship-to-shore movement. This family of systems included the offshore petroleum discharge system (OPDS), the elevated causeway (modular) (ELCAS[M]), the Army trident pier, the Army and Navy roll-on-roll-off discharge facilities (RRDF), the floating causeway administration pier, and a large-scale tent camp for a life-support area.

The Military Sealift Command activated four vessels for use in this exercise. The *SS Cape Mohican* carried Amphibious Construction Battalion 1's lighter-

age from San Diego, California, to Camp Pendleton. [Lighterage refers to small powered and nonpowered craft that move material from ship to shore.] The large, medium-speed, roll-on-roll-off (LMSR) *USNS Pililaau* was used to move the 3d Brigade from Hawaii to Camp Pendleton. The *SS Chesapeake* was the OPDS tanker, and the auxiliary crane ship *SS Flickertail State* carried Army lighterage and the ELCAS pier components from Norfolk, Virginia, to Camp Pendleton.

Both services also used a host of smaller logistics watercraft essential to moving the cargo from ship to shore. These included legacy Army and Navy lighterage, the improved Navy lighterage system (INLS), Army and Navy landing craft utility, lighter amphibious resupply cargo amphibians, tugs, utility boats, and a large logistics support vessel.

Set Up

First into the field were the Seabees of Amphibious Construction Battalion 1. Starting from pop-up tents with meals, ready-to-eat, and water for sustenance, they began construction of the tent camp that would eventually house 2,700 Soldiers and Sailors with a full range of life support. The life support area included dozens of command and control tents, a 700-seat galley [dining facility]; barbershop; laun-

dry; showers; morale, welfare, and recreation facility; movie tent; gym; chapel; and over 250 berthing [sleeping] tents.

This was an expeditionary tent camp. No life support facilities existed before 15 June, and the field was empty again at the conclusion of the exercise. Unlike many U.S. military experiences at camps in Kosovo, Iraq, and Afghanistan, the life support area had no KBR facilities, no commercial vendors doing laundry, and no third-country nationals working in the galley. The entire operation was planned and executed by Soldiers and Sailors.

Exercise Logistics

As the Pacific Strike J-4, I was the JLOTS commander's principal assistant for logistics. I was responsible for all aspects of life support (galley, laundry, barber, tents, cots, tables, and chairs), contracting for services (port-a-johns, trash, recycling, gray water removal, rental vehicles), material (logistics yard, freight routing, priority 03 ordering, government purchase card), fuel, mail handling, coordinating commercial bus transportation to and from the aerial port of debarkation, and budget management. The total exercise budget was over \$20 million, with nearly \$2.5 million used for life support and operations and maintenance needs.

During the peak period of operations, nearly 100 Army and Navy personnel worked to support over 2,700 camp residents. Offload operations continued 24 hours a day, 7 days a week.

The J-4 organization was fully integrated, with Army and Navy leaders from the Active and Reserve components in place throughout. For example, all cooks, regardless of service, wore brown t-shirts and all food service attendants wore green t-shirts. These t-shirts told all who came to work in the J-4 organization that our mission was to support the joint force to the best of our ability, regardless of our service affiliation.

With tent camp construction underway, much of the required lighterage and heavy equipment to support

JLOTS began arriving by sea. The *SS Cape Mohican* allowed fully loaded improved Navy lighterage system and Navy lighterage causeway sections to be driven onto a large elevator on the stern and rolled onto rails on three decks. This float-on-float-off technology allows for quick assembly of sections into causeway ferries for transit through the surf zone onto the beach to support cargo discharge. This capability is one of the key enablers of JLOTS.

The arrival of the *SS Chesapeake* and the legacy OPDS brought another key ingredient of logistics planning into play—fuel. OPDS allows the pumping of 1.2 million gallons per day of fuel from sea to shore. This fuel is pumped via underwater flexible pipelines or conduits to a beach termination unit. From there, the fuel is moved over land to large, collapsible storage tanks set up and operated by Soldiers or Marines.

JLOTS Ship-to-Shore Equipment

The next components of the JLOTS system to arrive, the ELCAS(M) and the Army trident pier, came by rail and aboard the *SS Flickertail State* from Norfolk. The ELCAS(M) is an amazing piece of engineering.



A 175-ton crane moves pile sections into place as the elevated causeway (ELCAS) pier is constructed into the Pacific Ocean. In the distance, a barge ferry is being unloaded on the beach by a Kalmar rough-terrain container handler. Additional pontoon sections for the ELCAS pier are visible in the foreground.

Seabees use heavy construction equipment and cranes to build a steel pier from the beach into the ocean using 8-foot by 40-foot pontoon sections and steel pilings. ELCAS(M) can be built out to 3,000 feet to ensure it passes safely over the surf zone. The head of the ELCAS pier contains two 200-ton cranes for offloading cargo. The pier roadway is 24 feet wide, allowing for two-lane truck traffic. In calm conditions, the ELCAS(M) system can be used to move over 370 20-foot equivalent units of cargo during 24/7 operations.

The Army trident pier is constructed of non-powered pontoon sections that are driven onto the beach by a flotilla of modular warping tugs [the craft used to move the causeway sections and tend the completed structure]. The pier extends from the beach through the surf zone and allows for Army and some Navy watercraft to unload rolling stock. Although it is a capable piece of equipment, the fact that it floats on the water leaves it susceptible to surf damage. Thus, before it was even used during JLOTS 2008, the Pacific Ocean damaged the platform and it was not used in completing the mission.

The final pieces of the JLOTS mission set were the RRDF platforms. These large floating platforms are assembled from nonpowered causeway sections and towed by warping tugs into place alongside the vessels to be offloaded. Large ramps are lowered from the Military Sealift Command ships onto the RRDF platforms, and rolling stock is moved from the ship down the ramp onto the RRDF and then driven onto causeway ferries for transport to a beach, the ELCAS(M) pier head, or the trident pier. When the *USNS Pililaau* arrived, the Army placed RRDFs on the portside of the vessel and the Navy RRDF was positioned astern. RRDFs allow for a much more efficient rate of cargo transfer than lift-on-lift-off by crane.

As the warfighting equipment of the 25th Infantry Division was brought ashore, it was handed over to the reception, staging, and onward movement force assembled on the beach. The 45th Sustainment Brigade Soldiers loaded equipment and rolling stock onto a large number of Army and commercial trucks for the trip to Fort Irwin.

Navy cargo handling battalion personnel operated the cranes onboard the *SS Flickertail State* and



An improved Navy lighterage system (INLS) barge ferry moves into position astern of USNS Pililaau in preparation for equipment offload.

the *USNS Pililaau*. Maritime expeditionary security force inshore boat units provided seaward security. Finally, there was a large presence of both Army and Navy Reserve personnel. Many key units were comprised solely of reservists. Other Active forces relied on reservists to round out their manning to sustain 24-hour operations. JLOTS demonstrated the “total force” concept envisioned by the Navy.

JLOTS 2008 was a huge success. The 3d Brigade’s equipment was delivered to Fort Irwin ahead of schedule, the operation was completed safely, and all forces were retrograded home. Pacific Strike validated to the U.S. Pacific Command, the U.S. Transportation Command, and U.S. Army Pacific that the Army-Navy team of JLOTS professionals can move a heavy force from ship to shore anywhere in the world to support both combat and humanitarian missions. **ALOG**

LIEUTENANT COMMANDER RICHARD A. PAQUETTE, USN, IS THE DIRECTOR OF CONTRACTS FOR FLEET AND INDUSTRIAL SUPPLY CENTER JACKSONVILLE, FLORIDA. HE WAS THE SUPPLY OFFICER FOR AMPHIBIOUS CONSTRUCTION BATTALION 1 IN CORONADO, CALIFORNIA, WHEN HE WROTE THIS ARTICLE. HE HOLDS A B.S. DEGREE IN HISTORY FROM THE UNITED STATES NAVAL ACADEMY AND AN M.S. DEGREE IN MANAGEMENT (ACQUISITION AND CONTRACTS) FROM THE NAVAL POSTGRADUATE SCHOOL.



The 8th Theater Sustainment Command Leads the Way During *Operation Pacific Strike 2008*

BY BRIGADIER GENERAL MARK MACCARLEY AND LIEUTENANT COLONEL BRIAN F. COLEMAN

The ability to move rapidly to the fight with the equipment and personnel needed to successfully achieve the commander's objective and to sustain that force logistically for the duration of the action has always been the key combat and operational enabler. An enlightened Chinese warrior once wrote, "An untested commander believes that a battle can be won with forces of the moment . . . the seasoned commander knows that good logistics ultimately dictates success or failure on the battlefield." Two thousand years later, General Dwight D. Eisenhower, on the eve of the Normandy invasion, corroborated the truth of that universal axiom to his staff by saying, "Battles, campaigns, and even wars have been won or lost primarily because of logistics."

Forward deployed from Fort Shafter, Hawaii, to Marine Corps Base Camp Pendleton, California, from June to August 2008, the Army's 8th Theater Sustainment Command (TSC) successfully demonstrated its ability to execute joint task force (JTF) command and control responsibilities for joint logistics over-the-shore (JLOTS) operations. Known as Pacific Strike 2008, the exercise, directed by the U.S. Joint Forces Command (JFCOM) and the U.S. Transportation Command

(TRANSCOM), tested the strategic ability of the Army and Navy to jointly offload a brigade set of vehicles and cargo to an austere beachhead and then push that equipment forward to the warfighter.

JLOTS Concept

JLOTS is among the tools in the combatant commander's kit bag to support the fight or to execute disaster relief. As outlined in Joint Publication 4-01.6, Joint Logistics Over-the-Shore, JLOTS is the process of loading and unloading supply ships, without the benefit of deep-draft-capable fixed-port facilities, through the coordinated efforts of Army and Navy personnel to receive, stage, and push supplies, equipment, and fuel to the warfighter. JLOTS demands the close integration of multiple Army and Navy elements and capabilities in order to achieve a seamless and efficient flow of all classes of combat supplies.

Each geographic combatant commander has overall responsibility for JLOTS operations in his area of responsibility. Each service component has the personnel and equipment needed to conduct logistics over-the-shore operations within its area of core competency—the Navy from ship to shore, the Army from



Military vehicles drive across an elevated causeway system as the sun sets during Pacific Strike 2008. (Navy photo by Mass Communication Specialist 2d Class Brian P. Caracci)

ship to shore with Army watercraft, and the Army from shore to foxhole. However, the geographic combatant commander normally delegates authority for command, control, and synchronization of the entire JLOTS mission to a subordinate JTF. The designated JTF commander and staff then can accomplish detailed planning through a central planning team composed of representatives from the participating services and TRANSCOM, which provides strategic maritime transportation platforms through the Navy's Military Sealift Command (MSC). These platforms include Navy-owned or -chartered large medium-speed roll-on-roll-off ships (LMSRs), other roll-on-roll-off ships, tactical auxiliary crane ships, and fuel tankers.

Each participating service, as directed by the JTF JLOTS commander, contributes forces and equipment (within its respective service inventory and capabilities) that are uniquely tailored to execute specific parts of the JLOTS mission. The Navy provides amphibious construction units (Seabees), beach group and beachmaster ship-to-shore controllers, ship offloading personnel, lighterage (tugs and barges) of various capacities, floating and elevated causeways and piers, and the Offshore Petroleum Distribution System (OPDS).

The Army trident pier approaches the beach during Pacific Strike 2008 at Camp Pendleton, California. (Navy photo by Mass Communication Specialist 2d Class Brian P. Caracci)

The Army provides logistics support vessels, landing craft, lighterage, causeway construction companies, ship offloading personnel, deprocessing and staging companies, surface movement control teams and coordinators, long-haul transportation assets (either organic or contracted), and the Inland Petroleum Distribution System (IPDS). Both Army and Navy units contribute to the construction and operation of the base camp for JLOTS personnel on site.

JLOTS and the TSC

To avoid overlap, duplication, or capabilities gaps in the JLOTS operation and to prevent disagreements between the services over tactical responsibilities in the JLOTS process, the service elements (Army and Navy) are integrated under a JTF JLOTS commander. He usually has the tactical control authority to direct all aspects of the JLOTS operation, including arrival of the strategic maritime vessels within the JLOTS area of responsibility, "in-stream" downloading of cargo and vehicles, over-the-shore operations, assembly of equipment and cargo at inland staging and marshalling areas, and movement of cargo and equipment to the supported unit's tactical assembly areas.

The Army's TSC, when augmented by Navy, Marine Corps, and TRANSCOM capabilities and subject-matter experts, is uniquely qualified to serve as the JTF headquarters to execute JLOTS for the combatant commander. By doctrinal design, a TSC commands and controls all Army operational logistics formations in support of a joint or multinational force. The TSC serves as the combatant commander's Army service component execution agent for several lead-service, common-user logistics responsibilities, including supply-chain management, common land





A rough-terrain container handler unloads cargo from an improved Navy lighterage system, a floating causeway system used to ferry equipment to shore, during Pacific Strike 2008 at Camp Pendleton, California. (Navy photo by Mass Communication Specialist 2d Class Brian P. Caracci)

contributions to the exercise without significant strain on the TSC's organic command and control resources and well within the TSC's technical area of logistics competence, when augmented by Army and Navy

transportation, movement control, and water and petroleum receipt, storage, and distribution.

The TSC mission is to plan, prepare, rapidly deploy, and execute operational-level sustainment operations in an assigned theater. The TSC and its subordinate expeditionary support commands can be the combatant commander's early-entry logistics capability in the theater area of operations, responsible for theater-opening actions at air and seaports of debarkation and for the reception, staging, and onward movement (RSO) of land forces and equipment.

The TSC command and control system is composed of senior staff personnel, information management systems, and equipment and facilities that are essential to assessing, planning, preparing for, and executing support operations. Through its increasingly capable electronic enablers, such as the Battle Command Sustainment Support System, the Future Battle Command Brigade and Below System, and the Command Post of the Future, the TSC provides the land force commander with a dynamic and reliable logistics common operating picture and operational headquarters.

The TSC plays the primary role in distribution management by coordinating and requisitioning TRANSCOM's strategic transportation assets, monitoring the movement of MSC vessels and Air Mobility Command aircraft into theater, and integrating strategic lift with the common-user land transportation assets on the ground. The TSC also connects the warfighter to the national providers' capabilities and resources (the Army Materiel Command and the Defense Logistics Agency) through its distribution management center within the support operations section. These organic capabilities give the TSC commander, as the JLOTS JTF commander, the ability to direct the JLOTS operation and integrate the Army's and Navy's

watercraft subject-matter experts.

As the JTF headquarters for JLOTS operations at Pacific Strike 2008, the 8th TSC was responsible for over 3,000 Soldiers, Sailors, Marines, and civilians from more than 80 units, including 26 National Guard and Reserve units from 11 states. The 8th TSC commander led JTF-8, which consisted of two major subordinate commands—

- The Army's 45th Sustainment Brigade from Schofield Barracks, Hawaii, which engaged in RSO missions.
- Naval Beach Group One from San Diego, California, with its subordinate Navy Amphibious Construction Battalion One, its Navy Beachmaster Unit One, and the Army's 24th Transportation Battalion from Fort Eustis, Virginia, which collectively executed the ship-to-shore, in-stream offload actions and constructed the temporary piers and causeways.

Pacific Strike Conceived

JFCOM conceived Pacific Strike 2008 as an opportunity to train Army and Navy units in JLOTS operations, while coordinating with TRANSCOM to meet the transportation requirements of the 3d Brigade Combat Team (BCT), 25th Infantry Division, to move the brigade's combat systems, vehicles, and supplies from the unit's home station at Schofield Barracks to the National Training Center (NTC) at Fort Irwin, California. In lieu of contracting for commercial door-to-door transportation from Hawaii to the NTC, TRANSCOM, with JFCOM concurrence, directed the U.S. Pacific Command (PACOM) to execute a JLOTS operation for loading the BCT's cargo onto the Navy's *USNS Ptililaau* at Pearl Harbor, Hawaii, for cross-Pacific shipment. Navy units were then tasked to expedite the in-stream discharge of the brigade's equipment from the *Ptililaau* onto Red Beach at Camp Pendleton. As

part of this JLOTS exercise, Army units were identified to stage and move all of the BCT's vehicles and equipment by Army organic or contracted transportation from Red Beach to Fort Irwin in time to support the BCT's mission rehearsal exercise in preparation for its deployment to Iraq.

The Army's Military Surface Deployment and Distribution Command (SDDC) also played an important role in the exercise. As a major subordinate command of the Army Materiel Command, SDDC's mission is to provide global surface deployment command and control and distribution management. During Pacific Strike 2008, SDDC managed all rail transportation to and from the JLOTS area of responsibility and provided highly trained Army and Navy personnel from its own staff to serve in the JTF-8 headquarters.

Setting Up Operations

PACOM nominated U.S. Army Pacific as its executive agent for the exercise and concurred in the appointment of the 8th TSC as the JTF, with the 8th TSC commander serving as the JTF commander. After a series of planning sessions and rock drills among Army, Navy, Marine Corps, and TRANSCOM planners during the early months of the year, Pacific Strike got underway in June 2008 when Navy Seabees from Amphibious Construction Battalion One began building the life support base for JLOTS personnel at Camp Pendleton. The Seabees erected over 500 sleeping tents, a dining facility, latrine and shower facilities, a barbershop, and a post exchange. By the time the bulk of Army and Navy personnel arrived at Camp Pendleton, the Seabees had completed a morale, welfare, and recreation facility that supported nearly 3,000 service members.

At the same time, Soldiers from the 24th Transportation Battalion began the demanding task of packing and loading the Army's trident pier, lighterage, and causeway ferry on rail cars for shipment from Fort Eustis to Camp Pendleton.

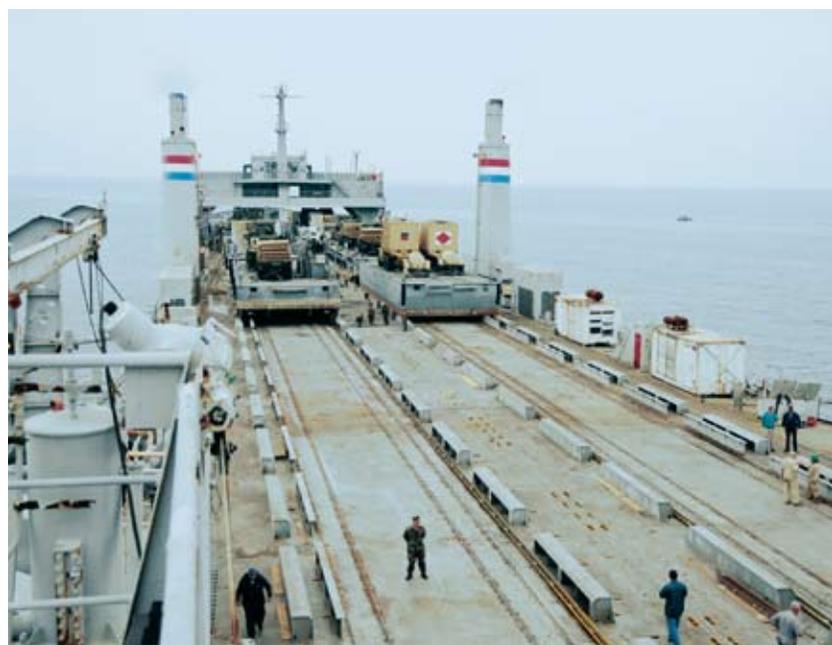
As the strategic partner in the exercise, TRANSCOM committed four ships operated by the MSC to the exercise. These included the *USNS Pililaau*, an LMSR capable of carrying 380,000 square feet of cargo; the *SS Cape Mohican*, one of MSC's two heavy-lift ships; the *SS Flickertail State*, a crane ship that lifts cargo from its holds onto watercraft or a temporary or fixed pier; and the *SS Chesapeake*, a fuel tanker designed for OPDS operations.

Offloading the Equipment

With the arrival off shore of the *SS Flickertail State* and the offload of hundreds of sections of the elevated causeway pier (ELCAS) from that vessel, the Seabees constructed the ELCAS, a temporary pier. They built the ELCAS 25 feet above the breaking surf and out

1,200 feet from shoreline to sea. The 24-foot-wide ELCAS could handle 18-wheeled tractor-trailers. It incorporated at its pier head a rotating 130-ton crane. The crane and its Navy operators proved indispensable in unloading the 3d BCT's containers from the lighterage used to transfer the cargo from the *USNS Pililaau* to the ELCAS and then from the ELCAS to the tractor-trailers that were driven to the ELCAS pier head. The tractor-trailers then delivered the containerized cargo to the Army RSO team farther inland. Over the week-long ship-to-shore download activity, crane operators offloaded 42 ISU-90 containers, 87 20-foot containers, and 372 TRICONs.

The BCT's vehicles were driven off the stern ramp of the *USNS Pililaau* onto flat, modular barge sections that had been assembled into roll-on-roll-off discharge facilities. The equipment then was transloaded to Navy or Army lighterage. Sailors from Beachmaster Unit One guided the lighterage to shore, where transportation Soldiers met the smaller watercraft and moved the trucks, high-mobility multipurpose wheeled vehicles, and trailers from the lighterage to the beach, across the sand, and then forward to the marshalling area. At the marshalling area, Soldiers from the 45th Sustainment Brigade first inspected and then loaded the vehicles and the containers onto both commercial and military long-haul trucks for the 180-mile trip to Fort Irwin. By the third day of the exercise, Soldiers and Sailors



Two improved Navy lighterage system craft from Amphibious Construction Battalion 1 stand by to descend on the elevator of the Military Sealift Command heavy-lift ship *SS Cape Mohican* during Pacific Strike 2008. (Navy photo by Mass Communication Specialist 2d Class Brian P. Caracci)



Soldiers prepare to offload the floating causeway during Pacific Strike 2008. (Marine Corps photo by PFC Jeremy Harris)

became so proficient in JLOTS operations that they were downloading over 298 vehicles and containers per day from the *USNS Pililaau*.

Fuel Transfer

The *SS Chesapeake*, a modified fuel tanker designed to pump petroleum products from her tanks to other ships or holding tanks on shore, pumped fuel through an onboard flexible pipe from its storage hold through a recoverable 8-inch pipeline submerged on the ocean floor to the beach. There the OPDS connected to the Army's IPDS, which consists of flexible pipeline, pumps, and petroleum storage bags, operated by Soldiers of the 109th Quartermaster Company. These quartermaster Soldiers ensured that fuel would be available for future distribution inland via pipeline, truck, or railcar. During Pacific Strike 2008, Soldiers, Sailors, and Marines assigned to the OPDS and IPDS operation pumped over 200,000 gallons of fresh water (used to simulate JP8 or DF2 in order to eliminate the risk of environmental contamination) from the *Chesapeake* to the onshore bags.

Challenges Overcome

The exercise was not without its challenges. Low visibility, strong currents, and heavy surf on several days created a sea state that threatened some of the ship-to-shore operations. Growing waves and adverse currents pounded the Army's trident pier (designed for the movement of wheeled and tracked vehicles from lighterage to the beach) from opposite angles during its installation on Red Beach and tore apart the fasteners that held the multiple pier sections together. This "confused sea" rendered the trident pier unusable for the remainder of the exercise. Consequently, all *USNS Pililaau* cargo was offloaded either onto the ELCAS from smaller craft or directly onto Red Beach from Navy and Army barges.

The JTF moved more than 1,500 vehicles and shipping containers from ship to shore without the benefit of a fixed pier or berthing space and with no accidents or losses of equipment. This was the largest JLOTS operation, based on the quantity of equipment delivered, since the Inchon landing during the Korean War.

From an operational perspective, and more importantly as reported by the individual Soldiers, Sailors, and Marines who participated in Pacific Strike 2008, the exercise was an unqualified success. Pacific Strike tested and stressed the ability of the 8th TSC to accomplish the JLOTS mission and satisfy its warfighting customer, the 3d BCT. As the JTF, the 8th TSC, with its extraordinarily capable complement of Navy and Marine Corps personnel, demonstrated its inherent ability as a command and control headquarters to operate in a joint, combined, and physically challenging environment. The Soldiers, Sailors, and Marines of JTF 8 were able to make JLOTS, a tremendously complicated operation with its many moving pieces, appear seamless to the warfighter. **ALOG**

BRIGADIER GENERAL MARK MACCARLEY IS THE DEPUTY COMMANDER OF THE 8TH THEATER SUSTAINMENT COMMAND. HE IS A GRADUATE OF THE JUDGE ADVOCATE GENERAL'S OFFICER BASIC COURSE, THE JUDGE ADVOCATE GENERAL'S OFFICER ADVANCED COURSE, THE SUPPLY OFFICERS COURSE, THE ARMY COMMAND AND GENERAL STAFF COLLEGE, THE MULTIFUNCTIONAL LOGISTICS OFFICER COURSE, THE SENIOR OFFICER TRANSPORTATION QUALIFICATION COURSE, AND THE ARMY WAR COLLEGE.

LIEUTENANT COLONEL BRIAN F. COLEMAN IS THE DEPUTY SUPPORT OPERATIONS OFFICER OF THE 8TH THEATER SUSTAINMENT COMMAND. HE HOLDS AN M.S. DEGREE IN BUSINESS ADMINISTRATION FROM BOSTON UNIVERSITY AND IS A GRADUATE OF THE MORTUARY AFFAIRS OFFICER COURSE, THE NBC OFFICERS COURSE, THE SUPPORT OPERATIONS COURSE, THE LOGISTICS EXECUTIVE DEVELOPMENT COURSE, AND THE ARMY COMMAND AND GENERAL STAFF COLLEGE.

Logistics Transition Team

BY CAPTAIN DAVID A. BETANCOURT

In August 2007, I deployed to Iraq as part of logistics transition team (LTT) 24–12, whose mission was to train and mentor the 2d Division, Iraqi Army (IA), in all areas of logistics until the division could sustain itself. The LTT was made up of Soldiers from the 17th Combat Sustainment Support Battalion (CSSB) in Alaska and the 87th CSSB at Fort Stewart, Georgia.

When the LTT arrived in theater, we learned that the Iraqi division that we would be working with had little or no logistics training. Being an internal team under the administrative control of the 87th CSSB and under the operational control of the 2d Division IA military transition team (MiTT) and attached to the 4th Battalion, 1st Cavalry Regiment, it was difficult to find our place and mission. Once we had ascertained the mission, we immediately started to work with the IA G–7.

Developing Training

For the first 2 months, the team learned IA logistics policies, forms, and procedures. Following that, we began working alongside IA soldiers from Headquarters Service Company, 2d Division, to gain firsthand knowledge of the daily problems faced by the IA. After finding IA solutions to their logistics problems, our noncommissioned officers developed classes based on their own experiences, Ministry of Defense and 2d Division policies and procedures, and regulations. The first class covered maintenance and supply. These subjects were chosen because of the difficulty the IA had in these areas, making them major concerns of the IA 2d Division commanding general.

The LTT offered important training support to the IA 2d Division. We provided expert instruction in many critical areas, including maintenance operations, munitions management, warehouse operations, property accountability, medical treatment, human resources management, and driver's training. We conducted more than 35 classes and trained more than 421 Iraqi soldiers.

Training Iraqi Instructors

Initially, the LTT conducted training at the 2d Division motor transportation regiment. As the demand for classes increased, space became limited, compelling the team to conduct classes at Contingency Operating Base India and, later, in its own building at Al Kindi.

Iraqi instructors were the key to mission success. We began identifying honor graduates from previous classes to start training as instructors. With support from the IA G–7, qualified instructors were trained, and by spring, Iraqi instructors were teaching five out of six classes. Each class was assigned an IA officer to hold formations, discipline soldiers, and resource classes. By May, Iraqis were teaching all of the classes.

Making the Training Work

The LTT's success is credited to the IA G–7 and his assistant, who applied LTT advice to make training work. His assistant is a disciplined officer with high organizational and interpersonal skills. The G–7 and his staff believed in this training system. They shared the LTT's goal of having the 2d Division's training completely operational without U.S. support. The G–7 understood the importance of training. He saw first hand how U.S. Army training operates when he attended training at the Joint Readiness Training Center at Fort Polk, Louisiana, in 2007.

LTT 24–12 completed its mission in June 2008. With a new training center established and IA instructors trained, the IA started its first lesson in June. The Army is now turning LTTs into logistics training advisory teams to support the IA base support unit, which is similar to the Army supply support activity, by instructing warehouse operations management and level-3 maintenance.

The 2d Division commander explained his vision for the school to be a detachment unit to the division, with a staff and instructors similar to those at U.S. military schools. LTT 24–12 provided invaluable insight and training support that permitted the IA 2d Division to become more self-sufficient and assume greater responsibility for all support requirements. **ALOG**

CAPTAIN DAVID A. BETANCOURT IS ATTENDING THE COMBINED LOGISTICS CAPTAINS CAREER COURSE. HE WAS THE TEAM CHIEF FOR 2D DIVISION IRAQI ARMY LOGISTICS TRANSITION TEAM 24–12, WHICH WAS DEPLOYED TO MOSUL, IRAQ, WHEN HE WROTE THIS ARTICLE. HE WAS A PRIOR SERVICE QUARTERMASTER NONCOMMISSIONED OFFICER. HE HOLDS A BACHELOR'S DEGREE IN BUSINESS MANAGEMENT WITH A CONCENTRATION IN INFORMATION SYSTEMS FROM HAMPTON UNIVERSITY AND IS A GRADUATE OF THE QUARTERMASTER OFFICER BASIC COURSE.

Preparing for the SBCT's Blue to Green Transition

BY CHIEF WARRANT OFFICER (W-3) ADAM S. HAGENSTON

Army mechanics are taking over the task of maintaining Stryker vehicles in Stryker brigade combat teams. The author outlines his unit's transition from contracted maintenance support.

Unlike the heavy and infantry brigade combat teams, the Stryker brigade combat team (SBCT) was designed to rely on contractors to maintain the brigade's fleet of Stryker vehicles. Now SBCTs are required to reduce their dependence on contractor support and allow Soldiers to maintain all of the vehicles and equipment in their brigades. After the transition, field service representatives (FSRs) will be the only contractors required on site. This article is intended for maintenance managers in Stryker units that will eventually make the transition from contractor ("blue") to Army ("green") maintenance.

Blue Maintenance

When I was assigned to the 1st Brigade, 25th Infantry Division (an SBCT) in 2003, I asked one of my peers how difficult it was to work on Stryker vehicles. He replied that they were not difficult and I would not have to worry about maintenance for these vehicles anyway because General Dynamics Land Systems (GDLS) contractors would be responsible for their maintenance and servicing. Being the new guy in town, I duly accepted that piece of information and for the next year, as we ramped up for deployment, I had very little hands-on experience with the Stryker variants. At that time, I was assigned to the field artillery battalion within the SBCT, so I had fewer than 15 Strykers to maintain. When a Soldier walked into our motor pool and said that his Stryker was broken, all I had to say was, "Hold on, let me get one of the General Dynamics technicians to fix your truck."

Following that deployment, I was reassigned to an infantry battalion within the same brigade. While in the midst of reflagging and moving to Germany, we started to hear talk of a blue to green transition for Stryker maintenance. When I first heard about the proposed change, I instantly felt a knot in my gut. I thought to myself, "This will not be a simple task." I realized that my Army mechanics and I would soon be in charge of maintaining 75 Strykers. This was a scary thought since, at the time, I knew very little about Stryker maintenance.

In my spare time, I started reading Stryker technical manuals and also stressed to my mechanics the necessity of learning about the Stryker vehicles. We studied

training manuals and also crawled under every Stryker that rolled into the motor pool in order to become familiar with the vehicle. At this time, GDLS was still doing 95 percent of the Stryker repairs while my Soldiers fixed legacy equipment.

After moving to Germany, the blue to green transition took a backseat to predeployment training, so GDLS's support contract was extended. Deployment or no deployment, I knew deep down that the Army would eventually complete the transition, and I was not going to let my unit down by not fully teaching my mechanics and myself how to maintain Stryker vehicles.

Green Maintenance

In October 2006, I started my own blue to green program within my combat repair team. Working with the GDLS leader assigned to my unit, I teamed my mechanics with the GDLS mechanics. My mechanics worked right beside GDLS mechanics to assist with, watch, and learn from every job they did. We did this for about 2 months, and after the holiday break, we started off 2007 by switching roles. My Soldiers went from just observing to actually turning the wrenches, and GDLS mechanics began watching, assisting, and providing the technical support needed for each job. For the next 6 months until our deployment, we conducted business this way. By the time we got on the plane to Kuwait, I knew we were better prepared for deployment, but I still felt we were not fully ready for the blue to green transition.

When my unit hit the ground running in Iraq, we had several new elements and pieces of technology, such as slat armor and crew ballistic shield armor, to learn about and incorporate into Stryker maintenance. The added weight of the equipment, heat, dust, new terrain, and the effect of combat had a direct impact on the squadron's fleet of Strykers. For a while, it was "all hands on deck" in the motor pool. GDLS mechanics and my Soldiers were working 20-hour days to ensure a high operational readiness rate. The learning curve was steep, but we managed to adapt and overcome despite any obstacles.

Ten months into deployment, the operational tempo slowed enough for me to take a hard look at where we stood in maintaining our Stryker fleet solely with Army

mechanics. The Soldiers' technical competence was no longer an issue. Fortunately, the new modification table of organization and equipment increased my workforce so that we no longer needed our GDLS counterparts. However, for the time being, GDLS was still managing repair parts and the FSR was serving as a liaison between the unit and GDLS and as a technical subject-matter expert for the Stryker.

The lesson I took away from this experience was that the blue to green transition is indeed a viable concept. The SBCT can reduce its contracted GDLS crew in the field to just an FSR and a parts clerk. Even with a few challenges, the big picture is entirely positive.

Challenges

While preparing for the blue to green transition, the human relations factor among Soldiers and contractors was challenging. Soldiers simply do not enjoy the realization that they are doing a job that someone else is contracted to do for about three times the pay. I call this the "show-me-the-money syndrome." Motivating Soldiers to work while the handsomely paid contractors absorbed the air-conditioning in the break room was difficult. It was important to convince the Soldiers that learning to fix Stryker vehicles was for the greater good and that they were turning the wrenches because the contractors would not be there in the future. Turning the wrenches themselves is the only way Soldiers really learn how to troubleshoot the wide array of maintenance issues these vehicles incur.

Another challenge was convincing the assigned GDLS team to hand the wrenches over to the Soldiers, let them do the work, and become tutors to them when they needed assistance. During deployment, when the boredom bug can get the best of folks, no one wants to be told they are the B-team and that they are to sit on the bench even though there is work to be done. Getting everyone, from Soldiers to contractors, to understand the process right away was paramount to success. Sometimes, of course, assistance was needed from the GDLS contractors because, for the time being, they still owned the repair parts. Conveying this idea correctly to the folks on my GDLS team ensured that the working relationship between the Soldiers and the contractors was not tarnished by animosity or conflict over misunderstood roles.

Surprisingly, the biggest challenge was getting the infantry Soldiers to ask the Soldier mechanics for assistance rather than going straight to the contractors. These infantrymen depended on the mission readiness of their Strykers, so convincing them to go to Soldiers first when their Strykers were broken was difficult. When we first started, I literally caught Soldiers sneaking past my office to go to GDLS for repairs. The vast majority of those infantry Soldiers had been raised in an Army that is increasingly reliant on contractors to fix their problems. They also did not want to wait around for an Army mechanic to learn



An Army mechanic performs maintenance on a Stryker vehicle in Iraq.

how to do it from the professionals. Over time, we won the Soldiers' confidence and they figured out that my Soldiers were just as good as the contractors at fixing the problems. By the end of the deployment, mechanics from my combat repair team were the subject-matter experts.

Another challenge was using the GDLS repair parts supply chain instead of the Army supply chain. As a maintenance manager, I had to learn how to read and understand the secure database that GDLS used to order parts and track the maintenance status of Strykers. Since this system did not interface with the Standard Army Management Information Systems, I had to understand the program and obtain read-only access to it from the project manager so that I could request parts and monitor part status and authorized stockage lists. Maintenance managers must have a solid, trustworthy working relationship with their FSR and GDLS parts clerk.

I learned that GDLS has a fairly simple logistics chain. When a Stryker needs a part, the part generally will be shipped from one of four places. The key is to be able to track that part and put the status into a language that a ground commander will understand. Get to know the people who move the parts. The "squeaky wheel gets the oil" theory works on the civilian side of the house, too. No regulation or barrier exists to prevent a maintenance manager from directly calling or emailing supply representatives at the warehouse and asking for a more accurate status. Like the Army supply system, GDLS's supply chain is based on demand, so at times a part was hard to get.

As funds tighten and the Stryker fleet gets older and larger, all SBCT units will inevitably go blue to green. I say start now. Set some internal milestones that will ensure success. Talk to your commanders and get them on board. A successful transition will take time and a lot of hands-on training for both the leaders and the Soldiers. The only true way to learn how to troubleshoot and maintain Strykers is by getting your hands dirty.

ALOG

CHIEF WARRANT OFFICER (W-3) ADAM S. HAGENSTON IS A SENIOR AUTOMOTIVE MAINTENANCE WARRANT OFFICER ASSIGNED TO A COMBAT REPAIR TEAM OF THE REGIMENTAL SUPPORT SQUADRON, 2D STRYKER CAVALRY REGIMENT.

Army Logistics Knowledge Management and SALE: A Paradigm for Military Logistics Transformation

BY DR. NICHOLAS J. ANDERSON

This article, the second of a three-part series on Army logistics knowledge management and the Single Army Logistics Enterprise, suggests knowledge management practices that Army logisticians should employ.

The Army logistics community should institutionalize and implement knowledge management (KM) practices in support of KM requirements. Logistics KM practices should serve as processes with which the Single Army Logistics Enterprise (SALE) can align. The primary sources of data on KM practices for Army logistics KM requirements include KM studies, Army documents, and interviews with personnel involved in implementing logistics KM initiatives and SALE.

Michael Stankosky's "DNA of KM Model"¹ suggests four KM practices for an organization. These practices are leadership and management, organization, learning, and technology. The leadership and management practice pertains to KM guidance for the logistics community. The organization practice includes structure and metrics. The learning practice focuses on explicit knowledge and tacit knowledge sharing. The technology practice deals with KM capture and creation tools and funds.

Leadership and Management

The Army organizations involved with KM include the Army Chief Information Officer (CIO)/G-6, Army G-4, Army Training and Doctrine Command (TRADOC), Army Combined Arms Support Command (CASCOM), and Army Materiel Command (AMC). The Army has launched a couple of KM initiatives, such as the Battle Command Knowledge System (BCKS) and

the LOGNet knowledge-sharing portal. However, no organization has taken the lead on logistics KM, and no one has developed a KM policy to distribute to the logistics community.

The Army Knowledge Management (AKM) policy developed by the Army CIO/G-6 provides overarching Army-level directions for information management and information technology. The AKM policy represents the Army information technology community's perspectives on KM, so it does not address the collection, sharing, and use of logistics data and information. The AKM regulation, Army Regulation 25-1, Army Knowledge Management and Information Technology, "establishes the policies and assigns responsibilities for the management of information resources and information technology."² AKM focuses on leveraging information technology to help the Army become a network-centric force. The policy identifies KM goals for the Army; however, it focuses on the needs of the information technology community, not the logistics community.³

AKM Guidance Memorandum Number 5 designates TRADOC as the Army Training Enterprise Integrator (ATEI) for "strategic direction and guidance for transforming and standardizing Army training and leader-development business processes."⁴ TRADOC "recruits, trains and educates the Army's Soldiers; develops leaders; supports training in units; develops doctrine; establishes standards; and builds the future Army."⁵ As the ATEI, TRADOC

¹ Michael Stankosky, *Creating the Discipline of Knowledge Management*, Elsevier/Butterworth-Heinemann, New York, 2005.

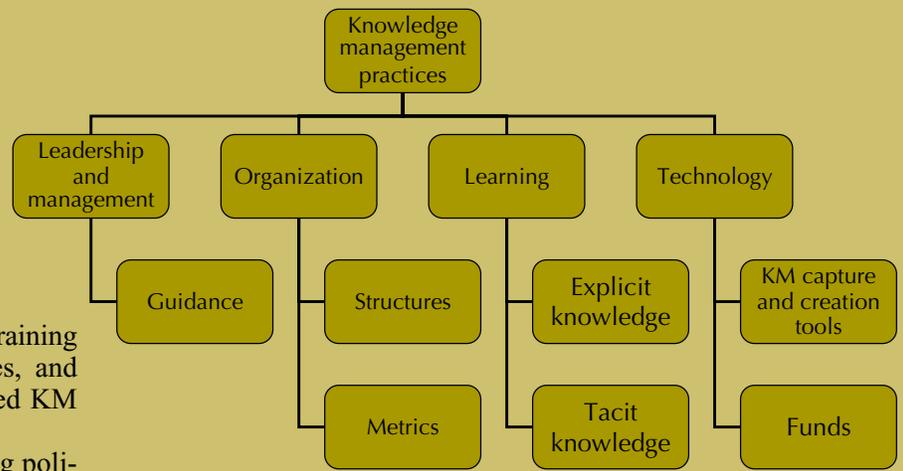
² *Army Regulation 25-1: Army Knowledge Management and Information Technology*, Department of the Army, Washington, DC, 2005, p. 1.

³ *Ibid.*, p. 3.

⁴ "Army Knowledge Management Guidance Memorandum Number 5—Army Training Enterprise Integration," Department of the Army, Washington, DC, 2004, p. 1.

⁵ "TRADOC Mission," Army Training and Doctrine Command, 2007, <<http://www.tradoc.army.mil/about.htm>>, accessed on 27 July 2007.

This figure represents Stankosky’s four knowledge management practices and the subcategories for each practice.



“ensures integration and synchronization of training and leader-development requirements, resources, and priorities.”⁶ However, TRADOC has not provided KM guidance for the logistics community.

The Army G-4 is responsible for “establishing policies and providing guidance that ensures responsive, flexible, and effective logistics support to the Army.”⁷ However, as of the completion date of this research, the Army G-4 has not established a logistics KM policy. Meanwhile, CASCOM has stepped forward in an attempt to institutionalize the KM efforts of the logistics community. A CASCOM KM representative stated during an interview that the Army G-4, AMC, and CASCOM intend to establish KM guidance for the logistics community. The collaborative efforts of this triad could help the Army establish a logistics KM policy, which could provide direction and guidance to the logistics community for creating, collecting, sharing, and using logistics data and information.

Organization

According to Stankosky, organization KM practices “ensure a flow down, tracking, and optimum utilization of all the organization’s knowledge assets.”⁸ Army logisticians follow a similar approach as organizational structures help guide their efforts. Flexible organizational structures and metrics represent the main organization KM practice themes.

Structures. W. Richard Scott identifies three perspectives of organizational systems: rational, natural, and open.⁹ The organizations in which Army logisticians operate possess dominant features of rational and open systems. Logisticians follow a formal structure that standardizes procedures and controls behaviors, which is similar to Scott’s views about a rational organizational system. Scott states—

Recall that a structure is formalized to the extent that the rules governing behavior are precisely

and explicitly formulated and to the extent that roles and role relations are prescribed independently of the personal attributes and relations of individuals occupying positions in the structure. Formalization may be viewed as an attempt to make behavior more predictable by standardizing and regulating it. This, in turn, permits “stable expectations to be formed by each member of the group as to the behavior of the other members under specified conditions.”^{10, 11}

From a rational system perspective, Army logisticians have a formal chain of command and adhere to policies, guidance, and directives from the chain of command. That is, the formal structure influences individual behaviors. Unlike the natural system perspective that advocates social relationships, informal group processes, supervisory skills, and cooperation,¹² the Army relies on a formal chain of command to accomplish goals. However, features of the natural system perspective complement the Army’s rational system approach. “Knowledge sharing is dependent on relations and behaviors of individuals,”¹³ and formal organizational structures and command and control relationships under the rational system approach affect logistics KM practices.

Army logistics organizations follow formal rules for managing logistics data and information. AMC is a strategic-level logistics headquarters, and its mission is to provide “superior technology, acquisition support, and logistics to ensure dominant land force capability for Soldiers, the United States, and our Allies.”¹⁴ AMC also plays a key role in the procurement of supplies, equipment, and materiel for the Army from industries.

⁶ “Army Knowledge Management Guidance Memorandum Number 5,” p. 1.

⁷ “General Order No. 3: Assignment of Functions and Responsibilities Within Headquarters, Department of the Army,” Department of the Army, Washington, DC, 2002, p. 24.

⁸ Stankosky, p. 6.

⁹ W. Richard Scott, *Organizations: Rational, Natural, and Open Systems*, 5th ed., Prentice Hall, Upper Saddle River, N.J., 2003, pp. 31-101.

¹⁰ Herbert A. Simon, *Administrative Behavior: A Study of Decision-Making in Administrative Organizations*, 4th ed., Free Press, New York, 1997, p. 35.

¹¹ Scott, p. 35.

¹² *Ibid.*, pp. 60-66.

¹³ Georg Von Krogh et al., *Enabling Knowledge Creation: How to Unlock the Mystery of Tacit Knowledge and Release the Power of Innovation*, Oxford University Press, Oxford, 2000, p. 173.

¹⁴ “AMC Mission,” Army Materiel Command, 2007, <<http://www.amc.army.mil/>>, accessed on 22 January 2007.

Theater sustainment commands (TSCs) provide command and control over logisticians at the operational level. “The TSC will maximize throughput sustainment of Army forces and other supported elements and provide . . . overall sustainment support to Army forces.”¹⁵ AMC can attach organizational elements with direct links into AMC headquarters to TSCs.

Tactical-level logisticians orchestrate support close to warfighting units. According to Army logistics doctrine, tactical logistics elements “provide coordinated and tailored support for the warfighter. These elements provide support as close to the point of need as possible to satisfy specific tactical requirements.”¹⁶ AMC can also embed organizational elements in support brigades at the tactical level.

Formal rules foster a cooperative approach to logistics KM. According to Kathleen R. Conner and C.K. Prahalad, the “organizational mode through which individuals cooperate affects the knowledge they apply to business activity.”¹⁷ Formal Army organizational structures, complemented by cooperative social environments, enable logistics knowledge-sharing.

Army logisticians also operate in an environment that resembles an open system with features of the natural system. According to Daniel Katz and Robert Kahn, “Open systems maintain themselves through constant commerce with their environment, that is, a continuous inflow and outflow of energy through permeable boundaries.”¹⁸ The Army logistics enterprise is an open system, and the environment influences knowledge creation, sharing, and use.

Army logisticians follow formal rules for creating, collecting, sharing, and using knowledge. However, organizations at all levels collaborate and share data and information. Wenpin Tsai states, “Internal knowledge sharing within a multiunit organization requires formal hierarchical structure and informal lateral relations as coordination mechanisms.”¹⁹ Thomas H. Davenport also advocates a combined formal and informal organizational structure to deal with enterprise systems. He states—

In addition to having important strategic implications, enterprise systems also have a direct, and often paradoxical, impact on a company’s organization and culture. On the one hand, by providing universal, real-time access to operating and financial data, the systems allow

companies to streamline their management structures, creating flatter, more flexible, and more democratic organizations. On the other hand, they also involve the centralizations of control over information and the standardization of processes, which are qualities more consistent with hierarchical, command-and-control organizations with uniform cultures.²⁰

Army logisticians follow formal rules for creating, collecting, sharing, and using knowledge. However, logistics organizations at all levels collaborate and share data and information across several organizational boundaries, and Army logistics organizational structures facilitate hierarchical and lateral communication.

Metrics. The organizational perspective of Army logistics KM also pertains to metrics. Metrics help measure organizational effectiveness. Army Regulation 711–7, Supply Chain Management, which covers logistics metrics, states—

Logistics performance metrics are tools used to measure a particular process within the supply chain. Logistics includes seven interdependent processes: customer response, inventory planning and management, supply (manufacturing/procurement), maintenance, warehousing/distribution center, distribution of materiel, and reverse logistics. Logistics performance metrics are diagnostic in nature. They also must have the capability to “peel back” the data to facilitate review by commanders at all levels and compile reports at the DA level.²¹

Logisticians identify, create, collect, share, and use knowledge for their respective portions of the supply pipeline. The supply request goes through several steps, and several organizations involved with supply and distribution processes take action to help fill the requisition. The manner in which logisticians process data and information for the requested items influences the amount of time it takes to fill the requisition.

Logisticians can find out how long it takes an organization to fill a commodity shortage by accessing a database to determine when a requesting organization submitted a particular supply requisition. Metrics for each segment help the Army identify weaknesses and strengths in the supply chain and transportation network. This supports the goals of the Army’s business transformation strategy, which states that we must achieve

¹⁵ Terry E. Juskowiak and John F. Wharton, “Joint and Expeditionary Logistics for a Campaign-Quality Army,” *Army Logistician*, September–October 2004, p. 5.

¹⁶ *Field Manual 4–0, Combat Service Support*, Department of the Army, Washington, DC, 2003, p. 4-17.

¹⁷ Kathleen R. Conner and C.K. Prahalad, “A Resource-based Theory of the Firm: Knowledge versus Opportunism,” *Organization Science*, September–October 1996, p. 477.

¹⁸ Daniel Katz and Robert Kahn, *Social Psychology of Organizations*, 2d ed., John Wiley & Sons, Inc., New York, 1990, pp. 18–19.

¹⁹ Wenpin Tsai, “Social Structure of ‘Coopetition’ Within a Multiunit Organization: Coordination, Competition, and Intraorganizational Knowledge Sharing,” *Organization Science*, March–April 2002, p. 179.

²⁰ Thomas H. Davenport, “Putting the Enterprise Into the Enterprise System,” *Harvard Business Review*, July–August 1998, p. 127.

²¹ *Army Regulation 711–7: Supply Chain Management*, Department of the Army, Washington, DC, 2004, p. 8.

“measurable improvement in our business processes and increase our efficiency and effectiveness.”²²

The Army measures warfighting readiness in terms of “equipment on hand, equipment readiness, personnel, and training percentages.”²³ Army organizations report the status of these four readiness categories on monthly unit status reports (USRs). The “USR system indicates the degree to which a unit has achieved prescribed levels of fill for personnel and equipment, the operational readiness status of available equipment, and the training proficiency status of the unit.”²⁴

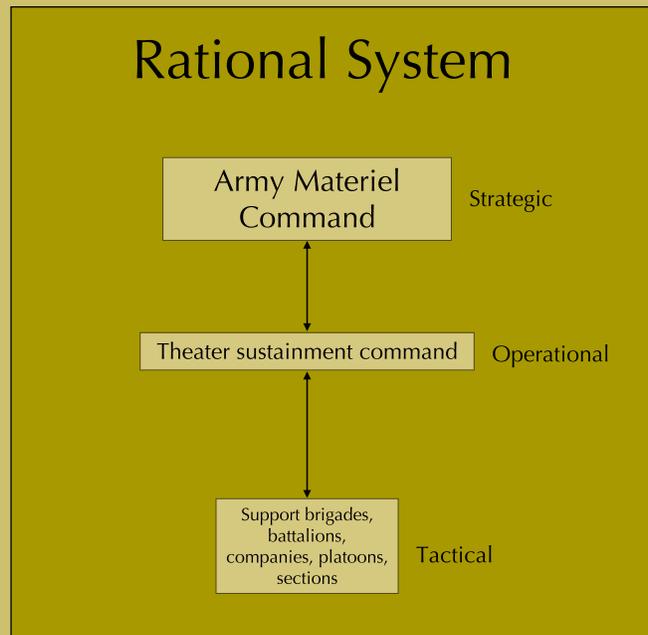
Organizational structures and metrics influence the management of logistics data and information. The Army organizational structure facilitates hierarchical and lateral communications. Logisticians collect, share, and use data and information across several organizational boundaries. Metrics help to focus their efforts on the goals of the organization.

Learning

Stankosky’s learning KM practice pertains to sharing knowledge. Logisticians share explicit and tacit knowledge. Explicit knowledge is easier to share than tacit because explicit knowledge can be documented. Tacit knowledge, on the other hand, resides in the minds of individuals.²⁵ It is difficult to extrapolate tacit knowledge from the minds of individuals. According to Michael Polanyi, “We remain ever unable to say all that we know.”²⁶ Several ideas exist for sharing knowledge, but the Army logistics community does not have a coherent approach to accomplish knowledge-sharing.

Explicit knowledge. Logistics KM training and education fall under TRADOC. TRADOC has overall responsibility for Army logistics schools, such as the Quartermaster, Ordnance, and Transportation schools. The Combined Arms Center (CAC), one of TRADOC’s subordinate commands, provides training and leader development oversight for service schools. The “CAC commander is responsible for providing guidance, leadership and command supervision to the branch centers/schools to ensure that training remains safe, relevant, realistic and executed to Army standards.”²⁷ The CAC website states—

CAC provides Army-wide leadership and supervision for leader development and professional military and civilian education; institutional and



This figure provides an example of the rational system by showing how elements are attached to operational and tactical logistics organizations but report to the Army Materiel Command.

collective training; functional training; training support; battle command; doctrine; lessons learned; and other specified areas that the TRADOC Commander designates. All of these are focused toward making CAC a catalyst for change and to support the development of a relevant and ready ground force to support joint, interagency and multinational operations anywhere in the world.²⁸

CASCOM is another TRADOC subordinate organization. CASCOM “provides training and leader development, and develops concepts, doctrine, organizations, life-long learning, and materiel solutions, to provide the Combat Service Support to sustain a campaign quality Army with joint and expeditionary capabilities.”²⁹ CASCOM focuses on sustainment training and education. TRADOC, CAC, and CASCOM influence Army logistics KM training and education.

The logistics schools focus on the sharing of explicit logistics knowledge. Although they may not have updated their training and education programs to use the term,

²² *Army Game Plan*, Secretary of the Army, Department of the Army, Washington, DC, 2006, p. 4.

²³ *Army Regulation 220-1: Unit Status Reporting*, Department of the Army, Washington, DC, 2006, p. 2.

²⁴ *Ibid.*, pp. 1-2.

²⁵ APQC, “Retaining Valuable Knowledge: Approaches for Capturing and Sharing Valuable Knowledge,” 2003, <http://www.apqc.org/portal/apqc/ksn?paf_gear_id=contentgearhome&paf_dm=full&pageselect=detail&docid=111968>, accessed on 20 December 2006.

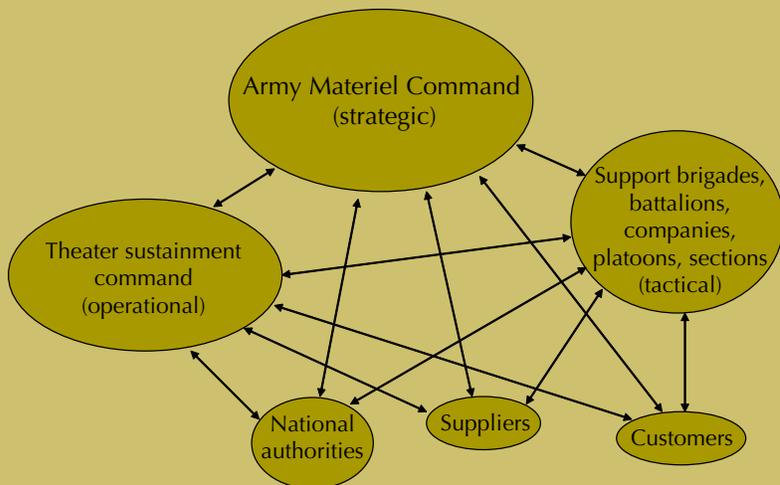
²⁶ Michael Polanyi, *Personal Knowledge: Towards a Post-Critical Philosophy*, University of Chicago Press, Chicago, 1958, p. 95.

²⁷ “TRADOC Mission.”

²⁸ “Combined Arms Center-Overview,” Combined Arms Center, 2008, <<http://usacac.army.mil/CAC2/overview.asp>>, accessed on 10 December 2008.

²⁹ “United States Army Combined Arms Support Command Command Overview Briefing,” 30 October 2008, <<http://www.cascom.lee.army.mil/command/commandbrief/CommandOverviewCoSI30Oct08.pdf>>, accessed on 3 December 2008.

Open System



In an open system, organizations at all levels collaborate and share data and information.

“knowledge management,” they cover processes for collecting, sharing, and using logistics data and information. They have written processes for identifying, acquiring, sharing, and using logistics data and information, and the Army has institutionalized these documented processes.

Tacit knowledge. None of the Army logistics training and education programs addresses tacit logistics knowledge. The Army logistics community does not have a tacit knowledge training and education strategy. Without a strategy for capturing logistics knowledge from the minds of subject-matter experts, a wealth of knowledge departs organizations when people rotate to their next duty assignments or depart the Army. The Army should institutionalize tacit knowledge sharing for the logistics community.

CASCOM has launched LOGNet to assist logisticians with sharing tacit knowledge. The open organization structure mentioned in the previous section facilitates rapid exchange of logistics data and information, and logisticians interact at all levels of operations. The logistics community should have a strategy for transforming tacit knowledge from the minds of individuals into explicit knowledge.

A logistics tacit knowledge strategy could serve as the funnel through which explicit logistics knowledge training and education programs receive updates. The manner in which the Army captures lessons learned from military operations could serve as a guide to assist the logistics community with this effort. Logisticians should have instructions from the tactical through

operational and strategic levels for capturing and institutionalizing tacit knowledge.

Technology

Stankosky’s technology KM practice relates to KM capture and creation tools and funds. Technology “deals with the various information technologies peculiar to supporting and/or enabling KM strategies and operations.”³⁰ The technology portion of this research does not attempt to cover every information technology available to Army logistics KM. Therefore, my research focuses on KM capture and creation tools and funds to help create, share, and use logistics data and information.

KM capture and creation tools. The Army has several logistics KM capture and creation tools to help logisticians create, collect, share, and use data and information. Knowledge capture and creation tools help transfer data and information from Army logistics automated information systems in the logistics enterprise to suppliers, shippers, and customers. These KM capture and creation tools include LOGNet, Battle Command Sustainment Support System (BCS3), and Logistics Information Warehouse (LIW). The Army also uses the service-oriented architecture (SOA) software design approach. These KM tools help logisticians analyze data and information and convert them into knowledge for their organizations. The logistics community has several options for capturing, sharing, and using data and information.

LOGNet is a web-based collaborative site. CASCOM established this Internet-based forum for personnel with common interests to share logistics information. LOGNet allows logisticians to access, share, and use information from numerous sources and benefit from real-time collaboration.

The Army’s BCS3 is a system that pulls data from automated information systems to help logisticians make decisions. BCS3 is a KM decision support tool that provides estimates, friendly force tracking, in-transit asset visibility, and collaborative planning.³¹ Logisticians use information from BCS3 to prepare management indicator reports and control logistics operations. BCS3 obtains information that logisticians analyze and synthesize into knowledge to help them perform their duties.

LIW links data from several databases into a collaborative web-based environment and “provides a common point of entry to the existing web capabilities of the Logistics Integrated Data Base (LIDB), the Integrated Logistic Analysis Program (ILAP), and other LOGSA [Logistics Support Activity] tools.”³² LIW provides logistics managers access to data and information to make decisions. With the KM enablers from

³⁰ Stankosky, p. 6.

³¹ *Field Manual 4-0*, p. 8-23.

³² “About LOGSA Logistics Information Warehouse,” LogTool, <http://logtool.net/html/_tool_detail.php?tid=416>, accessed on 12 February 2007.

LOGSA, logisticians can manage the logistics pipeline at all levels of operations.

SOA “is a new approach to building information technology systems that allows business to leverage existing assets and easily enable the inevitable changes required to support the business.”³³ SOA solutions for pulling data from databases to help make decisions include Raytheon’s Distributed Common Ground System Integration Backbone (DIB) and Boeing’s Network-Centric Logistics (NCL). Other software suppliers provide comparable SOA solutions as well. These enablers provide a means for the Army logistics community to leverage KM technological enablers without having to buy new automated information systems to keep pace with technological changes. DIB, NCL, and other SOA solutions rely on adapters to access databases to obtain logistics information.

SOA solutions provide additional decision support system options to the Army logistics community. Army logisticians do not have to rely on decision support systems that are part of an enterprise resource planning (ERP) package because they have KM system options to help with making decisions. The Army logistics community has several KM capture and creation tool options that logisticians can use to assist with several types of decisions. The logistics KM capture and creation tools help logisticians analyze data and information and are not limited to ERP package solutions.

Funds. The Army logistics community needs funds for linking KM capture and creation tools to shared databases in web-based environments and for completing the implementation of SALE. The logistics community should identify and quantify additional funding requirements for logistics KM capture and creation tools and should link these tools to Army Knowledge Online.

Access to the Internet is an important consideration for logistics KM. The Internet plays a major role in integrating information. Michael Porter states, “The special advantage of the Internet is the ability to link one activity with others and make real-time data created in one activity widely available, both within the company and with outside suppliers, channels, and customers.”³⁴ Porter further states that the use of the Internet for a particular process will have far-reaching effects on other processes that are without access to the Internet.

The Army should provide additional funds not only for linking KM capture and creation tools under SALE to the Internet but for linking other logistics automated information systems as well. The components of SALE do not cover all logistics KM requirements. Therefore, the Army will have a combination of logistics KM capture and creation tools funded by SALE implemen-

tation projects and other logistics automated information system projects. Additional funds could help provide access to logistics data and information in a web-based environment.

But, as of the completion date of this research, installation-level logistics organizations have no plans to link KM capture and creation tools to the Internet. According to a representative at the CASCOM Enterprise System Directorate, the Army has not funded the Logistics Modernization Program component of SALE for installation logistics KM requirements. The Army also needs funds for establishing a web-based entry point managing logistics data and information. According to the Army G-4 Logistics Automated Information Systems Office, if the funds were available, Soldiers would have one web-based entry point for every system. But logistics organizations do not have enough funds to make this a reality. The linkage of logistics KM capture and creation tools to the Internet should not be limited to the SALE portal.

The Army G-4 representative further stated that twenty-five command systems currently exist and, given a few dollars, those systems could be reduced to one. By doing this, the Army could eliminate the support contracts for the other systems and save money. The Army would give the Soldiers what they need and free up training dollars. (Soldiers’ operational training dollars fund those systems.)

The Army should not rely exclusively on SALE to link logistics KM capture and creation tools to the Internet. The Army should also provide funds for linking KM capture and creation tools under LIW to the Internet. The Internet plays a major role in establishing the logistics KM infrastructure; it provides a common structure for linking logistics data from functional systems to shared databases and reinforces the execution of logistics processes.

Stankosky’s leadership and management, organization, learning, and technology KM pillars could serve as guides for institutionalizing logistics KM practices. These KM practices should support logistics KM requirements, and the logistics community should adopt these practices at all levels of operation. **ALOG**

DR. NICHOLAS J. ANDERSON IS THE PRESIDENT OF O&M CONSULTING, LLC, IN GOOSE CREEK, SOUTH CAROLINA. HE IS A RETIRED ARMY COLONEL AND A GRADUATE OF SOUTH CAROLINA STATE UNIVERSITY. HE HAS A DOCTOR OF PHILOSOPHY DEGREE IN ORGANIZATION AND MANAGEMENT FROM CAPELLA UNIVERSITY, A MASTER’S DEGREE IN MANAGEMENT FROM WEBSTER UNIVERSITY, AND A MASTER’S DEGREE IN STRATEGIC STUDIES FROM THE ARMY WAR COLLEGE.

³³ Judith Hurwitz et al., *Service Oriented Architecture For Dummies*, Wiley Publishing, Inc., Hoboken, NJ, 2006, p. 3.

³⁴ Michael Porter, “Strategy and the Internet,” *Harvard Business Review*, March 2001, p. 74.

Contingency Contracting Ruminations and Recommendations

BY LIEUTENANT COLONEL RUSS DUNFORD

The author mines his personal experiences to offer some thoughts on meeting the challenges of contingency contracting.

What follows are the observations of a staff officer who worked in the field of contingency contracting in Iraq and Afghanistan in 2007 and 2008. My intent is to highlight some lessons learned by someone with a little different perspective on contingency contracting—an Army Acquisition Corps officer trained primarily in program management and logistics but cross-trained in contracting. I hope those who will be supporting a future deployment will gain perspective and some factors to consider for their missions from reading this.

I arrived in the theater of operations completely unannounced to the command, which often happens despite our ability to zip emails with every humorous joke and video clip known to mankind around the planet faster than light. In any event, there I was. We swept in at night on a UH-60 Black Hawk helicopter, under low illumination with chaff and flare popping like machinegun fire as we headed for the landing zone. I had four suitcases, three duffle bags, an iPod, a laptop computer, a cell phone, a personnel digital assistant, an 800-gigabyte external hard drive of music—and there was not a 110-volt outlet anywhere to be found.

My goal in this article is to address five questions that resulted from my observations of contingency contracting—

- Should a contracting officer be a generalist or specialist?
- Should program managers (officers with area of concentration [AOC] 51A) and junior contracting officers (AOC 51C) be allowed to swim in the same gene pool as level III contracting officers (KOs)? [To oversimplify, level III positions are generally for lieutenant colonels and above.]
- Do bank tellers and contracting officer's representatives (CORs) have more in common than we imagine?
- Are shorter KO tour lengths better?
- Can email traffic be tamed?

My rules of engagement are simple. First, there are no metrics. So for all the recovering "A" types, proceed

with caution and remember that you have been warned! The information I present is anecdotal—no metrics, PowerPoint charts, regression analysis, or webpages to refer to for interactive analysis, and not even one quote from anyone who is famous, infamous, or anonymous. And just to push us over the edge, the focus areas are not presented in any order; they are not higher to lower, lower to higher, or otherwise ranked.

The following scenarios provide an illustration of the focus areas. After discussing each point, I'll culminate with the proverbial "path ahead" that I would implement if I were king for a day.

Generalist or Specialist?

KO #1: Look, I'm a contracting officer. I don't do transportation. Besides, I contracted for the material and the shipping terms are F.O.B. [freight on board], so it is the vendor's problem to get the items delivered. Besides, I have 20 contract actions working on my desk.

KO #2: I know. I had a similar situation last week, and I'm still waiting for delivery.

I submit that the KO must be a generalist in many fields, with transportation as the key field, but a specialist in the field of contracting. Back home, we would say, "You need to be an inch deep and a mile wide."

KOs can quote the Federal Acquisition Regulation (FAR), Defense Federal Acquisition Regulations, and acquisition instructions and oversee a competitive selection process and all of the other tasks associated with contracting. However, when the KO drifts from his specialty, he exits his comfort zone. All military branches or career specialists are like that, so this is not unique to the world of KOs.

In an effort to combat this very situation, the Army Acquisition Corps has begun requiring personnel to become broader in scope. I think this is good. Knowledge of an alternate acquisition field will prove beneficial as one builds a bigger rolodex of resources for future assignments, missions, and challenges.

Given that the majority of KOs are from the Air Force, I can say that the Air Force does a great job training and growing KOs. Officer, enlisted, and

civilian personnel are all very knowledgeable as they “single” track when it comes to this career field; this system builds excellence. But in the contingency contracting environment, we have to learn the second-order effects of our actions and how to ask probing questions when we work with local nationals. For example, F.O.B. or FedEx deliveries in the United States and other noncombat environments work as advertised, conform to generally accepted terms, and are used in contracts with little concern about confusion from the KO. But this is not the case in the contingency environment, and we have to remember this.

Now, you may be saying that I am stating the obvious, but how many of us go to turn on a light switch when we know the electricity is out? This analogy holds true in contingency contracting. We grow so accustomed to a certain level of service based on our experiences in a peacetime environment that we forget what a challenge everything can be in a contingency environment. What works well in peace does not function as well in a conflict. Knowing the right question to ask is paramount in getting to the ground truth and developing a working solution. Allow me to focus on transportation and provide an example that I have observed.

Cross-training would do much to facilitate understanding of each respective acquisition specialty. PMs and junior KOs can work in the contingency contacting environment and aid the KO. All they need is a “right seat ride” with a KO shadowing them until the PM and the junior KO can begin transitioning and assuming more KO duties.

Once upon a time, a field command had just sent a flaming email up to “Higher,” and it had rolled downhill and landed in the KO’s lap. Everyone’s favorite question was in the subject line: “When am I getting my stuff?” So the KO quickly got on the phone and, after multiple attempts, finally was able to get in contact with the local vendor. The vendor spoke broken English, and the KO’s Arabic was even worse. The summary of the vendor’s response was, “Seven days.” The KO’s inquired again, “Are you sure?” The vendor replied, “Yes, 7 days.” This message of 7 days was then pollinated, propagated, regurgitated, incubated, and emailed across the theater

of operations through horizontal and vertical levels and every chart and chain of command imaginable, and all was good with the world.

Often, this scenario has a happy ending; sometimes it does not. Trust me, the contingency contracting environment is the elixir of which Murphy lives, breathes, and dreams. So we should plan for the worst and hope for the best.

I learned the following info nugget while working with those in the transportation world: The KO can uncover a few more facts from a vendor by asking just a few questions. For example—

Question 1: Vendor, can you fax or email me a copy of your import clearance documentation?

If, after you ask this question, you hear crickets on the other end of the phone, lightbulbs should be going off in your mind. If the host nation has not approved the shipment for import, I seriously doubt the delivery will arrive in 7 days. The processing time alone for import authorization can be 7 to 10 days.

Question 2: There is no question 2. Question 1 alone should answer the mail. Given the current area of operations, unless it is a T-wall, bunker, or other item that is being manufactured locally, the product is being imported and will require an import clearance issued by the host country.

Question 3: Okay, you insist on more. Assuming the product is local, ask for a location where you can meet to inspect the item. Now you have your poker face on. If you again get crickets on the phone, proceed with caution.

It is your reputation and the reputation of U.S. contracting and acquisition that are on the line. Trust is paramount in any operation, for I can assure you that in 7 days, at 2400 hours, the commander will send a followup email if the item is not delivered as advertised. And no, you won’t get a “thank you” in the mail if all works as planned. That is life. “Aw-shucks” come via email, while “hooahs” are put in a bottle and thrown in the desert to await the next flood for delivery. Get over it, and move on.

So, if I were king for a day, I would have an orientation for a week that takes KOs throughout their areas of responsibility. The KO would look the commander she supports in the eye and educate him about what the KO brings to the fight; the KO would also learn about the transportation processes and walk the ground she is going to fight on as a KO. This is how the ground commander does it when he executes a relief in place.

Okay, there is no time for that pie-in-the-sky scenario. So the KO must take the initiative to discover the key information nodes, find the person who has been there about a month ahead of him (that person will be most beneficial), and be prepared to work.

Program Managers in the Role of KO

Program management (AOC 51A) Soldier: All I know is, it was submitted to contracting over 3 weeks ago. Why they can't just go sole source is beyond me. I have everything ready to execute. All I need is that contract released, and we're bending metal.

Contracting (AOC 51C) Soldier: All a PM [program manager] knows is cost, schedule, and performance, and he can't even begin to spell contracting.

Effective immediately, we should expand the KO gene pool and let contingency contracting commands be the vanguard in educating PMs (51A) and KOs (51C) who are at least level I in their respective careers to work in contingency contracting. One of our military's greatest strengths has always been the cross-training of personnel.

Cross-training would do much to facilitate understanding of each respective acquisition specialty. PMs and junior KOs can work in the contingency contracting environment and aid the KO. All they need is a "right seat ride" with a KO shadowing them until the PM and the junior KO can begin transitioning and assuming more KO duties.

KO's will argue that they don't have time to babysit. Given that the bulk of the items being contracted are consumables—printer cartridges, paper, office supplies, tents, containerized housing units, and such—a PM and junior KO can be trained. We'd all be better for it, for we learn much by doing. The value added of this action is that the KO can now focus on the multimillion-dollar source selections or other actions that are more complex and require greater attention to detail, the PM can see the inner workings of the contracting world and can carry lessons learned to a future PM assignment, and the junior KO can obtain a little baptism by fire.

However, the attitude among contracting leaders sometimes seems to be that if you aren't a level III 51C, you aren't qualified. It happens in all organizations as we are a self-protecting species. We all have our corporate cultures, but this is the catch-22 that must be broken. It takes time to grow KOs, and though 51A Soldiers might not quote the FAR by paragraph and line number, they at least come with a solid baseline of knowledge and can learn. The same holds true for the junior KO.

Eating the young of the 51C career field is a bad practice as well. If contingency contracting leaders maintain that they want only level III-trained 51C KOs down range, how are we going to grow our junior ranks? Having level III-trained 51C personnel in every office may be desirable. But you fight with the KO force you have, not with the one you want. Sound familiar?

If this practice continues, we soon will have a talent gap. Then we'll hire all the level III KOs who retire or face an estimated time of separation as contract support personnel, and our new junior personnel will lack the experience they could have gained had they gone down range. I am a firm believer that people will rise to the height of the bar. No, I am not advocating we fill every billet 100 percent with junior personnel. But I do submit that a junior KO could perform and assist with many tasks and thereby enable the senior KO to focus on more complex issues. Maintaining better communication with the CORs is just one such critical task.

So, if I were king for a day, I would expand the gene pool for KOs to include PMs and KOs who are level I in their respective career fields. I would advocate that we not treat these personnel the way that Shrek treated Donkey when Shrek was looking for a cohort to accompany him to find Lord Farquaad. Donkey kept screaming, "Pick me, pick me," and Shrek just kept turning a blind eye until his hand was forced.

Bank Tellers and CORs

KO: I don't understand who that COR thinks he is issuing a cure notice. I'm the KO.

COR: I'm an 11B. What am I doing being a COR? I can never get in contact with the KO. Fine. I have to get this moving, the CO [commanding officer] is on my butt. I'll issue a cure notice. That will get the vendor's attention.

We, the contracting community, set ourselves and that young trooper (often an E-5 or E-6) serving as a COR as an additional duty up for failure. We take an 11B, or any other available person, shake and bake them in a 1-hour class, and turn them loose to change the world—and 2 or 3 months later wonder why the contract performance is all fouled up.

If a KO has no idea what an 11B is, it is probable that an 11B has no idea what the FAR is or what the whole concept of contracting is about. The 11B wasn't around KOs at the National Training Center or the Joint Readiness Training Center, and he didn't hear of KOs at any simulation exercise or while assigned to his home station. Now, an 11B is the military occupational specialty for an infantryman. In generic terms, 11Bs are in every military service: They are the troopers who are put into every mission under the sun and work to make it happen. So, to get a better perspective of how the 11B feels when assigned to act as a COR, I propose the following: Starting tomorrow, we are going to put KOs through a 1-hour class, issue each one an M16A4 and complete battle rattle, send them on patrol, and see how things go.

But the military does not have a monopoly on this approach. Consider bank tellers. Banks will spend

KO's will argue that they don't have time to babysit. Given that the bulk of the items being contracted are consumables—printer cartridges, paper, office supplies, tents, containerized housing units, and such—a PM and junior KO can be trained. We'd all be better for it, for we learn much by doing.

millions on an ad campaign to gain customers, but the one person in the bank who has the most interface with the customer—the one who will most influence the “customer experience”—is often the least paid, and possibly the least trained, bank employee: the teller. The same thing can happen in the world of contracting.

The COR is the eyes and ears for a KO. The COR has the mission of reconnaissance for the KO. The KO should let the COR help him. The COR knows what is going on as he lives at the forward operating base or operates in the environment where the work is being performed. But we route this COR through a 1-hour class, hand him a certificate, bless him to execute with little to no followup, and wait until the flaming email crosses our desk. It happens. Unfortunately, this scenario has the potential to evolve into a “Parson's Construction” fiasco. (Google “Parson's Construction Iraq” if you have no idea what I'm talking about.) And yes, the COR duty is one of many duties the Soldier has. Do I think KOs or CORs proceed with malice? No. But we don't set the conditions for success, either. We need to show the COR some love.

If I were king for a day, what would I do? The reverse role mentioned earlier (11B versus KO) best communicates the point. Therefore, starting next week, I would have all KOs routed through a 1-hour class on patrol techniques, and, once a week for 24 hours, they would be required to conduct a route reconnaissance in the red zone with their 11B COR brethren. One week, they would be driver, the next week they would be in the 50-caliber machingeon turret, and so on. This quality time would foster better communication and a collaborative spirit between the KO and the COR. Extreme? Draconian? Yes, but think of the teambuilding that would evolve.

So, the KO community solution for CORs must be equivalent to what KOs would desire if they had to perform a route reconnaissance mission. If we do this, we'll have a quality COR program. Give all CORs a satellite communications phone, digital camera, and laptop so they can communicate effectively with the KO. Empower the COR. No one shows up wanting to fail. What costs more, these items or the manpower required to recoup from a poorly executed contract?

KO Tour Lengths

KO 1 (Air Force): I have 20 days left, and my 6-month tour is over. I'll have to file my TDY [temporary duty] settlement upon return.

KO 2 (Air Force): Has your replacement arrived?

KO 1: No. They've been delayed for some training in Kuwait.

KO 2: So how much cross-training will you get?

KO 1: I'm sorry. Can you repeat the question? I was confirming my departure flight date.

KO 1 and KO 2: Hey, Army, how many days left on your 12-month, I'm sorry, 15-month tour? Where do you file your TDY when you return?

Currently, we have 6-month tours for KOs (up from 4 months for Air Force personnel). The 6-month tour tends to work like this. The first month, the KO is learning; the last month, he's marking days off a calendar. (We all do it, at least mentally.) Then we overlay the 7 to 10 days during which the KO will execute his rest and recuperation pass to Qatar. So the commander essentially achieves 4 months of combat effectiveness from a 6-month KO deployment. I'm not making a judgment here; this is merely the battle rhythm observed with 6-month deployments.

Many contracts are for services or span periods of performance that do not terminate when a unit rotates out of theater. To ensure that we have continuity in managing these contracts, we need to stagger KO rotations in relation to the relief in place and transfer of authority of combat units. Otherwise, the COR who we've trained and worked with departs when his parent unit departs, and the KO, junior KO, and PM have to train a whole new crew. It happens.

I understand that KOs represent low-density, high-demand skill sets. So are 11B infantrymen, pilots, explosive ordnance disposal specialists, military police, civil affairs officers, Special Forces Soldiers, and medics. But the home station can hire a KO easier than we can export one to a theater of operations.

On a positive note, the contracting command for Iraq and Afghanistan has held firm on requiring a replacement to be on the ground and a battle handoff conducted before the outbound person departs the theater of operations. This is not easy, but it appears to be working and ensures that replacement personnel are received and cross-trained. Most departing personnel are professional and have a vested interest in cross-training

their successors because they remember what it was like when they arrived.

So if I were king for a day, effective immediately, all KO tours would be 12 months.

Email Management

The bottom line is that we should consider migrating offices to duty-specific, or “functional,” email accounts and halt the practice of using name-specific email accounts.

For example, we should begin using email addresses such as “KO1@iraq.mil,” with a display name of “Contracting Officer 1.” Using this email account format rather than a name-specific email account, such as “john.doe@iraq.mil,” will greatly facilitate continuity of communication, halt the transfer of the personal email (“pst”) file (as the file folders are assigned to an individual), and improve business operations since 90 percent of our business is communication.

A secondary benefit of this email format change is that it allows any level of leadership in the contingency contracting command to quickly view on line how the command is organized. For example, all display names of commodity contracts personnel might begin with “Commodity KO#1,” “Commodity KO#2,” and so on and be grouped together in one section of the email directory. Thus, the commander or section leader or customer could quickly locate the party he needs. No longer would you get “failed mail” because the last point of contact you had was redeployed. Trust me, with 6-month rotations, maintaining contact is a nightmare for vendors and within the contingency contracting command.

You may advocate establishing a pseudo email or “distribution” email account that allows for email to be sent to, for example, “KO1@iraq.mil” and then automatically forwarded to “john.doe@iraq.mil.” The problem with this format is that John Doe will now build his file folders and organize his files and assign them to his name and therefore to his pst file. When he departs, his successor will have to start from ground zero and contend with a pst file as a historical reference. Another concern with this approach is that as soon as John Doe replies to the inquiry forwarded to him from the “KO1@iraq.mil” email account, the value of the “KO1@iraq.mil” email address is lost. Why? Because most users invariably will hit “reply,” and the default email address that loads into the message for the reply will be the name-specific “john.doe@iraq.mil” email address. So the duty-specific email address of “KO1@iraq.mil” will not receive the reply, and the value of this email management tool will be lost.

Using name-specific email accounts often disrupts continuity of communication with local nationals and

within our own commands whenever a new person arrives and backfills for someone with whom all parties are used to working. How many times have you lost a contact and tried to find their replacement within the same office?

Yes, you as the KO are going to get saturated by local nationals’ emails once they get the duty-specific email address. But this is no different than in the United States when vendors reach out to get the KO’s attention once they get his email address. A potential solution is to copy and paste a form letter and refer the vendor inquiry to the webpage that hosts all solicitations and educates the local national on the contracting process or the local host national business adviser. And remember, you now have that junior KO or PM to share these tasks. If we stop getting emails from local vendors, then we have real problems. The KO is as much an ambassador of economic development as he is a military contract manager.

An additional benefit of duty-specific email addresses is operational security. Take your own name, type it into Google or Facebook, and see what you find. How long do you think it takes before the local vendor population starts using the AKO or DKO email format once they have your name? The local vendors quickly learn it is “firstname.lastname@us.army.mil.”

So, if I were king for a day, all email accounts would be duty/functional-specific and would correlate to the duty assignment and would no longer be name-specific.

This conflict is not the first, and it certainly won’t be the last, to have contracting challenges. Just ask the Union Army Inspector General about his experiences in the Civil War. I’ve learned much from many different people, and this article is merely an opinion piece. A few rules of thumb and a path ahead for each focus area have been provided. What I do know is that, regardless of the bandwidth, rates of fire, or other metrics, the true strength of any organization is its people.

Lastly, remember this: Chuck Norris never fights, he just contracts for private security. Those who have been down range will get this one. Those who don’t get it, come on down, we’re hiring. Keep moving forward; failure is not an option. **ALOG**

LIEUTENANT COLONEL RUSS DUNFORD IS ASSIGNED TO THE PROGRAM EXECUTIVE OFFICE AVIATION IN HUNTSVILLE, ALABAMA. HE SERVED AS J-2/5/7 OF THE JOINT CONTRACTING COMMAND IRAQ/AFGHANISTAN AND AS FOREIGN MILITARY SALES OFFICER FOR THE MULTI-NATIONAL SECURITY TRANSITION COMMAND-IRAQ SECURITY ASSISTANCE OFFICE FROM APRIL 2007 TO APRIL 2008. HE CAN BE CONTACTED AT RUSSELL.DUNFORD@US.ARMY.MIL.

R&R: Reading and Reviews

***Reframing Organizations: Artistry, Choice, and Leadership*, 4th ed.** Lee G. Bolman and Terrence E. Deal, Jossey-Bass, San Francisco, California, 2008, 527 pages.

Over 70 years ago, Luther Gulick coined the acronym POSDCORB (planning, organizing, staffing, directing, coordinating, reporting, and budgeting) to describe the generic management processes. This concept of management seeks to structure organizations so that the effects of these processes are both efficient and effective. This structural framework dominates the Department of the Army's wholesale logistics management philosophy as evidenced by the adoption of process improvement technologies such as Lean and Six Sigma. However, an Army logistician supporting full-spectrum operations might find this structured approach tied to an overly mechanistic paradigm that lacks other promising perspectives necessary to manage the ever-changing needs of the land force.

Over the last two decades, several management researchers have attempted to integrate seemingly incommensurate theories and approaches to organizational effectiveness, with the idea that multiple views are superior to a single perspective. They include Gareth Morgan in his 1986 book, *Images of Organization*; Robert E. Quinn, in the many books and articles, including his 1988 book, *Beyond Rational Management: Mastering the Paradoxes and Competing Demands of High Performance*; Henry Mintzberg in his 1989 work, *Mintzberg on Management: Inside Our Strange World of Organizations*; and Mary Jo Hatch in her *Organization Theory: Modern, Symbolic, and Postmodern Perspectives* of 1997. However, if I were to recommend a single book for managers, it would be Bolman and Deal's 2008 edition of *Reframing Organizations: Artistry, Choice, and Leadership*.

The book presents an array of academic and popular management literature and provides up-to-date illustrations from the business sector, the public sector, and the military. The authors' guiding thesis explains how multiple framing, reframing, and "frame breaking" can work to help managers decipher and work within the inherent paradoxes of organizational life. Bolman and Deal present four "frames"—structural, human resources, political, and symbolic—that together help managers appreciate organizational effectiveness in a more complex, multiperspective way.

The purpose of the first frame, the structural frame,

should be familiar and obvious to military logistics managers. Organizations need clear, well-understood goals, roles, relationships, resources, and coordination. All of these elements prevent confusion, ineffectiveness, apathy, and hostility in the workplace. Managers equate problems in the organization with structural deficiencies; hence, they reengineer them.

The authors postulate that the second frame, human resources (based on the idea that if managers take care of and develop the workforce, they enhance the synergy of an ethical and committed people who openly participate and collaborate for the effectiveness of the organization), is equally important. This perspective should be familiar to those who subscribe to both the Army's espoused leadership model (Field Manual 6-22, Army Leadership) and the prominent goal in "The Army Plan" to "maintain the quality and viability of the All-Volunteer Force, the heart and soul of this Army." Lately, the Department of the Army has emphasized that the human resources frame applies not just to Soldiers but also to the civilian workforce. The recent establishment of the Army Civilian University, designed to enhance multidisciplinary education and leader development, exemplifies this.

The third frame, perhaps the most ignored in the Army's arguably naïve doctrinal view of organizational leadership, is the political frame. The authors argue that managers should never underestimate the power of the organizational "lowerarchy." They highlight those who mistakenly tend to frame challenges in terms of structured hierarchical arrangements (top-down directives, policies, and so forth). Our logistics officer basic and career course classes hardly address the value of organizational conflict arenas and powerful coalitions within the Army (not to mention furthering political savvy associated with Department of Defense, joint, intergovernmental, interagency, and multinational realms). The Army logistics manager must be preeminently skilled in setting agendas, mapping power structures, networking to build coalitions, and negotiating and bargaining.

The fourth frame—the symbolic—is perhaps most daunting. The authors stress that managers have to address the cultural, historical, emotional, and spiritual aspects of organizational life. Managers must inquire into these often hidden aspects of organizations by addressing these questions—

- How does one become a member?
- What types of rituals and ceremonies contribute to a feeling of membership?

• Is there a specialized language or set of dominant values in an organizational subunit that signifies a subculture?

- What stories are told to outsiders?
- How do irreverence, humor, and play at work reduce tension and encourage creativity?

Metaphors are important considerations in framing organizational effectiveness. While the structural frame may demand a machine-like metaphor, the symbolic frame calls for the manager to understand the organization as if it had a “soul.” Army logisticians do not have to search far to discover symbolic aspects of their organizations. Bolman and Deal provide new ways for managers to recognize the importance of symbolism and new ways to consider replacing, managing, and creating new organizational meaning through symbolism.

Bolman and Deal tie all of these frames under their multiperspective concept of leadership. In these chapters, insights include examining a case study involving a school principal just appointed to an inner-city middle school in the midst of near-chaos. The authors offer practical examples of how the principal can make sense of the seemingly hopeless situation and come up with a complex strategy, involving all of the frames, to match the problem's complexity. Although the organizational setting is in a public school, the leadership insights are valuable to any student of management.

Reframing Organizations: Artistry, Choice, and Leadership is interdisciplinary enough to provide great insight to Army logistics managers whether they are dealing with the industrial base or the realm of tactical logistics on the battlefield. The chapter summaries and charts concisely review major points and are exceptionally user-friendly. Army logistics professionals can gain much from investing their time in this well-written, well-illustrated, hybrid book on how to appreciate the complexities of achieving organizational effectiveness. The 21st century Army logistician will require multiple frames of reference, certainly beyond the structural view of POSDCORB.

DR. CHRISTOPHER R. PAPANONE, IS AN ASSOCIATE PROFESSOR IN THE ARMY COMMAND AND GENERAL STAFF COLLEGE'S DEPARTMENT OF LOGISTICS AND RESOURCE OPERATIONS AT FORT LEE, VIRGINIA.

Day of Empire: How Hyperpowers Rise to Global Dominance—And Why They Fall. Amy Chua, Doubleday, New York, 2007, 396 pages.

Amy Chua's *Day of Empire* is an intriguing look at the rise and fall of “hyperpowers.” According to Chua, a professor at Yale Law School, hyperpowers are “remarkable societies, barely more than a handful

in history that amassed such extraordinary military and economic might that they essentially dominated the world.” She further describes a world-dominating country as possessing power that surpasses all other rivals, clearly superior economically or militarily to any other power, and capable of projecting its power to an immense part of the globe. Chua says, “To be dominant a society must be at the forefront of the world's technological, military and economic development.”

Ethnic tolerance is the most important characteristic of a great hyperpower. From the conquest of Alexander the Great to the rise of the United States, Chua uses historical examples to support her premise. She cites Genghis Khan's assimilation of Chinese engineers into the Mongol army and notes that Khan's response to a Muslim envoy's complaints about Christian persecution in the city of Balasgun was to kill the Christian leader and incorporate Balasgun into his empire. Likewise, Chua describes how the Ottoman Empire's tolerance of non-Muslims led to an “immense economic expansion” of the empire.

Chua also points out that lack of ethnic tolerance has led to the collapse of hyperpowers. In 1905, the policies of British viceroy Lord Curzon marginalized Hindus in the India Civil Service. Those policies backfired. Although India remained under British rule for another 43 years, the seeds of dissension were sown, and eventually Britain's intolerance led to large-scale demonstrations against the Crown.

Intolerance was also present in the Japanese empire during World War II. Before Japan's invasion of Singapore in 1942, Singapore was a major international trade center. Chua wrote, “As soon as they invaded, monopolies were awarded to large Japanese corporations. Hyperinflation, price gouging and corruption soon led to economic collapse.”

Chua concludes her book with a chapter titled, “The Day of Empire,” where she points out that widespread anti-Americanism has replaced the world's democratic movement seen at the end of the Cold War. She contends that championing American enterprise does not “Americanize” other nations and that “wearing a Yankee's cap and drinking Coca-Cola does not turn a Palestinian into an American.”

Day of Empire is a fascinating look at hyperpowers. Chua has carefully researched her subject, and her level of scholarship makes *Day of Empire* well worth the read. Whether you agree or disagree with the thesis of her work, *Day of Empire* is an interesting account of world history.

MICHAEL E. WEAVER, A RETIRED MARINE, IS AN ASSISTANT PROFESSOR FOR LOGISTICS AND RESOURCE OPERATIONS AT THE ARMY COMMAND AND GENERAL STAFF COLLEGE AT FT. LEAVENWORTH, KANSAS.

ALOG NEWS

NEW DLA OFFICE PROVIDES OVERSIGHT FOR JOINT EXPEDITIONARY CONTRACTING

The Defense Logistics Agency (DLA) stood up a new organization in October 2008 to oversee expeditionary contracting activities for combat, post-conflict, and contingency operations. According to its director, Tim Freihofer, the new Joint Contingency Acquisition Support Office (JCASO) will help meet a congressional mandate that ordered the Department of Defense to implement a “programmatic approach to fix problems which exist in contingency contracting and contingency acquisition management.”

The need for better contract oversight stems from the larger number of contractors on the battlefield than in past operations. JCASO will eliminate the need for staff contracting elements at each regional command by providing a 28-member unit capable of deploying two 5-member teams.

The U.S. Joint Forces Command and the Defense Contracting Agency also were considered as possible parent organizations for JCASO. DLA was chosen because it currently supports the combatant commands and geographical areas needing the services, it already has the mission of sustainment support, and it has acquisition management experience.

TRANSPORTATION CORPS PROMOTES FIRST FEMALE CHIEF WARRANT OFFICER (W-5)

Chief Warrant Officer (W-4) Jennifer E. Trossbach became the first woman in the history of the Transportation Corps to attain the rank of chief warrant officer (W-5) when she was promoted in December at Fort Eustis, Virginia.

The promoting officer, Major General James E. Chambers, the commanding general of the Army Combined Arms Support Command and Fort Lee, Virginia, observed, “We need to congratulate her [Trossbach] because she’s the first woman CW5 in the Transportation Corps and it’s an Army milestone.” Noting the recent promotion of a logistician, General Ann E. Dunwoody, as the first female four-star officer in U.S. history, General Chambers added, “This is a great year for accomplishments by great women.”



CW5 Jennifer E. Trossbach and Major General James E. Chambers, the CASCOM commander, at the promotion ceremony at Fort Eustis.

CW5 Trossbach is a marine engineering officer assigned to the Marine Engineering Division, Maritime Training Center, an academic department of the Army Transportation Center and School at Fort Eustis. On active duty since 1985, she was appointed as a warrant officer in 1991 and initially served as a small tug chief engineer with the 73rd Transportation Company, 10th Transportation Battalion. In 2004, while deployed to Kuwait as an armor integration officer, she was awarded the Bronze Star for her actions in coordinating the efforts to add armor to the brigade’s tactical and commercial mission-essential vehicles. CW5 Trossbach also served as the Army Training and Doctrine Command capability manager in transportation and helped to develop the 2008 Army Watercraft Master Plan.

DLA AND TRANSCOM MERGING ASSET VISIBILITY PROGRAMS

The Defense Logistics Agency (DLA) and the U.S. Transportation Command (TRANSCOM) are merging the infrastructure and service-oriented architecture of DLA’s Integrated Data Environment and

the data and applications supporting TRANSCOM's Global Transportation Network. Lockheed-Martin Corporation and its teaming partners received the initial convergence contract for the "IGC." The "I" and the "G" stand for the first initial of each system, and the C stands for "convergence." The IGC will provide a single place to access common data, business services, and information regarding in-storage and in-transit asset visibility. It will also establish and provide common, cohesive, integrated data services for supply, distribution, and logistics management information for combatant commands, the military services, and other Federal agencies.

WATER PLANNING GUIDE UPDATED AND AVAILABLE ON THE INTERNET

The Army Combined Arms Support Command (CASCOM) Planning Data Branch has updated the Water Planning Guide that provides potable and non-potable water consumption rates for use in planning and modeling. The guide provides rates extrapolated for theater-level planning and detailed rates for each functional area, and it gives users the option of customizing rates to suit their requirements. The new version includes a small section on ice and a section on bottled water distribution planning. The water support equipment consumables section has been updated to include newer equipment.

Users can access the Water Planning Guide through the CASCOM Planning Data Branch website at <https://www.cascom.army.mil/private/CDI/FDD/Multi/PDB/Water.htm> or through the Quartermaster Center and School Petroleum and Water Department website at www.quartermaster.army.mil/pwd/pwd_water.html.



CONTAINER SECURITY SYSTEM TO PROVIDE BETTER PROTECTION OF MILITARY CARGO

In September 2008, the U.S. Transportation Command (TRANSCOM) deployed a container security system that detects tampering to protect military container shipments from Afghanistan to Pakistan. The CommerceGuard container security system, by GE Security, Inc., reports the security status of each container, alerting TRANSCOM if doors have been opened without authorization. The security device is placed inside the doors of the container and is then armed for shipment with a handheld reader. CommerceGuard is the first market-ready security technology that can be placed inside a container and can detect when doors have been opened. CommerceGuard also can provide the security status of a container via a global information network to customers.

Commercial shippers already use CommerceGuard, and fixed readers are deployed at more than 20 major seaports around the world. GE Security, Mitsubishi Corporation, Samsung C&T Corporation, and Siemens Building Technologies own the system jointly.

ARMY MATERIEL COMMAND WINS SHINGO PRIZES FOR OPERATIONAL EXCELLENCE

Six Army Materiel Command (AMC) programs were recognized with the 2008 Shingo Prize for Operational Excellence Public Sector Prize. The premier manufacturing award highlights the value of using Lean and world-class manufacturing practices to achieve operational excellence.

The Red River Army Depot heavy expanded-mobility tactical truck (HEMTT) team in Texarkana, Texas, brought home a silver medallion for implementing Lean processes that have resulted in a 75-percent improvement in HEMTT recapitalization cycle time.

Bronze medallion winners were the Patriot missile team and the tactical trailer team at Red River, the biological integrated system team at Letterkenny Army

The 752d Explosive Ordnance Disposal Company, attached to the 1st Special Troops Battalion, 1st Brigade Combat Team, 4th Infantry Division, trained technicians from the 9th Iraqi Army Bomb Disposal Company in techniques for effective post-blast site exploitation in November 2008. The exercise was held near Forward Operating Base Falcon in southern Baghdad's Rashid district and was designed to teach the Iraqi security forces how to disarm explosive devices and deal with scenarios in which devices have already detonated. (Photo by Justin Carmack, 1st Brigade, 4th Infantry Division, PAO)

The heavy expanded-mobility tactical truck (HEMTT) A4 load handling system, shown here with an armored troop carrier, is one of the vehicles in the family of heavy tactical vehicles that were delivered in November 2008.
(Photo courtesy of Oshkosh Defense)



Depot, Pennsylvania, and the AN/AM-189 maintenance shop van team and AN/TYQ-23 command and control system team at Tobyhanna Army Depot, Pennsylvania.

Since 2005, AMC organizations have won 23 Shingo awards.

NEW JFCOM ORGANIZATION PROVIDES TAILORED LOGISTICS EXPERTISE

A new organization within the U.S. Joint Forces Command (JFCOM) now provides tailored, specialized support and expertise to joint force commanders. The Joint Enabling Capabilities Command (JECC), activated in October 2008 at Norfolk, Virginia, delivers new tools to combatant commanders, including tools for logistics coordination and execution.

JECC will field joint deployable teams with expertise in four areas: logistics, operations, plans, and information superiority and knowledge management. These teams will assist joint force commanders in quickly establishing headquarters and in planning and executing humanitarian assistance and disaster relief operations.

These joint enabling capabilities teams provide the joint force commanders with the individual and collective skills to better understand the operational environment, plan fully integrated joint operations, coordinate unified actions, and prepare implementation directives and orders for subordinate tactical formations in rapidly changing environments.

Besides the joint deployable teams, JECC can also provide joint force commanders with modular assets from the Joint Communications Support Element, the Joint Public Affairs Support Element, and the Intelligence-Quick Reaction Team, which have become part of the new command.

Over the next year, most of JECC will move to Suffolk, Virginia, where the Joint Warfighting Center (JWFC) is headquartered. The move will synchronize

the rapid deployability of the JECC with efforts by the JWFC to train the warfighter for worldwide contingency operations.

ARMY AWARDS \$1.2 BILLION CONTRACT TO UPGRADE HEAVY TACTICAL VEHICLES

Oshkosh Defense, a division of Oshkosh Corporation, is adding more than 6,000 upgraded vehicles to the family of heavy tactical vehicles through a 3-year contract with the Army TACOM Life Cycle Management Command. In November 2008, Oshkosh began delivering the updated vehicles, including heavy expanded-mobility tactical trucks (HEMTTs), palletized load systems (PLSs) and PLS trailers, and heavy equipment transporters. The new HEMTT A4 (above) is included in the contract. The contract also includes a long-term armor strategy for all three vehicles. This strategy ensures that vehicles come off the assembly line fitted with upgraded suspensions and integral composite armor kits and are ready to receive add-on armor kits in theater.

FIRST ARMY SUSTAINABILITY REPORT OUTLINES ENVIRONMENTAL EFFORTS

Army leaders released the first-ever Army sustainability report on 14 November 2008. The *Army 2007 Sustainability Report* highlights environmental milestones that the Army has achieved and the Army's plans for meeting its sustainability goals. The report states that Army sustainability is the product of the Army's alignment of its mission with its stewardship responsibilities to the environment, the community, and the Army budget.

Keith E. Eastin, Assistant Secretary of the Army for Installations and Environment, said, "This report highlights the Army's current accomplishments in

sustainability, while setting a baseline for which we will measure all accomplishments in the future.”

The fiscal year 2007 Army strategy for the environment includes goals presented in *Army Strategy for the Environment: Sustain the Mission, Secure the Future*.

The goals, developed in 2004, challenge the Army to—

- Foster ethics that promote environmental compliance and sustainability.
- Strengthen its operational capability by minimizing its environmental footprint.
- Sustain land, air, and water resources to achieve training, testing, and mission objectives now and in the future.
- Integrate sustainability principles and practices in an effort to minimize the environmental impact

and total ownership costs of Army systems, materiel, facilities, and operations.

- Enhance the quality of life for Army families and communities.
- Meet needs and predict future challenges through sustainability principles and innovative technology.

In fiscal year 2007, the Army built 78 percent of its new construction projects using the U.S. Green Building Council leadership in energy and environmental design (LEED) standards. LEED buildings have cut Army-facility energy use 8.4 percent since fiscal year 2003.

The full sustainability report is available online at the Army Environmental Policy Institute website at www.aepi.army.mil.

PROFESSIONAL DEVELOPMENT

NEW ARMY INTERMEDIATE CONTRACTING LABORATORY OFFERED THROUGH ALMC

The Army Logistics Management College has added a new course at its Huntsville Campus in Alabama. The 2-week Army Intermediate Contracting Laboratory (AICL) provides hands-on training in using software called Procurement Desktop-Defense (PD2).

Contingency contracting teams, contracting directorates at Army installations, and contracting offices in the Army Corps of Engineers are some of the organizations using PD2. The software tool supports all phases of the procurement cycle, from entering the customer's requirements to closing out or terminating the contract. PD2 software uses desktop menus with images of filing cabinets, folders, routing envelopes, and documents to emulate the office environment while dividing procurement functions into three contract phases: requirements, pre-award and award, and post-award.

Students will receive instruction in the software followed by hands-on practical exercises that reinforce PD2 operating skills.

The Army Acquisition Support Center is sponsoring the course, which will be taught by a Government contractor. Each AICL is scheduled to immediately follow an Army Acquisition Intermediate Contracting Course. AICL is open to officers, warrant officers, noncommissioned officers, and Department of the Army civilians who have previously completed the Defense Acquisition Workforce Improvement Act level 1 training in contracting. Prospective students

should also be assigned to organizations using PD2 software to create and track contracts. Students will earn 60 continuous learning points for completing AICL. For more information, visit the Army Intermediate Contracting Laboratory webpage at <http://www.almc.army.mil/hsv/aicl.htm>.

LEADERSHIP TRANSITIONS HANDBOOK PROVIDES GUIDANCE FOR NEW POSITIONS

The Combined Arms Center and the Center for Army Leadership released a new guide in November 2008 that provides insight for leaders transitioning into new positions at all levels. *The Leadership Transitions Handbook* provides a systematic approach that can be customized to fit the needs of both new and seasoned leaders as they progress in their careers.

The handbook includes tips on assessing and achieving self-understanding and organizational understanding, building credibility, creating a cohesive team and routine, eliminating constraints, and sustaining operations.

Colonel Bruce J. Reider, director of the Center for Army Leadership, explained that the Army transitions leaders regularly but has not formalized the process from a leadership development perspective. “It is imperative that leadership transitions occur efficiently and effectively particularly during this era of persistent conflict and high operations tempo,” Reider said.

Leaders can access the new handbook on the Center for Army Leadership webpage through the Army Knowledge Online website at www.us.army.mil/suite/page/376783.

Writing for *Army Logistician*

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

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

The word limit does not apply to *Spectrum* articles. *Spectrum* is a department of *Army Logistician* intended to present researched, referenced articles typical of a scholarly journal. *Spectrum* articles can be longer than standard feature articles and are published with footnotes.

Instructions for Submitting an Article

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

Photos are a great asset for most articles, so we strongly encourage them. Photos may be in color or black and white. Photos submitted electronically must have a resolution of at least 300 dpi (.jpg or .tif). Make sure to include a description of what each photo depicts. Please try to minimize use of PowerPoint charts; they usually do not reproduce well, and we seldom have the space to make them as large as they should be.

Army Logistician publishes only original articles, so please do not send your article to other publications. Ask your public affairs office for official clearance for open publication before submission to *Army Logistician*. **A clearance statement from the public affairs office should accompany your submission.** Exceptions to the requirement for public affairs clearance include historical articles and those that reflect a personal opinion or contain a personal suggestion. If you have questions about this requirement, please contact us at leealog@conus.army.mil or (804) 765-4761 or DSN 539-4761.

Submit your article by email to leealog@conus.army.mil or by mail to EDITOR ARMY LOGISTICIAN/ALMC/2401 QUARTERS RD/FT LEE VA 23801-1705. If you send your article by mail, please include a copy on floppy disk if possible. We look forward to hearing from you.

Army Logistician (ISSN 0004-2528) is a bimonthly professional bulletin published by the Army Logistics Management College, 2401 Quarters Road, Fort Lee, Virginia 23801-1705. Periodicals postage is paid at Petersburg, VA 23804-9998, and at additional mailing offices.

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

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

Reprints: Articles may be reprinted with credit to *Army Logistician* and the author(s), except when copyright is indicated.

Distribution: Units may obtain copies through the initial distribution system (DA Form 12 series). Private domestic subscriptions are available at \$23.00 per year by writing to the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954, or by visiting <http://bookstore.gpo.gov> on the Web. For credit card orders, call (866) 512-1800. Subscribers should submit address changes directly to *Army Logistician* (see address below). *Army Logistician* also is available on the World Wide Web at <http://www.almc.army.mil/alog>.

Postmaster: Send address changes to: EDITOR ARMY LOGISTICIAN/ALMC/2401 QUARTERS RD/FT LEE VA 23801-1705.

ISSN 0004-2528
DEPARTMENT OF THE ARMY
ARMY LOGISTICIAN
US ARMY LOGISTICS MANAGEMENT COLLEGE
2401 QUARTERS ROAD
FORT LEE VIRGINIA 23801-1705

PERIODICALS POSTAGE
AND FEES PAID
AT PETERSBURG VIRGINIA
AND ADDITIONAL CITIES

Official Business

Coming in Future Issues—

- **Protecting Our Logistics Assets**
- **Pit Crew Maintenance in the Brigade Support Battalion**
- **The Question of Command: Modularity and Logistics**
- **The Case for an S-8 in the Brigade Combat Team**
- **U.S. Army Logistics in World War I**
- **Post Production Software Support**
- **AMC Repair Parts Supply Chain**
- **Top Flite: Securing Convoys in Iraq**
- **Delivering Deployment and Distribution Solutions**
- **Regimental Medical Logistics**
- **Army Strategic Management**