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ARMY SUSTAINMENT

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PAGE 44

Cover: The Ordnance Corps celebrates its bicentennial on 14 May. Building on a proud heritage of 200 years of service to the Nation, the men and women of today's Ordnance Corps provide maintenance, ammunition handling, and explosive ordnance disposal (EOD) support to warfighters around the world. The articles beginning on pages 4 and 6 look at the present and the past of the Ordnance Corps. In the cover photos (clockwise from the upper left), an Ordnance Soldier uses a forklift to move munitions at Joint Base Balad, Iraq; a mechanic reattaches hoses and wires in a generator after an engine is replaced at Camp Liberty, Iraq; an EOD Soldier prepares a controlled detonation of ordnance outside of Forward Operating Base Clark, Afghanistan; and an armament repair specialist reinstalls lugnuts on the wheel of a trailer at Contingency Operating Base Speicher, Iraq. (Photos by SPC Michael Camacho, SGT Phillip Valentine, SPC Tobey White, and SGT David Scott.)



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2 FOCUS

Refining Sustainment Priorities in an Era of Change
—Major General James L. Hodge

4 The State of the Ordnance Corps on Its Bicentennial
—Brigadier General Clark W. LeMasters, Jr.

6 The History of Ordnance in America—Karl Rubis

16 Logistics Movements in a Changing Afghan Environment
—Captain Owen A. Rose

18 The CSSB Challenge: Doing More With Less
—Major Thomas W. Haas

22 Moving Liquid Gold—Major Jonathan McDougal

24 Boat to Plane to Foxhole: Seven Key Steps to Intermodal Operations—Captain Christopher Sheehan

28 Warrior Logistics Scholars Seminar: The Ultimate Leadership Course for Field-Grade Logisticians
—Major Travis J. James

30 What “Shon ba Shona” Means to Army Logistics
—Captain Michael D. Andersen

32 The Complete Exchange of an MRAP Fleet During Stability Operations—Captain George Autry

36 The 87th Quartermaster Detachment’s Joint Aerial Operations in Okinawa—Captain April A. Campise and Sergeant Terrance J. Alvarez

39 The Three Most Common Electrical Safety Issues in Deployed Environments—James F. Jennings

44 Logistics and Analysis in the Science of War
—James A. Harvey III

47 A Road to War for Reconnaissance Squadron Forward Support Companies—Captain Jeremy P. Brown

50 “Fueling the Team” for Better Health and Performance
—Bill Roche

53 Operational Risk Management—Major Jeremiah O’Connor

56 Army Reserve Expeditionary Railway Center
—Colonel Davie T. Pollard, USAR

60 Military Culinary Arts Competition 2012—Staff Feature

62 HEADLINES



PAGE 36

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Refining Sustainment Priorities in an Era of Change

BY MAJOR GENERAL JAMES L. HODGE



In 1963, John F. Kennedy observed, “Change is the law of life. And those who look only to the past or present are certain to miss the future.” This statement applies to the Army as much as it does to any other governmental agency; after a decade of war, it should be no surprise that the Army is posturing itself, yet again, for significant adjustments to the force.

The war in Iraq has come to an end, and nearly all of the equipment retrograded back to Kuwait has been shipped from the theater or incorporated into pre-positioned stocks. We are also decreasing our force presence in Afghanistan and beginning the transition toward a security and assistance mission.

In light of this changing operational environment and anticipated force reductions, the sustainment community is now presented with a unique opportunity to closely evaluate our organizational structure, doctrine, and training strategy to provide an agile sustainment force postured to meet future sustainment requirements.

Improving Energy Use and Doctrine

In the past two issues of *Army Sustainment*, I highlighted two supporting efforts in our strategy to continue “leaning forward” in anticipation of future requirements: Operational Energy and Doctrine 2015.

The operational energy initiative will capitalize on capabilities developed by the industrial sector to reduce our overall energy use. This will extend the operational reach of maneuver force commanders by reducing their overall sustainment requirements and reducing the need to “stockpile” resources within easy reach.

Similarly, the restructuring of our doctrine in accordance with the Army Training and Doctrine Command’s Doctrine 2015 initiative will provide flexible publications that we can adapt over time as we continue to learn as an Army.

Two other ongoing programs complement these initiatives as we shape the future sustainment force: the ongoing force design review process and the Army Learning Model 2015 program.

Restructuring to Meet Future Requirements

The Army of 2020 must be postured to prevent conflict, shape the environment and, most of all, decisively and dominantly win our Nation’s wars. In order to do this, we must all take the lessons learned from the past

decade of conflict and mesh them with the need to meet the hybrid threat of the future while remaining operationally adaptable as codified in Army Doctrine Publication (ADP) 3-0, Unified Land Operations.

This operational adaptability must enable us to respond to not only military actions but also to humanitarian disasters and security risks as they emerge throughout the world. In understanding that the Army of 2020 is going to be a leaner and more agile organization, we must refine the sustainment force to ensure that our resources are positioned to provide the greatest flexibility to the maneuver force commander. As defined in ADP 3-0, our goal must always be to ensure freedom of action, extend operational reach, and prolong endurance.

In reshaping the force, we must continuously reassess how we have our forces and our equipment assets arrayed and at which echelon to best meet the Nation’s defense strategy. For example, the Army’s current tactical wheeled vehicle fleet is out of balance with its requirements. As the Army wrestles with a reduction in vehicles, we must do so in an orderly fashion while ensuring that we have sufficient modernized assets to meet the distribution requirements in 2020 and beyond.

In addition to ensuring that our modernization strategy is sound, we will also seek to increase capabilities by providing organic convoy protection platforms to many of our formations. Modernizing the fleet while increasing existing capabilities, and doing so in an era of diminishing resources, is a tall order, but I have every confidence that we can accomplish this and more.

As we reshape the force, we also have an opportunity to align some of our sustainment force structure to min-

imize the turbulence caused by the over-modularization of certain capabilities. As we have observed over the years, our force structure provides tremendous flexibility but often with the expense of increased turbulence and friction. For example, the typical sustainment brigade experiences an average of 14 relief in place/transfer of authority actions a month when deployed.

By aligning some capabilities within our combat sustainment support battalions and sustainment brigades and synchronizing their deployment timelines, we can reduce that turbulence. The alignment of these units and capabilities will improve mission command and training and command relationships with supported organizations, both in garrison and while deployed.

Enhancing Soldier and Leader Skills

As we reshape and build the organizations of the future, we cannot understate the importance of reassessing our systems for developing the necessary skills in our Soldiers and leaders to meet the hybrid threat. The Army Learning Model (ALM) 2015 has been developed to meet these challenges and develop our future fighting force.

ALM 2015 is a student-centric system that will identify the needs of the individual learner and develop a career-long learning approach that combines training, education, experience, and access to increased self-development tools. This program, enabled by available technology such as mobile applications, will help increase our capacity to learn faster and adapt quickly. Assess-adapt-learn is the principle that we will use to guide our efforts in implementing this new program.

Assessments are conducted at the onset of a training cycle as well as throughout the training to help tailor instruction to the learners’ needs and experience and allow Soldiers to test out of instruction they have already mastered. These ongoing assessments are a key enabler of the core element of ALM 2015: the ability to adapt training to the needs of the individual.

Adaptability is truly the central idea of ALM 2015. The ability to develop realistic, tailored, and continuously adaptable training to meet the needs of individual students and small groups is paramount to improving our educational processes. Gone are the days of “death

by PowerPoint” instruction, replaced by analysis of complex scenarios designed to enhance teamwork, adaptability, and critical thinking skills. Instructors must be able to facilitate discussion in a small-group setting to maximize the sharing of information and increase peer-to-peer learning (a hallmark of the experiential learning model espoused in ALM 2015).

The final principle, learning, is something we all need to impart to our Soldiers and leaders at every level. We must all recognize that learning is a continuous adaptive process, not one that exists only when a Soldier is sent to the advanced leaders course or captains career course. Learning must be integrated into everything Soldiers do at each level of their careers.

By leveraging developmental assignments, civilian educational opportunities, professional readings, and distributed learning opportunities for our Soldiers, we are working to create a self-directed learning capability that can be integrated into an individual Soldier’s personal professional development plan. This will allow for the continuous learning environment necessary to ensure that we maintain the best trained fighting force.

Change is inevitable, more so in the Army of today than in any other time in the recent past. Living in a time of change can be challenging. However, change can also open up tremendous opportunities to reshape the Army to meet the demands of the future.

As leaders, we have the responsibility to stay abreast of the latest information to ensure that we meet the needs of our Soldiers and our Army. By embracing a learning continuum, tailored to the individual Soldier, we will continue to become more efficient in everything we do, from the delivery of needed resources to sustain our fighting force to how we train our Soldiers and our leaders.

MAJOR GENERAL JAMES L. HODGE IS THE COMMANDING GENERAL OF THE ARMY COMBINED ARMS SUPPORT COMMAND AND SUSTAINMENT CENTER OF EXCELLENCE AT FORT LEE, VIRGINIA.

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The State of the Ordnance Corps on Its Bicentennial

BY BRIGADIER GENERAL CLARK W. LEMASTERS, JR.

Greetings from the Home of Ordnance! This year is the Ordnance Bicentennial celebration, and after it has “answered the call for 200 years,” I’m proud to bring you a short update on the state of your Ordnance Corps.

The Ordnance Corps has evolved over the years, and our current mission statement is as follows:

Trains Ordnance Soldiers and leaders in technical skills, values, common tasks, and the Warrior Ethos. Supports development of capabilities across Doctrine, Organization, Training, Materiel, Leadership, Personnel, and Facilities (DOTMLPF) supporting our core competencies and the Army’s mission. Supports the Army’s enlisted and officer accession mission.

Across our core competencies of maintenance, ammunition, and explosive ordnance disposal (EOD), the Ordnance Corps is composed of an Active Army, Army National Guard, and Army Reserve force of more than 105,000 Soldiers; that is more than one-third of the sustainment force and 11 percent of the total Army force. The bulk of our force is focused on maintenance, with over 90 percent of Ordnance Soldiers serving as maintainers under career management fields (CMFs) 91 and 94. The remainder of the force is nearly equally spread across CMF 89 as either ammunition or EOD specialists.

BRAC Moves and the New Home of Ordnance

The base closure and realignment (BRAC) move to Fort Lee, Virginia, was completed on 15 September 2011, and we are very proud of the new “Home of Ordnance” as the center of our training mission for the Army. The Ordnance School executed one of the more complex moves that resulted from the 2005 BRAC Commission. Over a 2½-year period, the Ordnance School and the Fort Lee BRAC team expertly managed the closure of our Redstone Arsenal, Alabama, and Aberdeen Proving Ground, Maryland, schools and moved the people and equipment to Fort Lee, all while synchronizing over 100 courses with the final facility construction and acceptance schedule.

The Army’s investment of over \$650 million in construction makes the Ordnance School main campus at Fort Lee one of the most state-of-the-art training facilities in the Army. The Ordnance School campus alone contributed significantly to Fort Lee’s overall growth

by nearly doubling its previous square footage.

The Ordnance School is composed of 30 buildings and facilities that vary in size and function. The North Range Complex has a completely new vehicle recovery range and training ammunition supply point. The EOD and munitions training buildings, robotics range, more than 120 maintenance training bays, basic electronics maintenance trainers, and more than 800 classrooms and labs are first rate. We have a lab with over 70 welding booths coupled with state-of-the-art 3-dimensional welding simulators, an indoor small-arms live-fire test range for small-arms repairer training, and top-notch automation to support training across the Ordnance Campus.

The new EOD Range Complex at Fort A. P. Hill, Virginia, supports the Global Anti-Terrorism and Operational Readiness (GATOR), Post Blast, and EOD Advanced Leaders Courses.

The Samuel Sharpe Dining Facility (DFAC) supporting the Ordnance campus is the largest Army-owned DFAC and provides outstanding-quality food that can feed the entire Ordnance School of over 3,200 students in a 90-minute period. Your Ordnance Soldiers live in first-rate barracks designed around two companies sharing one building, separated and organized around the two battalions of the 59th Ordnance Brigade.

Ordnance Corps Priorities

The Ordnance School team works hard to leverage the latest technology to update our programs of instruction (POIs), lesson plans, training support materials, and doctrinal publications to support a continuum of learning. Our training is focused on providing the background and environment for Ordnance Corps Soldiers and leaders to live up to the Ordnance Creed and provide support to the Army across the full spectrum of operations. The current Ordnance Corps priorities are as follows:

Army Training and Doctrine Command (TRADOC) accreditation. The TRADOC accreditation team is visited Fort Lee to evaluate the Army Combined Arms Support Command’s (CASCOM’s) four training institutions (the Ordnance, Quartermaster, and Transportation Schools and the Army Logistics University). The purpose of the visit was to evaluate professional, coaching, mentoring, and teaching standards. Attaining

the accreditation standards means that the institution’s training prepares Soldiers and leaders to perform their technical Ordnance mission to support the Army.

The TRADOC accreditation team visited the Ordnance School from 16 to 22 March. The evaluators observed training and conducted key-person interviews and focus groups, surveys, written questionnaires, and record and document reviews.

Army Learning Model 2015. The learning model consists of a learner-centric continuum that begins when an individual joins the Army and does not end until retirement. The learning model enhances the rigor and relevance of individual learning and delivers multiple learning stimuli to reach audio, visual, and kinesthetic learners. It maximizes opportunities to master fundamental competencies and develops critical thinking skills that all Soldiers must master.

Components of the initiative include learner-centered instruction, technology integration, lifelong learning, student assessment, peer-to-peer learning, trade certification and licensing, and leader development programs. As the Army moves forward with this learning strategy, the lines between the Army Learning Concept and the Army Training Concept will merge into one effort to ensure that our Soldiers are provided relevant, pointed training that will prepare them for any contingency. The value of instructional expertise and training development is as important to Army Forces Command (FORSCOM) commanders as it is to TRADOC’s centers of excellence.

Skills-based training (SBT). This training marks a shift from the “remove and replace” mentality to a “creating critical thinkers and diagnosticians” one. SBT is a principles-based, diagnostics-driven methodology, based on the science of learning, that seeks to provide Soldiers with the skills they need to isolate and identify components that are inoperative, out of alignment, or malfunctioning to a precise degree of accuracy. Tasks are focused on problem solving and not on equipment specifics. Of the 25 initial military training courses taught at the Ordnance School, 5 have converted and 2 are in the process of converting to SBT.

Ordnance Campaign Plan (OCP). The OCP describes Ordnance Corps actions to support and implement campaign objectives and major tasks articulated in the Army Campaign Plan and supporting the TRADOC and CASCOM campaign plans. The OCP also serves as a staff management tool to track ongoing initiatives associated with maintenance, ammunition, and EOD in the Ordnance School.

The OCP provides the visibility and metrics to ensure that all Ordnance Soldiers possess the right capabilities to support today’s force. But it will also help us guide the Ordnance Corps toward the Army 2020 force with the right mix of common and technical skills, values, and Warrior Ethos across all DOTMLPF domains to

support our core competencies and the Army’s mission.

TRADOC initial military training initiative. The TRADOC Deputy Commanding General for Initial Military Training (DCG-IMT) has an initiative to ensure that all IMT courses are current and relevant and incorporate the latest training methods and technologies. To ensure that Soldiers and junior leaders are prepared to contribute at their first units of assignment, the IMT centers of excellence are directed to—

- Review all POIs on a regular basis to ensure that training is relevant, rigorous, and standardized.
- Direct the training and development of IMT cadre.
- Direct the development of common core tasks.
- Enable the resourcing of subordinate units.
- Capture and share lessons learned across the centers of excellence and IMT brigades.
- Assist IMT brigades to improve the quality of life and resilience of cadre, families, and civilians.

In support of the TRADOC initiative, CASCOM and the Ordnance School completed a review of critical task lists for each Ordnance military occupational specialty in February 2012. In April, CASCOM and the Ordnance School started reviewing POIs and lesson plans with the DCG-IMT’s “Tiger Team.” In July, the Ordnance School will present the results of the review and our recommendations to the DCG-IMT. The CASCOM Training Directorate plays a major role in this process, but the Ordnance School has the lead.

Doctrine 2015. Seven Ordnance publications are currently being written or updated. The projected publication dates for these publications are as follows:

- Technical Manual 4-33.31, Operations and Maintenance of OD Materiel in Cold Weather: Second quarter, fiscal year (FY) 2012.
- Army Training Publication (ATP) 4-35.1, Ammunition Handbook: TTP for Munitions Handlers: Second quarter, FY 2012.
- ATP 4-35, Munitions Distribution in the Theater of Operations: Third quarter, FY 2012.
- ATP 4-33, Maintenance Operations: Third quarter, FY 2012.
- ATP 4-31, Recovery and Battlefield Damage Assessment and Repair: Fourth quarter, FY 2012.
- Field Manual 4-30, Ordnance Operations: Second quarter, FY 2013.
- ATP 4-32, EOD Service and Unit Operations: Third quarter, FY 2013.

Ordnance Corps Bicentennial Celebration

We have planned for a full schedule of events to celebrate the bicentennial anniversary of the Ordnance Corps. Ordnance Week will be held at Fort Lee on 16 to 18 May. I invite each of you to join us for this first-class event, which will provide a unique opportunity for the Ordnance community to gather at the new, state-of-the-art Home of Ordnance to learn what is on the

Continued on page 65

The History of Ordnance in America

BY KARL RUBIS

On 14 May, one of the Army's oldest branches celebrates 200 years of service to the Nation.

The Ordnance branch is one of the oldest branches of the Army, established 200 years ago. However, the duties and responsibilities of the Ordnance profession date back to 1629, when the Massachusetts Bay Colony appointed Samuel Sharpe as the first Master Gunner of Ordnance.

Just 16 years later, in 1645, Massachusetts Bay had a permanent Surveyor of Ordnance. His responsibilities were to deliver powder and ammunition to selected towns, recover weapons from militia members, receive payment from those who lost weapons, and provide periodic reports to government officials to guide the purchase of firearms, powder, and shot. Although each colony developed a militia system in which members were required to provide their own weapons and an ini-

tial amount of gunpowder and shot, colonial Ordnance officials furnished the depth of logistics support needed for any type of sustained operations.

The Revolutionary War established the general outlines of the future U.S. Army Ordnance Department. General George Washington, the commander of the Continental Army, appointed Ezekiel Cheever, a civilian, to provide ordnance support to his army in the field in July 1775. By mid-1779, all the field armies had Ordnance personnel moving with them. These men, civilians and Soldiers, served as conductors of a traveling forge for maintenance, an ammunition wagon, and an arms chest. Each conductor led a section of five to six armorers who repaired small arms.

The Continental Congress' Board for War and Ord-

nance created the Commissary General for Military Stores to establish and operate Ordnance facilities in an effort to alleviate the infant nation's dependence on foreign arms purchases. Colonel Benjamin Flower led the commissary from his appointment in January 1777 until his death in May 1781. Ordnance facilities were established at Springfield, Massachusetts, and Carlisle, Pennsylvania, for the production of arms, powder, and shot.

After the war, the sustainment elements were disbanded and the authority for procurement and provision of all things military was transferred to the Office of the Purveyor of Public Supplies, which was located in the Treasury Department.

The Early Republic

In the first half of the 19th century, the Ordnance Department played a crucial role in the burgeoning Industrial Revolution and helped to establish the American System of Manufacturing. One of the most significant achievements was the establishment of Federal armories at Springfield, Massachusetts, in 1795 and Harpers Ferry, Virginia (now West Virginia), in 1798. Under congressional legislation of 1794, each armory was staffed by a civilian superintendant and a master armorer.

The two armories served as a nucleus for technological innovation in the young republic. Inventors such as Eli Whitney and Simeon North developed the methods and means for mass production through the use of interchangeable parts and refined technology in milling machinery.

By the dawn of the War of 1812, the Secretary of War recognized the need for a distinct branch to manage the procurement, research, and maintenance of ordnance materiel. Decius Wadsworth, previously superintendant of the United States Military Academy at West Point, New York, was appointed a colonel and given the title Commissary General of Ordnance (later changed to Chief of Ordnance). His ambition during the war years and afterward was to simplify and streamline Ordnance materiel management. His staff worked to reduce the variety of small arms and artillery pieces to a few efficient models.

He also aimed to develop a cadre of highly trained Ordnance officers who could dedicate their inventive ingenuity to their profession. This effort created a tradition of technological innovation in the Ordnance Department and resulted in a generation of such "soldier-technologists" as Alfred Mordecai, George Bomford, Thomas J. Rodman, and John H. Hall. Indeed, assignment to the Ordnance branch was one of the most sought-after assignments for young officers graduating from West Point.

In 1832, Congress authorized the rank of Ordnance sergeant. This rank filled the Army's need to have highly-trained and experienced Ordnance Soldiers at the in-

REGIMENTAL CREST



1833 BUTTON



PRESENT CREST

The earliest evidence for the design of the Ordnance Regimental Crest dates back to a uniform button from 1833. When the Ordnance Corps was reestablished in 1985, the button's crest was an obvious design to choose. This design was commonly used by the Ordnance Department throughout the 19th century. According to the Army Institute of Heraldry, the crossed cannons represent the Ordnance Corps' early relationship to the Artillery branch. The Shell and Flame (also known as the Flaming Bomb) represents the armament of days gone by, while the energy it connotes is applicable to the weapons of our own day. The cannoner's belt, which encircles the flaming bomb and crossed cannons, is embossed with the words "ORDNANCE CORPS U.S.A." and represents the traditional association between munitions and armament. The white background symbolizes the Ordnance Corps motto, "ARMAMENT FOR PEACE."

creasing number of frontier posts and coastal defensive forts. To apply, a Soldier had to have at least 8 years of service, 4 of which had to be as a noncommissioned officer, and pass a series of examinations, including tests in mathematics and writing. The responsibilities of Ordnance sergeants included the maintenance of arms and ammunition at Army installations and the provision of those supplies to armies in the field. This rank continued until it was abolished in the Army Reorganization Act of 1920. Ten of the 15 Medal of Honor awardees in the history of the Ordnance Corps served as Ordnance sergeants during their enlistments.

Mexican War

The Mexican War of 1846 to 1848 provided the first



Schooling for Ordnance officers and enlisted personnel was consolidated in 1940 in The Ordnance School at Aberdeen Proving Ground, Maryland (shown in 1941). Aberdeen was the center of the Ordnance branch for 68 years, until 2008.

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10.	BRIGADIER GENERAL ADELBERT R. BUFFINGTON	1899–1901
11.	BRIGADIER GENERAL WILLIAM CROZIER	1901–1917 ³
12.	MAJOR GENERAL CLARENCE C. WILLIAMS	1918–1930 ^{4,5}
13.	MAJOR GENERAL SAMUEL HOF	1930–1934 ⁶
14.	MAJOR GENERAL WILLIAM H. TSCHAPPAT	1934–1938
15.	MAJOR GENERAL CHARLES M. WESSON	1938–1942
16.	MAJOR GENERAL LEVIN H. CAMPBELL, JR.	1942–1946
17.	MAJOR GENERAL EVERETT S. HUGHES	1946–1949
18.	MAJOR GENERAL ELBERT L. FORD	1949–1953
19.	LIEUTENANT GENERAL EMERSON L. CUMMINGS	1953–1958
20.	LIEUTENANT GENERAL JOHN H. HINRICHS	1958–1962
21.	MAJOR GENERAL HORACE F. BIGELOW	1962–1962
22.	MAJOR GENERAL WILLIAM E. POTTS	1985–1986 ⁷
23.	MAJOR GENERAL LEON E. SALOMON	1986–1988
24.	MAJOR GENERAL JAMES W. BALL	1988–1990
25.	BRIGADIER GENERAL JOHNNIE E. WILSON	1990–1992
26.	MAJOR GENERAL JOHN G. COBURN	1992–1994
27.	MAJOR GENERAL JAMES W. MONROE	1994–1995
28.	MAJOR GENERAL ROBERT D. SHADLEY	1995–1997
29.	BRIGADIER GENERAL THOMAS R. DICKINSON	1997–1998
30.	MAJOR GENERAL DENNIS K. JACKSON	1998–2000
31.	MAJOR GENERAL MITCHELL H. STEVENSON	2000–2003
32.	BRIGADIER GENERAL WILLIAM M. LENAERS	2003–2004
33.	MAJOR GENERAL VINCENT E. BOLES	2004–2006
34.	BRIGADIER GENERAL REBECCA S. HALSTEAD	2006–2008
35.	BRIGADIER GENERAL LYNN A. COLLYAR	2008–2010
36.	BRIGADIER GENERAL CLARK W. LEMASTERS, JR.	2010–2012

¹ From 1821 to 1832, the Ordnance Department was merged with the Artillery branch. By 1832, it was recognized that this merger was a failure and the branches were separated and the Ordnance Department reestablished.

² Major Charles Shaler served as acting Chief of Ordnance from 29 March to 5 April 1899 following the death of Brigadier General Daniel W. Flagler and until Brigadier General Adelbert R. Buffington could assume the position of Chief of Ordnance.

³ Colonel Rogers Birnie served as acting Chief of Ordnance while Brigadier General William Crozier served as President of the Army War College during the 1912–1913 academic year.

⁴ Brigadier General Charles B. Wheeler served as acting Chief of Ordnance from 2 December 1917 to 19 April 1918.

⁵ Brigadier General William S. Pierce served as acting Chief of Ordnance from 19 April until 2 May 1918.

⁶ Brigadier General Colden L'Hommedieu Ruggles served as acting Chief of Ordnance from 1 April to 3 June 1930.

⁷ The position of Chief of Ordnance was officially reestablished in 1985 after a 23-year hiatus.

real test of the Ordnance Department's system of armories and arsenals. In 1841, there were 2 armories and 20 arsenals. These facilities met the needs of the Army for equipment and supplies to support the multiple campaigns of the Mexican War without difficulty. In view of this success, the system did not undergo any major reorganization following the war.

In addition to its support role in the war, the Ordnance Department established the Rocket and Howitzer Battery, the only unit in ordnance history raised specifically for combat duty. The battery's 105 officers and enlisted men were the only ones with the experience to operate the new M1841 12-pound howitzer and the latest Hale war rocket; these weapons were still in the testing phase and had not been distributed to the Artillery branch for field use. The battery suffered 6 killed and 22 wounded during the war.

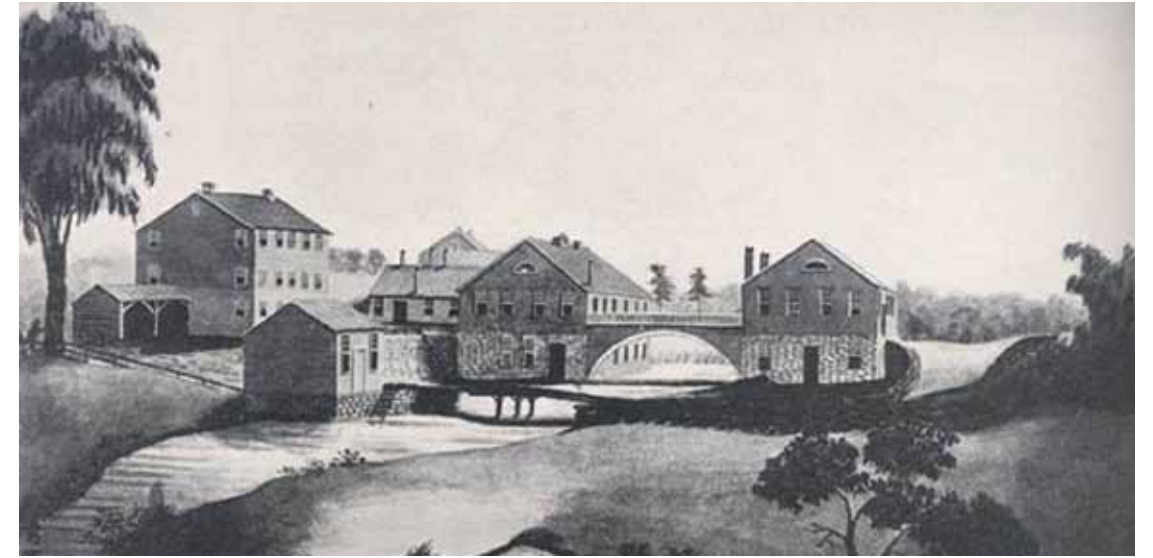
At the close of the Mexican War, the Ordnance Department numbered 1 colonel, 1 lieutenant colonel, 4 majors, 12 captains, 15 first lieutenants, and 10 second lieutenants, along with several hundred enlisted personnel and approximately 1,000 civilians at the armories and arsenals.

Civil War

During the Civil War, the Ordnance Department was called on to arm and equip an army of unprecedented size. It furnished 90 million pounds of lead, 13 million pounds of artillery projectiles, and 26 million pounds of powder for a Union Army of 1 million Soldiers. To achieve these impressive results, the Ordnance Department's civilian staff increased from 1,000 to 9,000 by the war's end.

Women were sought after to work in the ammunition plants

The Federal armory at Springfield, Massachusetts, was established in 1795. Along with a second armory established at Harpers Ferry, Virginia (now West Virginia), in 1798, it served as a center of technological innovation in the young United States.



because of the contemporary perception that a woman's nimble and petite fingers worked better than a man's at assembling paper rifle cartridges. Consequently, when there was an explosion (such as at the Allegheny Arsenal in Pennsylvania in 1862 and at the Washington, D.C., Arsenal in 1864), the number of female fatalities was very high. In the Allegheny Arsenal explosion, 78 civilian workers were killed and 71 of them were women.

Despite the massive expansion of the Army, the official staffing of the Ordnance Department remained small. At the peak of the war, the department numbered 64 officers and 600 enlisted men. Ordnance officers were assigned to divisions and above. For lower echelons, Ordnance responsibilities were tasked out to Soldiers who had previous training in smithing or some other Ordnance-related skill. These Soldiers remained with their units, but they were provided a set of tools from the Ordnance Department. As a result, thousands of Soldiers were detailed to perform Ordnance duties during the war.

A few Ordnance officers accepted line commands, such as Major General Oliver O. Howard, who won the Medal of Honor at the Battle of Fair Oaks, Virginia, in 1862, and Major General Jesse Reno, who was killed at the Battle of South Mountain, Maryland, in September 1862. Most officers, however, remained in the Ordnance Department and rose in rank to serve as Ordnance officers for their commands, including the Army of the Potomac and other field armies.

As was common in other branches of the Army, a

The 15-inch Rodman gun shown here was the Army's major coastal fortification artillery piece during and after the Civil War. Rodman guns of this and other sizes were produced using innovative manufacturing methods developed by Army officer Thomas J. Rodman.





A Federal cannon foundry was established at Watervliet Arsenal, New York, in 1887. This photo shows workers in 1895.

during such a sudden increase in size (approximately a tenfold increase). Regular Army troops were equipped with smokeless, bolt-action Krag-Jorgensen rifles, but most volunteer units had the single-shot, breech-loading, black powder M1873 Springfield. In a report following the war, the Chief of Ordnance, Brigadier General Daniel W. Flagler urged that funds be allocated to establish an adequate stock of war reserve munitions, but his recommendations went unheeded. As a consequence, the United States would have even greater challenges mobilizing for the far greater scale of World War I.

World War I

Even though World War I had been raging in Europe for nearly 3 years, the Ordnance Department had to play catchup when the United States entered the conflict in April 1917. With only 97 officers and 1,241 enlisted Soldiers, the department had a myriad of problems to overcome: no system below the Office of the Chief of Ordnance to coordinate with industry, no plan for mobilizing industry, an inadequate proving ground, no system of echeloned maintenance, a lack of sufficient schooling for enlisted Soldiers, and only 6 armories and manufacturing arsenals at Watervliet; Springfield and Watertown, Massachusetts; Picatinny, New Jersey; Frankford, Pennsylvania; and Rock Island, Illinois.

As the war progressed, the department overcame the lag, matured as an organization, and adapted to modern warfare. By the end of the war, the Ordnance Department numbered 5,954 officers and 62,047 enlisted Soldiers, with 22,700 of those officers and Soldiers serving in the American Expeditionary Forces in France. The Ordnance Department established 13 Ordnance districts

constructing materiel to be used against them. After his request for transfer to California was denied, he resigned his commission. The Confederacy offered him a position, but he denied that as well and spent the war years teaching mathematics at a private college in the North.

Spanish-American War

Between the Civil War and World War I, the Ordnance Department did not expand to any great extent. Modest improvements in the organization of the department and scientific research continued, but a lack of preparedness grew. A full-fledged proving ground was dedicated at Sandy Hook, New Jersey, in 1874, and a Federal cannon foundry was established at Watervliet Arsenal, New York, in 1887. With the start of the Spanish-American War in 1898, the Ordnance Department did not have the time to catch up to the swiftness of mobilization and had to “muscle through” its support issues.

The department faced a problem similar to what it had faced in 1861: how to arm and equip all the Soldiers

During World War I, the Ordnance Department fielded mobile Ordnance repair shops (like the 42d Infantry Division Mobile Ordnance Repair Shop shown here) and heavy artillery mobile Ordnance repair shops. These units moved with the division and provided a wide array of support to the line.



The number of civilians in the Ordnance Department grew during World War II from 27,088 to 262,000. Women Ordnance Workers (WOWs) like these accounted for approximately 85,000 of the civilian workforce.

across the country that had the authority to deal directly with industry and award contracts. By the end of the war, almost 8,000 plants were working on Ordnance contracts.

To offset industry’s reluctance to build new plants, the U.S. Government established a system of constructing the factories but contracting out their operation. By the war’s end, 326 Government facilities were operating under the auspices of contractors. This practice would be employed even more successfully during World War II. A new proving ground was established at Aberdeen, Maryland. Its construction began in November 1917, and by September 1918, 304 officers, 5,000 enlisted personnel, and 6,000 civilians were conducting tests on a wide range of munitions.



HISTORY OF THE SHELL AND FLAME

The Shell and Flame (also known as the Flaming Bomb) had been used by European armies for several centuries before its adoption by the U.S. Army. In fact, it is still used by many countries in Western Europe, such as the Grenadier Guards in Britain. The insignia does not represent a bomb but rather an iron hand grenade with a powder charge and a fuse that had to be lit before throwing.

The Shell and Flame is considered the oldest branch insignia in the U.S. Army. The use of the Shell and Flame by the Ordnance branch dates back to 1832. It was also used by the Artillery branch until 1834, when the Artillery branch adopted the crossed cannons as its branch insignia.

The Shell and Flame continued to be used by a wide variety of Army organizations, not just the Ordnance branch, until 1851 when the new 1851 Uniform Regulations dictated that the Ordnance branch would be the sole users of the Shell and Flame.

Despite its sole ownership by the Ordnance branch, multiple designs of the Shell and Flame existed. Different designs accompanied different uniforms. The 1851 Uniform Regulations granted enlisted personnel the opportunity to wear the Shell and Flame; previously, only officers wore the emblem. The dress uniform, the forage cap, the enlisted uniform, and many other uniforms had their unique designs. Most officer emblems were sewn onto their uniforms, while enlisted Soldiers had brass insignia affixed to theirs.

The multiplicity of designs continued through World War I. Indeed, with the deployment of the American Expeditionary Forces in France and the advent of collar disks with branch insignia, a dizzying array of designs existed. Even today, it is still not known how many different designs were produced. Designs in the United States had a tenure of approximately 10 years before a new insignia was designed for a particular uniform. In France, however, Soldiers employed a number of French manufacturers to make their uniform items.

In 1936, the Army Institute of Heraldry redesigned and standardized the design of the Shell and Flame. This stylized Shell and Flame remains the current version. Interestingly, all older versions were allowed to be grandfathered out of use. It is not uncommon to see photos of World War II Ordnance Soldiers still wearing the pre-1936 designs. There are portraits of officers wearing the pre-1936 design as late as 1962.



The Ordnance branch gained its third core competency, bomb disposal (now called explosive ordnance disposal), which was added to its previous missions of ammunition handling and maintenance. The photo shows the new Bomb Disposal School at Aberdeen Proving Ground during World War II.

With the experience it gained from the Punitive Expedition in Mexico in 1916, the Ordnance Department established an embryonic system of echeloned maintenance. For major repairs, it set up a system of ordnance repair base shops in France. For maintenance support to the field, the Ordnance Department fielded the mobile ordnance repair shops and heavy artillery mobile ordnance repair shops. These units moved with the division and provided a wide array of support to the line.

To train the new Ordnance Soldiers, the Ordnance Department established schools at a large number of locations, including universities, civilian factories, armories, arsenals, and field depots. Eventually, much of the training was consolidated at the Ordnance Training Camp at Camp Hancock, Georgia. By war's end, more than 55,000 officers and Soldiers had been trained at one of these locations, including the 6 Ordnance schools in France.

Interwar Years

The story of the Ordnance Department between World War I and World War II is filled with both good news and bad news. Decreased budgets following World War I limited the amount of money it spent on research; maintaining war reserves was considered a higher priority. In spite of this, several legendary weapons were developed, including the M1 Garand rifle and the 105-millimeter howitzer. Tank development, however, lagged significantly.

The development of the Ordnance school system was a success story during the interwar years. Schooling for Ordnance officers and enlisted personnel was streamlined during this period and consolidated by 1940 at Aberdeen Proving Ground in The Ordnance School, a single location where all ordnance education would occur. This location would be center of the soul of the Ordnance branch for the next 68 years.

World War II

The Ordnance Department swelled exponentially in World War II and applied the lessons it had learned in World War I. The department was responsible for roughly half of all Army procurement during World War II, \$34 billion dollars. President Franklin D. Roosevelt's "Arsenal of Democracy" depended on the Ordnance Department to become a reality.

In January 1944, the Ordnance Department accounted for 7 manufacturing arsenals, 7 proving grounds, 45 depots, and 77 Government-owned, contractor-operated plants and works. Of the 77, all but one focused on ammunition and explosives. This exception was the Detroit Tank Arsenal in Michigan. It was built in 8 months while engineers simultaneously designed a new medium

tank, the M3. By the end of the war, the Detroit Tank Arsenal had built over 22,000 tanks, roughly 25 percent of the country's tank production during the war. The arsenal continued to operate as the Detroit Army Tank Plant until 2001.

The Ordnance Department's strength during World War II increased from 334 to 24,000 officers, from 4,000 to 325,000 enlisted Soldiers, and from 27,088 to 262,000 civilians, all in an Army of approximately 8 million. Women Ordnance Workers (WOWs) accounted for approximately 85,000 of the civilian employees. Ordnance Soldiers and civilians worked across the globe, in places as diverse as Iceland, Iran, the Pacific Islands, Africa, Europe, and the Middle East. Aberdeen Proving Ground expanded exponentially and was the headquarters of The Ordnance School, the Ordnance Replacement Training Center, the new Bomb Disposal School, and the Ordnance Unit Training Center.

The Ordnance mission in the field operated on a scale never experienced previously by the Ordnance Department. The Ordnance branch gained its third core competency, bomb disposal (renamed explosive ordnance disposal [EOD] after World War II), which was added to its previous missions of ammunition handling and maintenance. By war's end, the Army had more than 2,200 Ordnance units of approximately 40 types, ranging in size from squads to regiments.

The Ordnance Department applied the maintenance lessons it learned in World War I and devised a five-echelon maintenance system ranging from base shop maintenance to organizational maintenance, all in an effort to return materiel to operational status as near to the

front line as possible. To complicate the maintenance mission, in 1942 responsibility for motor transportation was shifted from the Quartermaster branch to the Ordnance Department. The complexity of maintenance for such a wide variety of vehicles spawned several innovations that continue to the present, including a system of preventive maintenance and the publication of *Army Motors* (renamed *PS* magazine in 1951). Maintenance remained one of the largest challenges in World War II.

Korean War

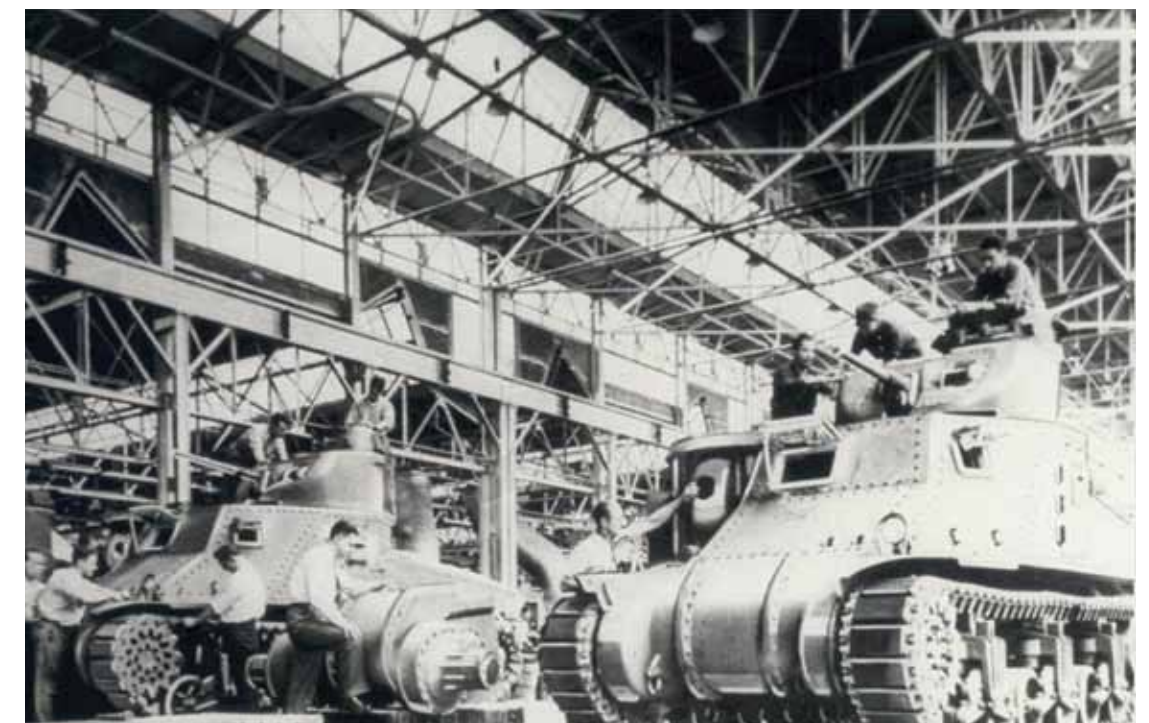
During the Korean War of 1950 to 1953, the Ordnance Department reestablished many functions and methods deactivated after the end of World War II. The Ordnance Corps (renamed as such in 1950) reestablished the schools previously located at Aberdeen Proving Ground to meet the increased demand to train officers and enlisted Soldiers. It reestablished its technical intelligence teams, which had collected German equipment for exploitation during World War II. In Korea, the Ordnance Corps exploited captured Russian and Chinese equipment. This captured World War II and Korean War materiel would serve as the foundation of artifacts displayed at the Ordnance Museum.

In Korea, the Ordnance Corps established a support infrastructure modeled on the one used in World War II, including echeloned maintenance operations, ammunition handling, and EOD operations. The Ordnance Corps improved this model through standardization to achieve tremendous success in reducing parts and processes, which had been one of the biggest challenges in World War II. Seven standardized engines and transmis-



On the regimental flag, the regimental crest is displayed above a yellow scroll inscribed with "ARMAMENT FOR PEACE," the official Ordnance Corps motto. The background of the flag is crimson, and the fringe is yellow. Crimson and yellow have been the colors of the Ordnance Corps throughout its history, except for a short period between 1902 and 1921, when the official colors were black and scarlet.

The Detroit Tank Arsenal in Michigan built more than 22,000 tanks, which was roughly 25 percent of the Nation's tank production during World War II. Here, M3 medium tanks are finished at the Detroit Army Tank Arsenal.





An African-American ammunition handling company conducts an inventory in World War II

for Logistics. The new Army Materiel Command assumed responsibility for many of the Ordnance Corps' historical functions: research, development, procurement, production, storage, and technical intelligence. The Ordnance School was renamed the Ordnance Center and School and placed under the direction of the Continental Army Command. Combat development was delegated to a new Combat Development Command.

Despite these changes, Ordnance officers and Soldiers continued their core missions

of ammunition handling, maintenance, and EOD during the Vietnam War. Ordnance support fell under the control of the 1st Logistical Command, which divided Vietnam into four support commands. Ordnance units served vital roles under each of these support commands. New challenges, however, had to be confronted.

Because of the counterinsurgency nature of the war, EOD units were spread thin; there was no "front line" as had existed in World War II or Korea. The 1-year rotational policy produced personnel shortages in some key fields. In the initial years of the war, spare parts were often in short supply and equipment availability rates were low. However, despite these challenges, operational readiness rates increased and by 1969 exceeded those of previous wars.

Post-Vietnam Developments

In 1985, the Ordnance Corps became the first of the Army's support elements to reestablish itself under the branch regimental concept. The Chief of Ordnance regained responsibility for decisions concerning personnel, force structure, doctrine, and training. This change gave ordnance officers, Soldiers, and civilians the opportunity to identify with their historical predecessors in their mission of Ordnance support to the Army.

In the past 22 years, Ordnance personnel have engaged in three sustained operations in the Middle East that tested their ability to adapt. In Operation Desert

A forward ammunition supply point at Pleiku supports operations during the Vietnam War.



sions replaced the 18 engines and 19 transmissions used in the previous fleet of vehicles. Stock number reconciliation and an automated stock control system were introduced.

Reorganization and Vietnam

Following the massive reorganization of the Army in 1962 based on the Hoelscher Committee Report, the Ordnance Corps and the office of the Chief of Ordnance were disestablished. The Ordnance branch continued under the direction of the Army's Deputy Chief of Staff

ORDNANCE CORPS MEDAL OF HONOR AWARDEES

Civil War

Brigadier General Oliver O. Howard	Fair Oaks, Virginia	1862
Captain Horace Porter	Chickamauga, Georgia	1863
Captain William S. Beebe	Alexandria, Louisiana	1864
Private Timothy Spillane	Hatchers Run, Virginia	1865

Western United States

The following 10 noncommissioned officers and enlisted men were awarded the Medal of Honor for actions in the Western United States. All of them were either serving as Ordnance sergeants when the Medal of Honor was awarded to them or later retired with that rank. All were members of Infantry or Cavalry units.

Albert Knaak	Arizona Territory	1868
Solon D. Neal	Little Washita River, Texas	1870
John Kelly	Upper Washita, Texas	1874
John Mitchell	Upper Washita, Texas	1874
Zachariah Woodall	Washita River, Texas	1874
Michael McGann	Rosebud River, Montana	1876
Henry Wilkens	Little Muddy Creek, Montana	1877
	Camas Meadow, Idaho	
Milden H. Wilson	Big Hole, Montana	1877
Moses Williams	Cuchillo Negro Mountains, New Mexico	1881
Frederick E. Toy	Wounded Knee Creek, South Dakota	1890

World War II

Sergeant Hulon B. Whittington	France	1944
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Storm in 1991, Ordnance personnel supported the largest armored assault in American history. Operation Enduring Freedom in Afghanistan, beginning in 2001, and Operations Iraqi Freedom and New Dawn, beginning in 2003 and ending in 2011, called on Ordnance officers and Soldiers to help overcome long-term insurgency campaigns.

After nearly a century of operations at Aberdeen Proving Ground, the Chief of Ordnance and the Ordnance Corps moved to Fort Lee, Virginia, in 2008 as part of a 2005 Base Closure and Realignment Commission (BRAC) decision. The new campus at Fort Lee is dedicated to train approximately 70 percent of all Ordnance personnel. The remaining personnel are trained at one of six other locations across the United States.

Today, the Ordnance Corps consists of approximately 2,700 officers, 3,000 warrant officers, and 100,000 enlisted Soldiers serving on active duty or with the Army National Guard or Army Reserve. As the Ord-

nance Corps celebrates its bicentennial in 2012, its men and women continue the proud heritage of service to the Nation that Ordnance Soldiers have demonstrated since colonial times. The legacy of Samuel Sharpe and Decius Wadsworth continues into the 21st century.

KARL RUBIS IS THE ORDNANCE BRANCH HISTORIAN WITH THE ARMY ORDNANCE CENTER AND SCHOOL AT FORT LEE, VIRGINIA. HE HOLDS A B.A. DEGREE FROM PEPPERDINE UNIVERSITY AND AN M.A. DEGREE FROM THE UNIVERSITY OF KANSAS. HE IS A PH.D. A.B.D. (ALL BUT DISSERTATION) CANDIDATE AT THE UNIVERSITY OF KANSAS.

THE INFORMATION IN THIS ARTICLE IS COMPILED FROM "SERVING THE LINE WITH EXCELLENCE" BY DR. KEIR STERLING, LECTURE NOTES FROM THE ORDNANCE BASIC OFFICER LEADER COURSE, AND OTHER SOURCES LOCATED IN THE ORDNANCE HISTORIAN'S OFFICE.

Logistics Movements in a Changing Afghan Environment

BY CAPTAIN OWEN A. ROSE

Logistics movements in Afghanistan face major challenges. During the year the 17th Combat Sustainment Support Battalion (CSSB) was deployed in Afghanistan conducting convoys and escorting supplies, the issues and requirements facing our forces on a daily basis constantly evolved. From dealing with host-nation trucks (HNTs) to confronting enemy activity, our convoys bravely traversed many routes over the rugged terrain of Afghanistan to bring vital equipment and supplies to our fighting forces. This article will summarize the major friction points and issues that affected the battalion's mission across Regional Commands East, North, and South.

Trucks and Drivers Pose Challenges

During our deployment from May 2010 to May 2011, we completed more than 400 convoys that moved more than 10,000 pieces of equipment. These movements were primarily executed using military-escorted HNTs. This in itself posed significant problems because the poor quality and unreliability of the trucks exposed our convoys to dangerous situations on the road. Some movements were accomplished using palletized load systems, but their use was restricted to transporting munitions, palletized sensitive cargo, and 20-foot containers.

Eight carrier companies operated under the host-nation contract. They had varying rates of reliability, and none was particularly distinguished in the quality of its performance. The carriers used many local drivers, who frequently switched between carrier companies and had no loyalty to any one carrier. The quality of the trucks supplied by the carriers under the host-nation contract was deplorable in every sense of the word. The age of the fleet and the general condition of the trucks resulted in frequent breakdowns during missions.

The rate of breakdowns became such a problem that the battalion instituted an internal quality assurance/quality control program for the trucks. This initially caused a mass outcry from the carriers because 80 percent of their trucks failed the checks performed according to the guidelines in the performance work statement. The missions that had to be canceled because of unsatisfactory trucks resulted in a significant loss of revenue for the carriers.

About a month into the program, marked improvements could be seen in the quality of the trucks sent by the carriers for missions. The problem was not totally

solved since trucks continued to break down. However, breakdowns occurred at a much lower rate than before the program was implemented and generally for reasons that could not be pinpointed during the checks performed by the quality assurance/quality control team.

Most of the HNT drivers had no proof of qualification or licensure on the trucks they operated. To see teenagers operating these trucks was quite common and left one to question the authenticity of the carriers and their commitment to the contract. The performance work statement said that operators would be properly licensed for the vehicles they operated, but I never saw an Afghan driver's license.

Driving the trucks through some areas was dangerous, and at times some drivers refused to travel certain routes. The fear of being identified as sympathetic to the United States and labeled as such by the Taliban, coupled with the bribes being paid to Afghan National Police and Afghan National Army officials at checkpoints, contributed greatly to the unwillingness of the drivers to travel along certain routes.

Fuel Supply Frustrates Carriers

Providing fuel for the trucks posed significant challenges. The lack of a defined standard for supporting HNTs across the Afghanistan combined joint area of operations caused some forward operating bases (FOBs) to refuse to give fuel to HNTs in convoys. The performance work statement dictated that trucks arrive at the point of mission origin with sufficient fuel to complete the assigned mission.

Ninety-eight percent of the time, HNTs showed up at the FOBs with barely enough fuel to make it through the entry control point. The carriers argued that they provided the drivers with money to purchase fuel and even fueled the trucks before they left the carrier holding yards, but this could not be verified. There was speculation that the drivers sold the fuel in their trucks before they got to the FOBs, knowing that the United States would provide them fuel before they started the mission.

If an HNT has passed all the necessary quality assurance/quality control checks and was selected for a mission but had no fuel, we supplied that truck with enough fuel to complete the assigned mission. The carriers were charged \$15 per gallon for the fuel that we supplied to the HNTs, which was five times more than the price paid for fuel on the local market.

Was that a fair charge levied by the United States?

That is open for debate, but what needs to be considered is that once a convoy was on the road, the convoy commander, because of the threat conditions, would not stop at local gas stations to allow the HNT drivers to refuel. During the course of the mission moving between FOBs, the drivers were then faced with a problem: either the local U.S. personnel would refuse to refuel them, or, if they did get fuel, they were charged the \$15 per gallon rate.

The price of fuel charged to the carriers needs to be revised. The price has to be fair and equitable, taking into consideration that sometimes the HNT drivers do not have the option to refuel on the road. They therefore should not be penalized by having to pay the high rate to refuel with U.S. Government fuel.

Eagle Express Helps Convoy Management

The Eagle Express initiative was implemented in January 2011. Its intent was to alleviate the shortfall in transportation assets resulting from the loss of some of the rotary-flight routes in the area of operations and to provide customers with more reliable information about convoy schedules and planned movements.

Under the Eagle Express initiative, the monthly schedule for convoys dedicated to three routes, which were identified as gold, black, and white, was sent to customers by the 20th day of the preceding month. Customers then had the option to track our convoy movements and build their movement requirements around them.

The advantage of the Eagle Express was that it allowed customers to predict when each convoy would be at the respective FOBs. Before the Eagle Express, our convoy movements were driven by demand: The customer would submit its movement requests, and once a full load was reached, the convoy was planned. With the Eagle Express, the convoys were already planned and the customer could submit movement requests for those routes.

The biggest disadvantage of the Eagle Express was that convoy assets were often underused. Convoys often went out on certain routes with only one or two loads just to abide by the schedule. It was certainly not economical or safe for Soldiers to traverse the dangerous routes without having a reasonable amount of loads to escort.

Finding Time for Maintenance

The pace at which the 17th CSSB ran convoys allowed little, if any, time for performing proper maintenance on vehicles. Command maintenance is a term reserved for those units that have a strictly "on the FOB" mission. M-ATVs (MRAP [mine-resistant ambush-protected] all-terrain vehicles), MaxxPros, palletized load systems, wreckers, and other equipment that go out on convoys were subjected to 48-hour and 24-hour unit quality assurance/quality control checks, as well as a

4-hour battalion-level quality assurance/quality control check before they left on missions. This did not take the place of a command maintenance program, as was demonstrated by the number of trucks being deadlined, some temporarily, while on the road running convoys.

Attempts were made to establish a quarterly maintenance standdown to allow each element to reset and focus on a comprehensive maintenance service for each vehicle. But mitigating circumstances, such as scheduling issues, prevented the establishment of a sustained policy on maintenance stand-downs.

Accounting for Equipment

Equipment accountability has always been a challenge. On a few occasions during our rotation, sensitive items were reported missing from escorted vehicles; in a couple of cases, whole vehicles were missing. All of the missing vehicles were eventually recovered, but the missing sensitive items continued to be a mystery. In response to this, the battalion convoy standard operating procedures were amended to require that customers remove sensitive items from vehicles before shipping.

Our local procedures were also enforced by a battalion directive requiring all convoy commodity managers to turn in a signed copy of the load logs, signifying that the customers had physically signed for their equipment. In the convoy staging yard, operations were also modified to ensure that all HNTs were correctly assigned the equipment's destination, heights of loads were verified for the specific route to be followed, and the customers had removed all sensitive items.

The 17th CSSB improved the way logistics movements were executed across Regional Commands East, North, and South. Over the year of our deployment, we adopted new policies and procedures and shaped others to better reflect the changes we faced in threats, demands, and capabilities. Our customers continued to have diverse and challenging requirements, but we were able to meet and surpass them all. Our replacements assumed an operation that had been refined and tested, and they will only continue to make it better as they respond to the demands of their customers.

CAPTAIN OWEN A. ROSE IS COMPLETING THE ENGINEER CAPTAINS CAREER COURSE. HIS NEXT ASSIGNMENT WILL BE AT HEADQUARTERS, EIGHTH U.S. ARMY, IN KOREA. HE WAS THE TRANSPORTATION OFFICER OF THE 17TH COMBAT SUSTAINMENT SUPPORT BATTALION DURING ITS DEPLOYMENT TO AFGHANISTAN. HE HAS AN ASSOCIATE'S DEGREE IN BIOMEDICAL ENGINEERING AND A BACHELOR'S DEGREE IN CONSTRUCTION MANAGEMENT AND IS PURSUING A MASTER'S DEGREE IN PROJECT MANAGEMENT FROM THE UNIVERSITY OF ALASKA IN ANCHORAGE AND IN GEOLOGICAL ENGINEERING FROM THE MISSOURI UNIVERSITY OF SCIENCE AND TECHNOLOGY.

The CSSB Challenge: Doing More With Less

BY MAJOR THOMAS W. HAAS

The modularity of a combat sustainment support battalion limits its ability to follow the Army Force Generation cycle, and the demands on the battalion are greater than the capabilities it is authorized through its modified table of organization and equipment.

Many demands are placed on a combat sustainment support battalion (CSSB) headquarters in today's Army. As a modular battalion, the CSSB is not habitually under a brigade and has no organic subordinate units. The CSSB is capable of deploying independently and providing mission command for assigned and attached sustainment units in order to provide full-spectrum sustainment support as required.

The 17th CSSB, stationed at Joint Base Elmendorf-Richardson, Alaska, provides mission command for 12 individual companies and detachments spread over 360 miles between Joint Base Elmendorf-Richardson and Fort Wainwright, Alaska, with a total of more than 1,300 Soldiers authorized. In the last 5 years, the battalion deployed twice: once in support of Operation Iraqi Freedom (OIF) for 15 months from 2007 to 2009 and once in support of Operation Enduring Freedom (OEF) for 12 months from 2010 to 2011. During those 5 years, the battalion served under 6 different brigade headquarters and provided mission command for 43 Active Army, Army National Guard, and Army Reserve units totaling more than 5,300 Soldiers.

On order, the 17th CSSB deploys and provides mission command of assigned and attached units, sustainment and general support commodity hub operations, distribution of all classes of supply, area support maintenance, central receiving and shipping point operations, and contractor oversight.

Using the 17th CSSB as an example, this article will examine the unique challenges facing CSSBs and provide recommendations in the areas of manning, equipping, and training against the backdrop of garrison sustainment operations, modularity, and overseas contingency operations in today's high operating tempo Army.

Manning

The size of the organization and modularity are indisputably the biggest factors in determining proper manning levels for a CSSB. These factors also significantly increase the staff's workload, and deployment adds to

the challenges. The 24-hour operations required during deployments justify depth of manning, as do the non-standard missions that inevitably come up. For example, the 17th CSSB had to split its headquarters to man a forward logistics element and had combined action training responsibilities with its Afghan military partners.

Of course, nonstandard missions are not unique to a CSSB; all battalions work through similar challenges while deployed. However, several examples of increased workload are unique to the CSSB. For example, the S-1 section of an average-sized, organic battalion with 500 to 700 Soldiers will process 500 to 700 end-of-tour (EOT) awards during a deployment. That requirement is more than double for a CSSB. During the recent OEF rotation, the 17th CSSB's S-1 section processed more than 2,100 EOT awards since 5 subordinate units redeployed during the battalion's tour. During the 17th CSSB's 15-month OIF deployment, the S-1 processed more than 2,000 EOT awards.

Awards are not the only administrative actions that significantly increase in a CSSB. The number of personnel administrative actions, including officer and noncommissioned officer (NCO) evaluations, records updates, and promotion packets, is at least double, and in some cases triple, the norm.

The fact that a CSSB becomes a multicomponent headquarters while deployed creates additional stress and workload since the Active component human resources specialists have to learn all the differences within the National Guard and Army Reserve personnel systems.

MTOE Shortfalls

The S-1 authorization for the 17th CSSB was nine Soldiers according to the battalion's fiscal year (FY) 2011 modified table of organization and equipment (MTOE). The FY 2012 MTOE decreased the S-1 section authorization to eight, yet the workload remained the same.

The additional workload that comes with the CSSB's

size and modularity also applies to other staff sections. The S-3, S-4, and S-6 sections all have significant workload increases. The S-3, in addition to having twice the normal S-3 workload since the CSSB is twice the size of an average battalion, is busy with continuous planning and staff synchronization because of the constant turnover of subordinate units.

In the S-4 section, having double or triple the number of subordinate units leads to an exponential amount of equipment and supply actions. Because of the high number of subordinate units and the frequent turnover of those units, the size and scope of the battalion's command supply discipline program is immense. The S-6 section is responsible for all of the battalion's network users, automation equipment, and network trouble tickets. The FY 2011 authorizations for the 17th CSSB S-4 and S-6 sections were seven Soldiers each. For FY 2012, the S-4 authorization decreased to five and the S-6 decreased to six, yet the workload remained the same.

The MTOE changes to the support operations (SPO) and S-3 sections offset each other since the only change was to move the plans section from under the SPO to the S-3. In the SPO section, the biggest workload increase was not necessarily because of size or modularity but because of the addition of a new responsibility: contract oversight. During the OEF deployment, the SPO section provided 8 full-time contracting officer's representatives to evaluate 12 contracts and the performance of over 500 contractors.

In the past 5 years, the 17th CSSB has been the size of a brigade minus, whether forward deployed or in garrison. Yet some key staff sections have remained the same size as those of a much smaller battalion. In garrison during the summer of 2009, the 17th CSSB was manned at 80 percent—despite the fact that the battalion had 12 units and 1,323 Soldiers—since it was not on the patch chart to deploy. It was a significant challenge to establish staff processes and manage a battalion that large with 80 percent of a staff organized to command a battalion half that size.

Professional Development and Training

A large modular battalion encounters several professional development challenges. Developing leaders is more difficult when the whole battalion is not on the same Army Force Generation (ARFORGEN) cycle. Invariably, dwell-time issues occur when moving officers and NCOs between companies and headquarters, which must be done to ensure the professional growth and development of those personnel.

Another problem is the fact that many junior leaders will serve under three to five different battalion commanders during a 3-year tour. This makes mentorship from the battalion command team inconsistent and, in some cases, very minimal because of the short amount

of time those junior leaders serve with a particular battalion headquarters.

Training a CSSB in garrison is very challenging when the battalion's subordinate units are on different ARFORGEN cycles. In order for a sustainment battalion headquarters to train for its wartime mission, there must be a sustainment mission to perform and sustainment units on hand to execute it. This training can be accomplished through field training exercises (FTXs) built to rehearse all the capabilities of the battalion or through daily garrison support requirements.

In the 17th CSSB's case, the customers in garrison are the 17th CSSB's higher headquarters, the 3d Maneuver Enhancement Brigade (MEB), which lacks an organic brigade support battalion (BSB), and U.S. Army Alaska (USARAK). As the only EAB sustainment battalion in USARAK, the 17th CSSB supported the 3d MEB in a direct support role and USARAK in a general support role. However, because of the ARFORGEN cycles of subordinate units, the support requirement never matched the 17th CSSB's capabilities between the 17th CSSB's OIF and OEF deployments.

For example, the 3d MEB needed sustainment-level maintenance support, but the 98th Maintenance Company was deployed. USARAK needed transportation support between Fort Wainwright and Joint Base Elmendorf-Richardson, but both of the transportation companies were deployed. By the time the maintenance and transportation companies returned, the headquarters was deploying again. Even though the support requirements were there, the 17th CSSB missed out on garrison training opportunities because of modularity.

National Training Center Rotation

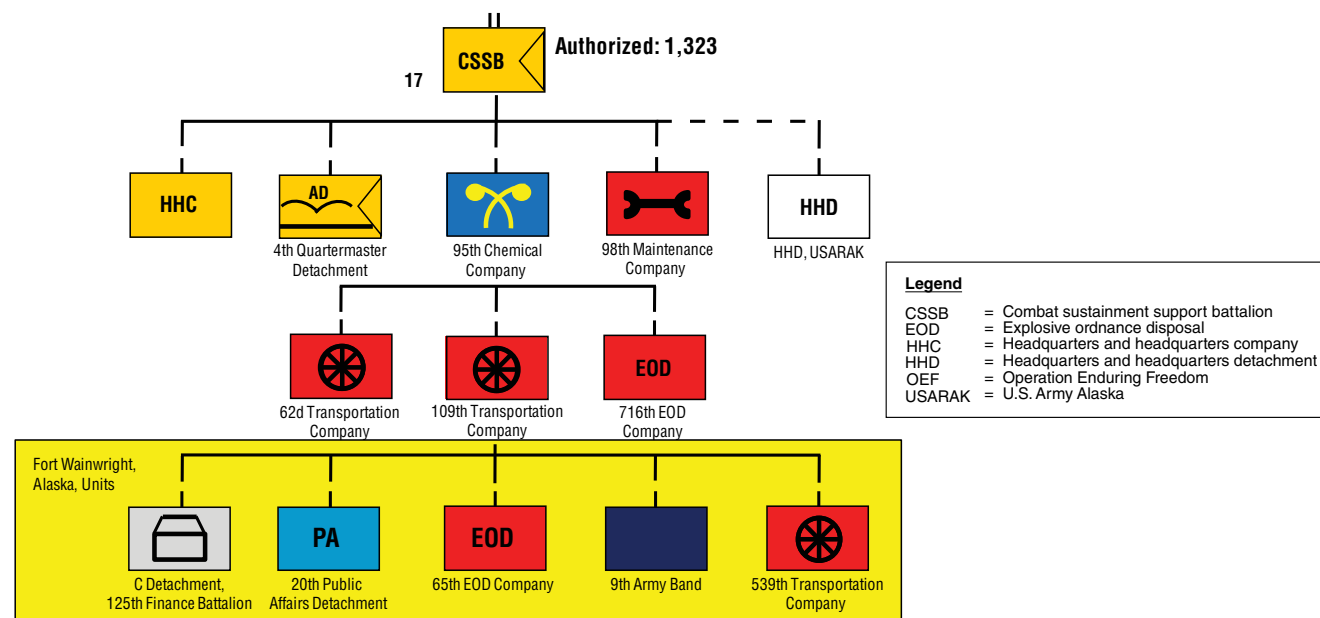
Before deploying to OEF, the battalion conducted three staff exercises and a National Training Center (NTC) rotation at Fort Irwin, California. With 12 units spread across 360 miles to command and each with its own unique training requirements, the CSSB faced a significant challenge to develop and execute a meaningful battalion-level training exercise.

Before the OEF deployment, the 17th CSSB did not conduct any battalion collective training exercises. One staff exercise was conducted in December 2009, and 2 of 12 companies participated. The staff was distracted by the other 10 units throughout the exercise. It was not until after a provisional staff stood up in January 2010 and the transfer of all subordinate units was complete that the 17th CSSB headquarters completed the bulk of its predeployment training.

The constant deployment, redeployment, activation, and inactivation of units—caused by the battalion's units being on different ARFORGEN timelines and having individual and unique training requirements—hindered the CSSB's ability to have a meaningful battalion-level training exercise. The 17th CSSB's two staff exercises

17th CSSB Home Station Task Organization

as of January 2010



and NTC rotation that were conducted after the provisional staff stood up proved to be exactly what was required to prepare for the OEF deployment.

While it was still a very valuable training event, the NTC rotation presented some training challenges, mostly in regard to command structure and mission command relationships. For the 17th CSSB's NTC task organization, the battalion was fortunate to have the 109th Transportation Company (TC), a home station unit. The 109th TC was separated by only 1 month from the CSSB headquarters in its ARFORGEN cycle, so the timing of the NTC rotation worked for both units. The 109th TC was the only unit commanded by the 17th CSSB headquarters during the NTC rotation. Had it not gone to NTC with the headquarters, the headquarters would not have had any units to train with.

Sourcing a CSSB with subordinate sustainment units for combat training center rotations and then matching the CSSB's capabilities with the rotating brigade combat team's (BCT's) requirements is a significant challenge. In the 17th CSSB's case, the 2d BCT, 25th Infantry Division (a Stryker BCT [SBCT]), was more than willing to make the 17th CSSB a part of the team and incorporate it into the overall concept of support to ensure tough, realistic training for all.

Even with incredible support from the SBCT, there were still challenges with the mission command structure. The 916th Support Brigade is garrisoned at Fort Irwin and provided mentorship and guidance during the rotation. That said, the mission of the 916th Support Brigade is to provide "Joint, Interagency, Intergovern-

mental, Multinational (JIIM), contracted support, and rotary-wing aviation sustainment to rotational units, NTC customers, and other government and civil agencies," not to command, mentor, and train rotational CSSBs. That left the SBCT to command a battalion it is not designed to command and limited the training value of the rotation for the CSSB.

Another challenge during the NTC rotation was observer-controller (OC) support. Although the Gold Miner OC team did its best to provide the 17th CSSB with the world-class training support it is known for, the CSSB was not its priority. The rotating BSB was its priority. The Gold Miner team simply does not have enough OCs to sufficiently cover both a BSB and a CSSB during a rotation. USARAK was tasked to provide OC augmentees. However, those augmentees lacked logistics experience; one was a second lieutenant fresh out of the officer basic course.

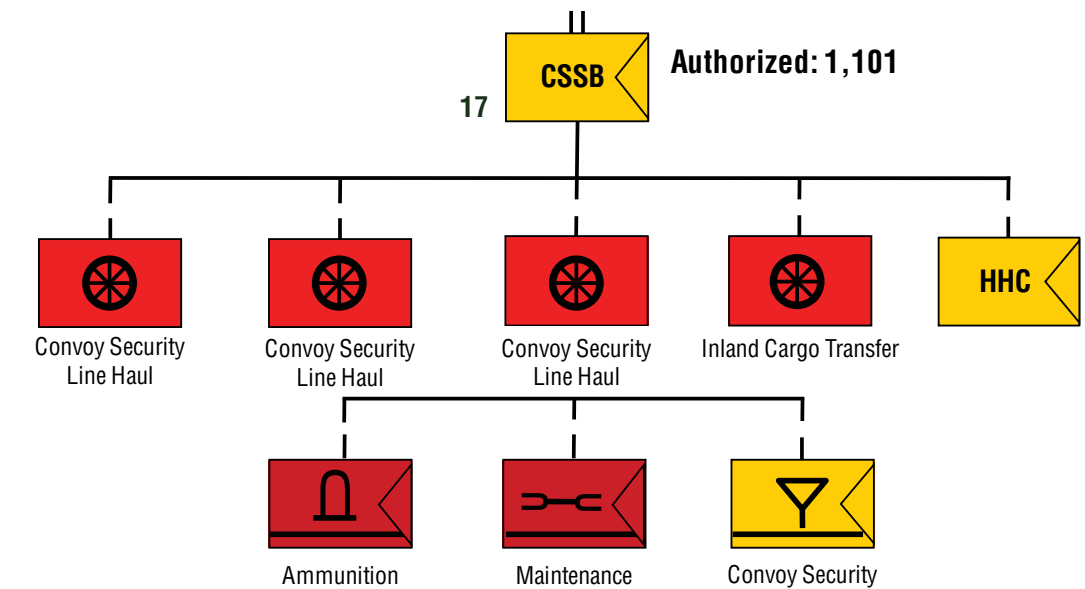
Equipping

One shortfall that the staff exercises and the NTC rotation highlighted was a lack of authorized MTOE equipment necessary to train the 17th CSSB headquarters and subordinate units adequately for deployment. The lack of key equipment created a complete dependence on the local battle command training center for facilities, Army Battle Command Systems, and network connectivity. Once the 17th CSSB got to NTC, its dependence shifted to the SBCT, which supported the battalion in any way it could.

The biggest support requirement was network con-

While in garrison in early 2010, 1,323 Soldiers served under the 17th Combat Sustainment Support Battalion. During Operation Enduring Freedom 10-11, 1,766 Soldiers served under the battalion.

17th CSSB Task Organization for OEF 10-11



nectivity. The 17th CSSB was fortunate to be able to stay in the rotational unit bivouac area, and it benefited from the battalion tactical operations center's clamshell tent being wired for network connectivity. If the headquarters had been pushed forward into the training area, it would have inevitably pulled from the SBCT's limited signal company capability, potentially hindering other units' ability to train.

Being a battalion headquarters not habitually under a brigade requires a CSSB to be as independent as possible and ready to deploy as an expeditionary force to an immature theater with no theater-provided equipment or as a follow-on force in a well-established theater. The addition of the Command Post Node will require a military occupational specialty 25N (nodal network systems operators/maintainer) Soldier to be added to the MTOE.

In the past 5 years, the 17th CSSB has been the size of a brigade minus, whether forward deployed or in garrison, yet the staff has remained roughly the same size as its smaller support battalion counterparts. In October 2011, some key staff sections actually became smaller than comparable non-CSSB support battalions. The size of the battalion and the diversity of the subordinate units, together with MTOE equipment constraints, make it impossible to conduct a simple FTX without relying completely on outside organizations to assist.

It is unrealistic to continue to build the MTOE of a CSSB to fight an insurgency in a mature theater with plenty of theater-provided equipment on hand. If the trend is not reversed, critical skills will continue to be lost and CSSBs will become incapable of expeditionary operations. CSSB MTOEs should be changed in six ways.

First, modularity and size should be considered. In order to maintain the pace at which CSSBs operate, whether forward deployed or in garrison, MTOE manning should not be reduced in the aggregate.

Second, E-7 and above positions should be manned at no less than 90 percent, regardless of where the CSSB is in the ARFORGEN cycle, to account for the increased workload.

Third, a contracting NCO should be added to the MTOE under the SPO section to act as the subject-matter expert and handle all contract administration requirements.

Fourth, the CSSB MTOE should be equipped for the worst-case scenario, which is an expeditionary capability designed to hold up in a force-on-force, high-intensity conflict.

Fifth, the number of OCs on the Gold Miner team should be increased, and mission command, mentorship, and training of the rotating CSSBs should become a primary focus of the 916th Support Brigade.

Sixth, a war trace alignment of National Guard and Army Reserve units with active CSSBs should be developed so that the units have some level of familiarity before deployment. This would allow multicomponent CSSBs to conduct training events, including FTXs and combat training center rotations, during Army National Guard and Army Reserve annual training.

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Moving Liquid Gold

BY MAJOR JONATHAN McDUGAL

Fuel delivery operations in Afghanistan are complicated by host-nation trucking system challenges, including pilferage, maintenance problems, and life support issues.

When I arrived in the Afghanistan theater, I realized that I was in for a rude awakening when it came to managing fuel operations. I was the battalion maintenance officer in the support operations section, so I was not really aware of the challenges that fuel operations managers faced. When the support operations officer went on rest and recuperation leave, I was placed in her position and saw firsthand the challenges she encountered in her attempts to manage this ever-increasing problem.

Fuel Operations in Regional Command East

How coalition forces deliver, consume, and distribute class III (petroleum, oils, and lubricants) in Afghanistan has been the subject of many contract negotiations, and the process seems to be improving. As the sole combat sustainment support battalion (CSSB) in Regional Command East, the 17th CSSB, also called Task Force 17, based out of Joint Base Elmendorf-Richardson, Alaska, was challenged in June 2010 to continue to improve the class III (bulk) distribution system put in place by the 524th CSSB, based out of Hawaii. What was discovered through extensive research and painful “trial and error” attempts was that there were entirely too many different ideas on how to improve the bulk fuel management system.

One idea was that a stationary pipeline should be put in place. This has finally been accomplished. TS-1 (an aviation fuel for fixed- and rotary-wing aircraft), which had been delivered by rail from Turkmenistan, Uzbekistan, and Kazakhstan, is now delivered by pipeline. The use of the pipeline has replaced fuel deliveries by vehicle to various Defense Logistics Agency sites in Kandahar, Kabul, and Bagram, Afghanistan. The number of fuel delivery trucks on Bagram Airfield was also reduced because of direct delivery to some forward operating bases, namely Camp Phoenix in Regional Command Capital and Forward Operating Base Ghazni.

Host-Nation Trucking Challenges

The stationary pipeline is a much more streamlined,

efficient way of delivering fuel than the host-nation trucking (HNT) system. The deliveries made by HNT contractors often are short on fuel amounts because of the shabby construction of some trucks, tank leaks, trash found in the fuel tanks, and lags in download time.

Contractually, fuel trucks are given 7 days to arrive at destinations that normally take several hours to reach. Because of this, many military units program fuel trucks into their logistics convoys to increase reliability and guarantee that trucks will arrive at the final destination with their full loads.

PILFERAGE IS THE LEADING CAUSE OF FAILED DELIVERY MISSIONS.

Even when a fuel truck is escorted by military convoys, a driver occasionally will leave a convoy and not return. It is suspected that some drivers leave convoys because they do not want to be targeted along with coalition forces. Sometimes they will return with less fuel cargo than they originally were carrying, leading coalition personnel to conclude that they sold some of the fuel to make extra money. Usually when the fuel truck drivers return, the fuel’s quality is degraded because the missing fuel has been replaced with some other liquid.

Pilferage is the leading cause of failed delivery missions. The trucks have distinct identification numbers and seals on their fuel tank valves. If, during a convoy or delivery mission, these seals are tampered with, replaced, or damaged before reaching the destination, the truck driver is not paid for the mission and his employer’s company is charged on average \$15 per gallon for the missing fuel.

When a driver is apprehended for stealing, he is

banned from conducting fuel delivery at Bagram Airfield. Banned drivers often circumvent this safety measure and continue getting paid for completing deliveries by having relatives drive in their place.

An added challenge is fuel delivery validation. Only one person is qualified by the contract to stamp and approve the driver’s delivery paperwork. Some drivers have to remain at the fuel station on one side of the installation for several hours until the contractor can arrive at the fuel station from the other side of the forward operating base to approve the delivery. This often angers the drivers and puts an added strain on managing the flow of traffic into and out of the fuel point.

Host-Nation Truck Maintenance

Host-nation truck maintenance was a constant challenge for Task Force 17. Practices put in place by the performance work statement of the HNT contract, which establishes rules and guidelines for transport vehicles, should assist trucking companies in ensuring that the best equipment rolls in and out of the gate. But this is not the case for fuel transportation and delivery.

Task Force 17 had to put an HNT quality assurance/quality control program in place to mitigate the loss of cargo from host-nation supply trucks and to ensure that fuel transport trucks were in complete working order according to the contract. Disqualifying trucks from transportation missions because of either faulty equipment or a lack of roadworthiness cost the unit more than \$600,000 a month.

Although it was effective, the quality assurance/quality control program could not continue because of an increased need for fuel in the theater. Fuel delivery demands resulted in the lowering of standards for fuel truck readiness.

It is very frustrating for a convoy commander to have a fuel truck break down immediately after it exits the installation. It brings up a twofold problem: Do you transfer the fuel to another transport truck, and if so, how? And do you attempt to fix the fuel truck onsite, or do you leave it at the installation for repair? Fixing the fuel truck off of the installation is significantly easier because of the ability of the drivers to acquire local maintenance assistance.

When a fuel transport truck breaks down on the installation, however, it causes a series of problems. The first is the initial traffic stoppage caused by the disabled vehicle. Next is the risk of further damaging the vehicle with military recovery assets, which are not designed to recover HNT equipment. Then there is the delay in coordinating local maintenance assistance and getting a civilian mechanic through the screening process to be granted access to the installation. The security measures to screen civilians who enter the installation can sometimes take several days. Finally, once access has been granted, the mechanic may not even have the proper tools and parts to repair the disabled truck.

Life Support for HNT Drivers

Life support problems were as consistent as the loss of fuel resources and theft. Some fuel truck drivers would arrive at Bagram Airfield at around 0800 and not be allowed to leave for 8 to 12 hours because they were waiting for a fuel load stamp that must accompany their paperwork for payment. The rations they were required to bring with them would not sustain them for the duration of their wait, so they became agitated, belligerent, and sometimes would threaten to leave the fuel station.

Sometimes when fuel truck drivers would show up without food, the fuel escorts would ensure that the drivers were issued a meal ready-to-eat, a halal meal, or an alternative regionally customized meal. As a contingency plan, Task Force 17 dedicated a 20-foot container for meal and bottled water storage to support drivers who had to stay at Bagram Airfield before being assigned to a convoy.

Some drivers were unhappy with the quality of the meals provided to them by the military. Task Force 17 and the 101st Sustainment Brigade coordinated to have an Afghan food vendor at one of the entry control points to meet increased driver food requirements.

It may be surprising that these various challenges could have such an impact on the fuel distribution industry in Afghanistan. Like many other cultural, industrial, and corporate practices that have come to be recognized as “how it is done here,” Task Force 17, as a fighting force, had to learn to embrace unique cultural differences to foster progress that would remain long after its mission was complete. Considering that Bagram Airfield’s average weekly fuel consumption rate was nearly 1.5 million gallons of JP8, more than 250,000 gallons of DF2 (diesel fuel), and 125,000 gallons of gasoline, it is safe to say that any fuel truck that was disabled, delayed, destroyed, detoured, or mechanically unsafe caught the attention of leaders at all levels.

Task Force 17’s progress toward stable fuel distribution operations inspires hope for the future. The task force endeavored to foster a working relationship that was conducive to moving toward a unique system of coalition forces and local nationals sharing the responsibility of securing a prosperous future for Afghanistan.

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Boat to Plane to Foxhole: Seven Key Steps to Intermodal Operations

BY CAPTAIN CHRISTOPHER SHEEHAN

Transferring cargo from sea to air transportation can be a very challenging part of an overseas deployment. But units can ease the difficulty by concentrating on seven critical areas.

When the 1st Air Cavalry Brigade at Fort Hood, Texas, received orders to deploy to Operation Enduring Freedom 11-12, it first had to plan how to get there. Afghanistan presents a transportation nightmare because it is a landlocked nation and it is surrounded by nations with less-than-secure lines of communication, to put it lightly. Since Afghanistan has no seaport of debarkation and very limited and unsecure overland transportation, most supplies, troops, and equipment come into the country by strategic airlift.

Planning to deploy any brigade into combat presents many logistics challenges, but deploying a maintenance-heavy aviation brigade into three different airfields, with further support to be provided to at least six forward bases, presents a near impossibility. After many planning sessions, the brigade's leaders determined that the biggest point of friction in deploying to Afghanistan would be the intermodal port.

The intermodal port is the point where cargo changes modes of transportation. For the 1st Air Cavalry Brigade, our cargo changed from the sea leg to the air leg at Naval Station Rota, Spain. With help from the Navy, Air Force, and civilian support personnel, the brigade supervised and facilitated the offloading of 64 helicopters and over 240 pieces of equipment. This equipment included rolling stock, crated equipment, and containers. Once offloaded from the boat, all equipment was moved to the airfield to prepare it for shipment by Air Force strategic airlift assets.

While preparing cargo to be shipped into Afghanistan, we learned seven key steps to successfully and safely deploying our cargo by air. In less than 30 days, the 1st Air Cavalry Brigade team at Rota was able to push 27 "chalks" of cargo using Air Force C-5 Galaxy transports. [A chalk is the personnel, equipment, and supplies that make up the load of an aircraft. It refers to a chalk number



An Air Force loadmaster oversees a 1st Air Cavalry Brigade soldier during the loading of aviation ground support equipment.

that is assigned to an aircraft and the corresponding chalk number given to personnel, equipment, and supplies that will be loaded on that aircraft for transport.] Although most units can adapt on the fly to succeed, these seven lessons learned will better prepare your unit to conduct intermodal operations.

The Right Supplies

As with any unit movement operation, having the right supplies on hand can mean the difference between success and failure. The most common items we needed were ones that every good unit movement officer (UMO) has on hand at home station. Unfortunately, we were not at home station. We found ourselves short on zip ties, boltcutters, one-time locks, document protectors, and duct tape. Although mundane, all of these items were crucial to preparing cargo for air load.

The zip ties were used to affix paperwork and radio frequency identification (RFID) tags. The boltcutters became

important because we had to open all of our containers so that the Air Force joint inspection (JI) team could certify our loads. The extra one-time locks were then used to reseal all containers.

If your unit is involved in intermodal operations, after completing load certification you will be required to affix pallet identifier forms (Air Force Form 2279) to all equipment. To ensure that this paperwork stays intact, you should use document protectors and duct tape. You also should use duct tape when you mark your equipment's center of balance and identify its gross weight during the JI process.

Recon the Port in Advance

To ensure the success of any port support activity, you need to reconnoiter the port in advance. This is even more important when you are dealing with a combined seaport and airport. Conducting a reconnaissance of your port ahead of time will provide you with important contact information for support and a conceptual picture of the operation and will also allow you to identify requirements for life support (such as billeting, food, and transportation) your unit will need while at the port.

To gain an even better conceptual understanding of the requirements to be successful, conduct your reconnaissance while a unit similar to yours is moving through the port. For instance, our unit sent our support operations officer to Naval Station Rota while the 159th Combat Aviation Brigade was deploying through there. The lessons learned and physically seeing another aviation brigade deploy provided us with invaluable information.

To fully reap the benefits of your reconnaissance, ensure that it is conducted well in advance of your movement timeline. Conducting it 180 days out is optimal, but 120 days out will suffice.

Preparing Your Sensitive Items

When preparing sensitive items (SI) containers, some of the most important things to remember are also the most obvious. Ensuring that your DD [Department of Defense] Form 1750s (packing lists) are extremely detailed and accurate is the most important thing to remember. Remember that all SI packing lists are secured to the inside of the container, and only "dummy" packing lists are affixed to the outside (to maintain operational security). Make sure that your UMO at the intermodal port has copies of all 1750s for your SI containers and hazardous materials (HAZMAT), too.

The more accurate the SI packing lists are, the easier your JI will be. You should expect that the JI team will inspect every piece of cargo down to the smallest detail. If your packing lists do not reflect the additional cargo in a container, specifically SI, the JI team can require you to empty all of your containers and repack them while they supervise.

If you decide to use standard locks on your SI containers, ensure that the UMO has the keys on hand; otherwise,

SEVEN STEPS TO IMPROVING INTERMODAL OPERATIONS

1. Have the right supplies on hand.
2. Reconnoiter the port in advance.
3. Properly prepare sensitive items.
4. Make sure unit movement officers, HAZMAT certifiers, and air load planners are certified, experienced, and able to operate with minimal guidance from higher levels.
5. Prioritize cargo for movement.
6. Build standard pallets.
7. Have the right pallets, straps, chains, and other equipment.

all locks will be cut for the JI. The best tactic to forego any lock issues is to use one-time locks that have serial numbers. This provides security, a tracking number, and the ability to remove a lock with a pair of boltcutters (commonly called "the master key"). In addition to using serial-numbered one-time locks, it is a good idea to duct tape extra one-time locks to the inside of a container's doors. This will allow the container to be resecured with serial-numbered locks after the originals are cut by the JI team. These new serial numbers can then be annotated on the container's packing list and initialed by the UMO to denote a change.

One last major issue affecting SI containers during intermodal operations is physical security. Your containers may be stored on a very secure airfield or in a port container yard lacking proper security measures. But no matter where your containers are stored, it is imperative that you check with the local provost marshal or law enforcement agency. They will be able to inform you of all available security measures, such as police patrols or cameras. The local law enforcement officials will also tell you about possible unit or external requirements for storing your SI containers. Some seaports and airports will provide an armed guard, but other ports may require the unit to provide guards (with weapons).

Ensure that you clearly identify security requirements well in advance so you can arrange for ammunition, weapons, or contracted security. No matter what security measures are taken, it is always a good practice for UMOs to check all SI containers twice a day to ensure that no tampering or theft has taken place.

UMOs, HAZMAT Certifiers, and Load Planners

Each unit needs to have three people who are certified, experienced, and able to operate with minimal guidance from higher levels. These people are your battalion UMO, HAZMAT certifier, and air load planner. The best prac-

tice is to ensure that seasoned noncommissioned officers (NCOs) are kept in these jobs, but sometimes it is necessary to use inexperienced junior officers and NCOs. In either case, each person must be school trained.

Although all three individuals are extremely important to movement, the UMO usually is the senior person with authority and overall responsibility for the success or failure of the unit movement. The UMO should be trained by your installation transportation office (ITO) in both unit movement operations and the use of the Transportation Coordinators' Automated Information for Movements System II (TC-AIMS II). Although courses in both unit movement operations and TC-AIMS II are required, the TC-AIMS II course is more important; it is also harder to be proficient at using TC-AIMS II.

The UMO you send to execute your intermodal operation should have all packing lists and a complete list of containers, RFID tag numbers, and transportation control numbers. This UMO should also have explicit guidance from higher headquarters on what cargo needs to be air-lifted first. (See "Prioritizing Cargo" at right.)

Your HAZMAT certifier should be trained and certified by your ITO or through a troop school (usually an 80-hour course). This person should carry a full list of all HAZMAT being shipped. Every chalk pushed by airlift will include a Shipper's Declaration for Dangerous Goods (with red stripes on the side) that needs to be signed by the HAZMAT certifier. These forms should be filled out at home station for each piece of equipment containing HAZMAT. Every HAZMAT certifier should bring additional blank shipper's declarations as well as a copy of Title 49, Transportation, of the Code of Federal Regulations. You should ensure that a color printer is available at the port since shipper's declarations must have the red hashes on each side when printed.

The last important person for your intermodal operation will be your unit load planner. This person should be trained by the Air Force in two separate courses. One is the Automated Air Load Planning System (AALPS) course, which teaches the load planner how to use AALPS to produce an automated load plan for cargo to travel on Air Force assets. This load plan will be a part of the final packet for each chalk and must be signed by the load planner and approved by both the JI team and the airplane's loadmaster.

The second course each load planner should take is the Air Load Planner Course (ALPC), which is more hands-on than the AALPS course. ALPC walks each load planner through critical cargo preparation. Skills taught at ALPC include aircraft characteristics, aircraft capabilities and limitations, and cargo dimensions and limitations. In addition to classroom lessons, students will normally practice loading actual 463L pallets with cargo. The students will then take these pallets, as well as military vehicles, and learn how to weigh them, find their center of balance, and physically chain them onto an Air Force aircraft. All

of these skills are critical to the unit's success for air loading.

Prioritizing Cargo

One of the main tasks in moving equipment can be determining cargo priority. Although UMOs should be able to execute movement operations with minimal oversight, this does not mean that they should plan movement operations without the commander's guidance. The prioritization of cargo, or which equipment needs to be in a theater first, should be something closely scrutinized by the entire chain of command to ensure that the right equipment arrives at the right place at the right time.

Often, a company commander, a battalion commander, and a squad leader will have different opinions about which equipment is critical and should hit the ground first. This confusion can cause the UMO to guess about which equipment needs to be pushed forward first. It is critical that all key leaders in a unit sit down and clearly identify a prioritization list for cargo, item by item. Leaders at the brigade level must also identify which subordinate units have priority of movement. This unit prioritization should be done down to the company level. Although one battalion may have priority over another, that priority does not necessarily mean that its personal equipment container is more important than another unit's maintenance container.

Consolidating unit and cargo prioritization at the brigade level and pushing the list to the company level can create a much smoother intermodal operation. This list becomes increasingly important if some of your airlift assets become not mission capable because of maintenance problems or if your unit experiences severe weather. If your chalks into the theater are delayed for either reason, the importance of having determined what equipment is needed first is exponentially increased.

Pallet Building

No matter what type of cargo you move by strategic airlift, it has to be palletized on a 463L pallet. A 463L pallet is the standard pallet used for transporting military air cargo. A 463L pallet is approximately 108 inches long, 88 inches wide, and 2¼ inches high. Its usable surface area is 104 inches by 84 inches. The best pallet building methods are taught by Air Force sergeants in the ALPC. If your home station does not offer this course, you can check local Air Force bases or Joint Base Langley-Eustis, Virginia, or contact your ITO for information on similar courses.

If you are unable to have your designated pallet-building teams attend a course, at least send your key leaders so that they can subsequently train the teams at the unit level. These teams should train together in learning to build different types of pallets. For example, a wooden crate is much simpler to secure on a 463L pallet than a 20-foot container, which requires three 463L pallets connected together to form what is commonly called a T-3 pallet. The teams should standardize their chaining and tiedown

NATIONAL STOCK NUMBERS OF PALLET EQUIPMENT

Ratchet Strap (white)	1670-00-725-1437
Top Net	1670-00-969-4103
Side Net	1670-00-996-2780
Adjuster Assembly (binder)	1670-00-212-1149
Chain	1670-00-516-8405

methods and their safety techniques, such as hand-and-arm signals and forklift procedures.

When you arrive at your intermodal port, ensure that both your assigned JI team and the senior loadmaster on site are present as you build the first chalk of pallets. This will ensure that your pallet teams, the JI team, and the loadmasters all follow the same standards for achieving a successful pallet build. Using this technique will ensure that your pallets are not kicked back for rebuild by either the JI team or the loadmaster.

The last and most important preparation for a pallet-building operation is having pre-cut dunnage and shoring ready. Since you can have no metal-on-metal contact when shipping cargo by strategic air, you have to buffer all palletized metal containers with plywood on the pallet. Using your unit's unit deployment list will give you a solid idea of how many and what types of equipment will be moved by airlift. Using your ITO, UMO, and load planner, you then can determine how much dunnage and shoring is required. You should then have all dunnage and shoring pre-cut and stored in a container to be used while you are on the ground at your intermodal port. This will save you from having to find and cut wood while at the port.

Pallets, Straps, and Chains

The last important note to remember during an intermodal operation, or any movement operation, is to have the right equipment. Having the proper equipment, and plenty of it, is critical for a successful intermodal operation. Any unsatisfactory equipment will be kicked back by your JI team to be rectified. The key pieces of equipment needed to move your cargo by strategic airlift are 463L pallets, cargo nets, white cargo straps, chains, and binders.

Using air load equipment is usually easy since most arrival/departure airfield control groups (A/DACGs) will provide it for you. (The A/DACG can be a mix of military and civilian personnel who control all airlift operations.) The A/DACG will normally provide all straps, pallets, chains, and binders that are required to move equipment by strategic air. However, this is not the case when an intermodal operation moves any large element (squad or higher). In our case—moving a heavy aviation brigade—we could not rely on the local A/DACG to provide all of the equipment we needed.

Your unit should use the unit deployment list from your TC-AIMS II movement plan to identify how many pallets you will need for your movement. You also will be able to determine how many chains, binders, white cargo straps, and cargo nets are needed. Whether you use chains or straps depends on the cargo's dimensions. Your local A/DACG, load planner, and brigade mobility warrant officer will be able to determine which cargo requires which types of tiedowns. When in doubt, always refer to your local A/DACG for guidance.

Chains, bindings, white cargo straps, and cargo nets can all be ordered through the supply system using the national stock numbers (NSNs) in the chart at left. Pallets will have to be ordered through your brigade S-4 from the division transportation office in your division G-4. From there, your G-4 will redirect the request for pallet assets to the next level of command and ensure an allocation can be made.

Pallets are a commonly used and rotated asset in air movement operations. To ensure that they are being properly used and secured, most A/DACGs will track them and ensure that they stay at the airfield and are used strictly for air movement operations. Since pallets are so closely controlled, ensure that your brigade mobility officer or S-4 forwards your pallet request well in advance (at least 90 days).

Ensure when ordering your equipment that you use the right NSNs. A common mistake is to use yellow cargo straps (often used for vehicle recovery). Yellow cargo straps cannot be used for air load movement since their maximum gross weight is not clearly printed on the strap itself. A white cargo strap (see its NSN in the chart) has the markings printed in intervals on it stating "5000 LB CAP."

Conducting an intermodal operation—moving from the sea leg to the air leg—can be an enormous undertaking from the platoon UMO all the way to the brigade mobility officer. Although not all-inclusive, these seven key steps can help set your movement plan in the right direction. The biggest factors in any movement operation remain the same: using trained and qualified people, planning the operation well in advance, and allowing for flexibility throughout the movement. Often, having the right people and right equipment in the right place can mean the difference between success and failure. And remember: Nothing happens until something moves!

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Warrior Logistics Scholars Seminar: The Ultimate Leadership Course for Field-Grade Logisticians

BY MAJOR TRAVIS J. JAMES

The Army Command and General Staff College (CGSC) Warrior Logistics Scholars Seminar is a graduate-level program designed to expose select field-grade officers to the best practices in military and corporate supply chain management and logistics. The 10-month program combines the Fort Leavenworth, Kansas-based Intermediate Level Education (ILE) common core and sustainment-focused electives period with the fully funded, National Logistics Curriculum (NLC)-endorsed University of Kansas (KU) master of science degree in business.

The KU master's program features a concentration in supply chain management and logistics, while the ILE electives period provides opportunities for education with industry (EWI) and sustainment field studies at strategic-level Department of Defense (DOD) organizations.

I was honored to be among the 16 officers to participate in the inaugural Warrior Logistics Scholars Seminar. The exposure I gained from participating in this intellectually demanding program had a positive effect on my professional development, increasing my analytical skills and my supply chain management and logistics knowledge. This article serves as my after-action review of the program and recommends changes for the way ahead.

Selection Process

To be considered for 1 of the 16 seminar seats in the 2010–2011 ILE year, each applicant was required to submit a written essay, a memorandum requesting participation, his last 3 officer evaluation reports, and his officer records brief. Incoming ILE students applied for the program while in-processing at CGSC and were notified of their selection a few days before the official start of the course. This selection process yielded a very diverse group, including 11 Army Logistics Corps officers, 1 Armor officer, 1 Chemical officer, 1 Aviation officer, 1 Navy engineer, and 1 Air Force C–5 Galaxy pilot.

The CGSC core curriculum consisted of instruction in leadership, military history, force management, and joint, interagency, and multinational operations. The various departments within CGSC emphasized staff functions at the operational level in environments across the full spectrum of conflict. In addition to this instruction were numerous graded assessments of the writing and critical thinking skills of each warrior logistics scholar. Seminar students participated in the same common core curricu-

lum as other students in ILE Class 11–01, including guest speaker engagements, strategic communication requirements, and additional duties.

KU Course of Study

The Warrior Logistics Scholars Seminar students also attended class 2 to 3 nights a week as they worked toward completing the KU master of science in business in supply chain management degree program. Although all of the KU courses were presented at Fort Leavenworth, they were taught by KU professors.

The first phase of the KU program was focused on core business functions with courses in accounting, economics, statistics, finance, project management, and an introduction to supply chain management. Each course held eight classes that met in the evenings for approximately 3½ hours. Requirements for each subject consisted of homework assignments that averaged 3 hours of study time per class meeting, Blackboard discussions, and mid-term and final exams.

Education With Industry

Once the seminar students completed the CGSC common core blocks of instruction, their schedules were altered from that of a traditional ILE student to support the EWI phase and CGSC courses L200, Leadership, and H200, Military Innovation in the Interwar Period. On Mondays and Fridays, scholars participated in the leadership and history courses; the remaining 3 days were dedicated to EWI.

The overall objectives of this portion of the program were to provide exposure to the corporate environment, witness best industry practices, and apply lessons learned from the KU coursework to assigned corporate projects. Based on individual interests, experience, and previous education, officers were paired with participating firms to work on supply chain management or logistics-related projects. Firms such as Hallmark, Harley-Davidson, and Frito-Lay were provided with two to three officers who worked from 0900 to 1500 on each Tuesday, Wednesday, and Thursday.

In my corporate assignment, I worked on a reverse logistics project at the Hallmark corporate headquarters in Kansas City, Missouri. My specific project-related tasks at Hallmark were to—

- Research industry best practices in reverse logistics

using external sources.

- Document and validate current Hallmark reverse logistics procedures and workflows (physical and information) and quantify current costs and resource requirements.
- Identify improvement opportunities in Hallmark's current reverse logistics/returns process based on findings from best-practice research and develop recommendations to enable supply chain and business staff reviews to improve the firm's current reverse logistics operations.

From January to May, EWI continued with required KU coursework, sustainment field studies, and CGSC electives. The KU courses were focused on core supply chain management issues, including change management, transportation and logistics systems, information systems, procurer and supplier management, and a final capstone project. The students were challenged to solve a real-world supply chain management issue for a major distribution firm under the guidance of the company's president.

CGSC Spring Electives

The second phase of the KU courses continued on Friday evenings and on Saturdays from 0830 to 1600 in support of the CGSC Spring Electives Term I travel requirements.

In the sustainment field studies period, which was substituted for the spring electives, we visited the TACOM Life Cycle Management Command headquarters, Navy Supply Command headquarters, and Defense Logistics Agency New Cumberland, Pennsylvania. We received overview briefs, tours, and demonstrations of each organization's current operations, supply chain issues, and future role in the military's strategic supply chain. Following each visit, an officer provided the visited organization with a case study on the issues presented and recommended solutions.

After completing the travel period, CGSC Spring Electives Term II electives became the main effort of the program. The electives were sustainment-focused to further broaden each officer's knowledge and provide preparation for post-ILE assignments. For example, I elected to take the Sustainment Brigade Operations Course, Support Operations Course, and Battle Command Sustainment Support System Course.

In the closing weeks of the program, we participated in a local Council of Supply Chain Management roundtable, a KU graduation social, a KU hooding ceremony, and finally the KU graduation ceremony in Lawrence, Kansas.

Recommended Program Improvements

The leaders within CGSC's Department of Logistics and Resource Operations (DLRO) have developed a cutting-edge program in the Warrior Logistics Scholars Seminar. It is one of the few, if not the only, programs that specifically target the professional development of

field-grade Logistics Corps officers. However, a few adjustments can be made to improve the program.

As the program gains popularity, the demand to participate will greatly exceed available seats for the seminar. To ensure that the selection process yields the best qualified officers to participate in the program, I recommend that CGSC add the Graduate Management Admission Test (GMAT) or Graduate Record Examination (GRE) to the application process. With this additional requirement, the application process deadline should be at least 30 days before the ILE start date in order to provide administrators with adequate time to select the best qualified officers for the program.

To ensure that officers are correctly assigned after completing the Warrior Logistics Scholars Seminar, a special skill identifier similar to the identifier given to graduates of the Theater Logistics Planners (TLOG) program should be awarded to the officers who complete the seminar. My recommendation is that graduates of the program receive follow-on assignments within sustainment brigade headquarters, corps- and division-level G–4 staffs, the Defense Logistics Agency, the Army Materiel Command, the Military Surface Deployment and Distribution Command, the Army Logistics University, and the Army and Air Force Exchange Service. This will ensure that the Army can take full advantage of the skills gained by graduates of the seminar.

The Warrior Logistics Scholars Seminar demonstrates CGSC's tremendous flexibility and creativity. DLRO's development of this specialized program enhances the military's ability to meet the current needs of the changing sustainment environment. As factors such as globalization, technological advances, joint and interagency Government interoperability, and dependence on the military industrial complex continue to affect Army sustainment operations, officers with the diverse skill set acquired in the Warrior Logistics Scholars Seminar will greatly benefit the Army.

By making minor adjustments to the application process and tracking the officers who complete the program, the sustainment community will produce a stellar program that develops field-grade officers with the knowledge needed to combine the best practices of civilian supply chain management with current military sustainment operations at the strategic, operational, and tactical levels.

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What “Shona ba Shona” Means to Army Logistics

BY CAPTAIN MICHAEL D. ANDERSEN

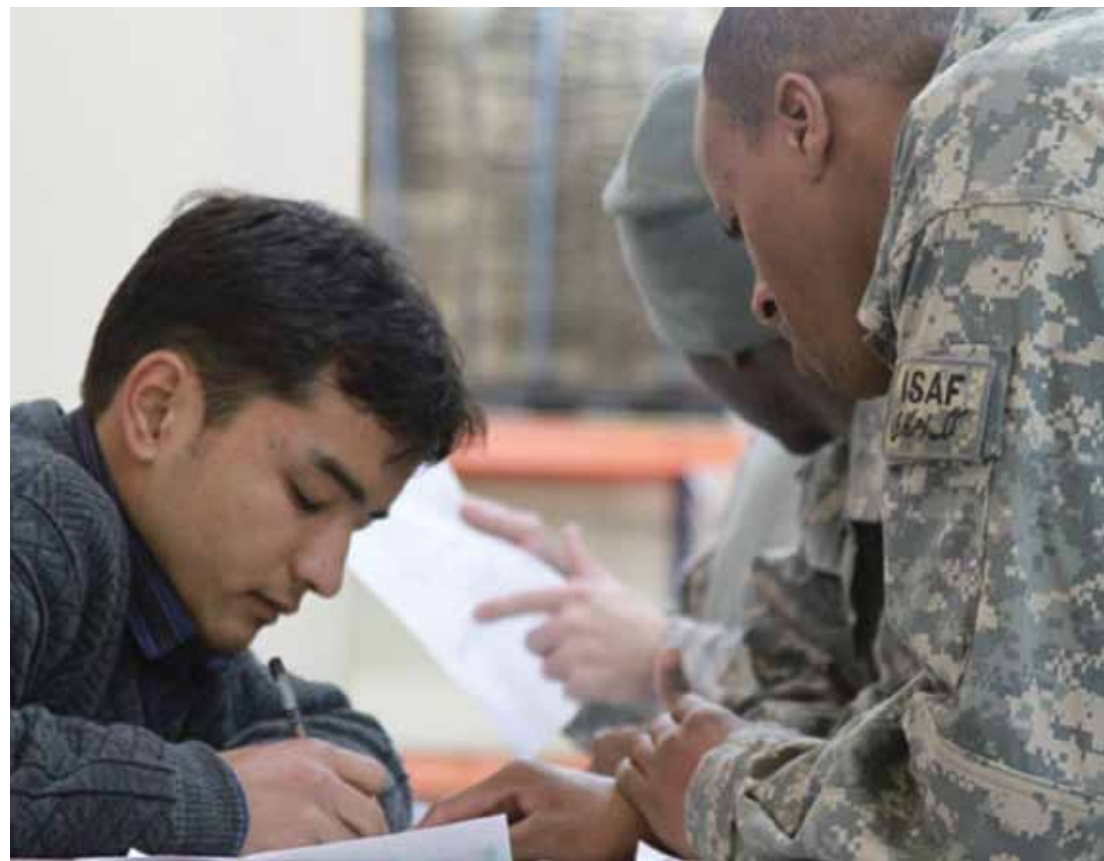
By helping to train Afghan logisticians, an Ordnance Soldier fulfills his desire to have a direct and positive impact on Afghan National Army operations.

Long after the withdrawal of combat forces from Afghanistan ends, the effect the United States has had on the country will still be significant. The world will measure the United States and its Army by the legacy left behind, good or bad. Afghanistan presents a world of opportunity for Army logistics. This includes the opportunity not only to train and assist in building the Afghanistan National Army (ANA) to take over but also to teach and mentor the Afghans in basic logistics principles and discipline.

First Deployment

I first deployed in support of Operation Enduring Freedom VI as a wheeled vehicle mechanic. Although I was happy in my work, I felt that I was not having the direct impact that I had imagined during predeployment training. Then Sergeant First Class Louis Steinke, my platoon sergeant, became the local representative for Operation Crayon. Through this program, I was able to travel to various places around northern Afghanistan and deliver school supplies and basic hygiene items to the Afghan people. However, despite delivering thousands of pounds of supplies, I felt as though I was missing something important.

On 4 July 2010, General David Petraeus said, “To our Afghan partners: We will do all that we can to help you build a country free of the fear of the Taliban and Al Qaeda, a country in which all citizens can live in peace with one another and provide for themselves and their families.” He also mentioned working shoulder to



Soldiers show Afghan personnel how to fill out supply forms.

shoulder, or “shona ba shona” in the Dari language, with our Afghan partners.

Finding Fulfillment

During my second deployment to Afghanistan, this time as the operations officer in a modular Quartermaster company, I figured out what had been missing from my first deployment experience. The 240th Quartermaster Supply Company was doctrinally structured to provide support to nondivisional units within the area of operations, including routine operations such as running a supply support activity (SSA), class I (subsistence) operations, class III (petroleum, oils, and lubricants) operations, and a water purification platoon.

A Soldier teaches an Afghan National Army soldier how to check the oil level in his vehicle.



As is generally the case with logistics units in this asymmetric conflict, we found ourselves adapting to the current mission and taking on non-traditional roles. One of those roles, supporting the Afghanistan National Security Forces (ANSF) partnership training, brought the company to embrace the shona ba shona mentality.

Directed from higher echelons and supported by the 129th Combat Sustainment Support Battalion (our higher headquarters), the company took on a variety of missions supporting ANSF partnership training.

In one location, we had Soldiers conducting a driver’s training course for an ANA logistics unit. What started initially as a one-time train-the-trainer class transformed into a flourishing training academy.

In another case, Army logistics Soldiers skilled in materials-handling equipment (MHE) trained their Afghan counterparts in all aspects of an MHE operation. The Soldiers taught the Afghan trainees proper preventive maintenance checks and services and the importance of taking care of their equipment. Every day, the Soldiers came prepared to cover important topics ranging from proper ground-guiding procedures and safe forklift operations to loading pallets of supplies onto trucks for delivery.

In another location, the company’s automated logistical specialists (military occupational specialty 92A) taught, coached, and mentored the Afghanistan National Police at one of their provincial supply points. Our Soldiers recognized the Afghan forces’ need to establish a command supply discipline program that enabled the Afghan Police to have accurate inventories and historical records in order to see trends and plan ahead for future missions.

The 129th Combat Sustainment Support Battalion also helped the Afghan National Police to implement a trusted agent program in which each element that was supported by the supply point designated a trusted agent who was responsible for all transactions. This program aided U.S. Soldiers in identifying Afghan personnel involved in the supply chain and training them in supply principles.

Lastly, the company had the opportunity to send two representatives to be part of an operational mentor and liaison team for an ANA logistics battalion. The two senior leaders were assigned to mentor the battalion S-3 and S-4 sections. They helped the battalion to draw all of its organizational equipment and taught its soldiers

hand receipt procedures and the principles of property accountability. The two mentors also conducted classes on the military decisionmaking process for the ANA battalion’s senior officers and trained the junior officers in troop-leading procedures.

The ANA battalion successfully completed its training, deployed to its area of responsibility and is providing first-class logistics support to ANA forces.

The lasting impact of our efforts was the puzzle piece missing from my first deployment to Afghanistan. Undoubtedly, the supplies that I helped to distribute during that first deployment helped children with their education or provided basic necessities, but for how long? The training in basic logistics functions and principles that the 240th Quartermaster Supply Company gave to Afghan forces will be used and passed down to other Afghan soldiers long after we are gone. Essentially, we have provided the ANA with an opportunity to become self-sufficient in providing seamless and professional logistics—the cornerstone for any military organization.

From water purification to property accountability and stewardship, Army logisticians have a vast range of training opportunities to offer the Afghanistan National Army. From my experience, the Afghan soldiers have been receptive and eager to learn but only from Soldiers who are genuine and sincere in their training efforts. I believe the Army has so many excellent logistics programs that could benefit the ANA. It remains to be seen how many of us are willing to work shona ba shona to make it happen.

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A 416th Transportation Company Soldier rewires the exterior lighting on a Caiman Plus in the exchange shop. (Photo by SGT Refugio Medina, 416th Transportation Company)

The Complete Exchange of an MRAP Fleet During Stability Operations

BY CAPTAIN GEORGE AUTRY

The 416th Transportation Company exchanged a fleet of Caiman mine-resistant ambush-protected (MRAP) vehicles for better protected Caiman Plus MRAPs while continuing operations in the Iraq Joint Operations Area.

When the 416th Transportation Company out of Hunter Army Airfield in Georgia was sent to Kuwait for a 12-month deployment in October 2010, it left behind its fleet of M915 trucks and 7,500-gallon fuel tankers and fell in on a fleet of M1220 Caiman mine-resistant ambush-protected (MRAP) vehicles. The company's new mission was to provide security for the convoys of its parent battalion, Joint Logistics Task Force (JLTF) 6. These convoys traveled from Kuwait into Iraq to points as far north as Camp Speicher, traversing some of the most hostile and dangerous routes in the Iraq Joint Operations Area.

Although the company was grateful for its Caiman MRAPs (a considerable improvement over the up-armored M1151 high-mobility multipurpose wheeled

vehicles used in earlier deployments), the 416th wanted to upgrade to the M1230 Caiman Plus MRAPs. With additional side armor designed to reduce the impact of explosively formed penetrators, the Caiman Plus MRAP has increased survivability.

The opportunity to phase in these improved vehicles finally arrived in late May 2011 as the company's parent brigade, the 230th Sustainment Brigade, began to exchange its entire inventory of Caimans for the superior Caiman Plus models. The 416th was responsible for exchanging 42 Caimans for the upgraded vehicles.

The Logistics Challenge

Any opportunity to increase the safety of Soldiers is a positive development and should be considered as such. However, significant challenges arose in the process of switching out the existing fleet. The main obstacle to the new vehicles' immediate incorporation into the fleet was the state of their readiness when the 416th Transportation Company received them. Each new Caiman Plus MRAP was completely bare of the additional equipment required for operation, including improvised explosive device (IED) countermeasures, Blue Force Trackers, radios, antennas, global positioning systems, digital vision enhancements for night driving, exterior light sets, and basic-issue items.

According to the exchange plan, as each new Caiman Plus arrived at the unit, an existing Caiman's equipment would be removed as needed and transferred to the new Caiman Plus platform. This single obstacle resulted in two secondary challenges: how to manage the logistics of the equipment transfers and how to minimize the impact on the company's mission throughout the process.

The Exchange Process

Two alternatives were weighed for transferring the equipment from the Caimans to the Caiman Pluses. One option was to consolidate operations for the brigade in a central location by tasking Soldiers from the subordinate battalions to run an exchange shop, where they would pull equipment from Caimans and install it in the Caiman Pluses. The second option was to allow the mechanics of each convoy escort team (CET) company to transfer the equipment themselves in their own maintenance bays and complete the task according to their own schedules as operations allowed.

The final decision was to centralize operations. Although transferring equipment between vehicles seems straightforward, it proved to be a highly technical procedure, involving multiple components and wiring systems. A dedicated central team augmented the operators of each MRAP and provided consistency, a strong knowledge base, and maximum efficiency. A large bay in a sister battalion's motor pool was set aside as an exchange shop. Operations at this dedicated site were run exclusively at night in order to avoid the intense heat of the Kuwaiti summer.



A 416th Transportation Company Soldier rewires a Caiman Plus mine-resistant ambush-protected vehicle in the exchange shop. (Photo by SGT Refugio Medina, 416th Transportation Company)

warfare officer made shop appointments several days in advance, and it was the 416th Transportation Company's responsibility to get the MRAPs to the shop for the appointments. Only after visits to both shops were the new Caiman Plus chassis deemed road ready.

Once the exchange method had been determined, each organization involved in the process had a different role to play. Since the exchange shop was used by the entire brigade, the JLTF 6 battalion maintenance officer (BMO) controlled the flow of vehicles through the shop.

A day or two before the exchange, the BMO would notify the 416th Transportation Company of the number of Caiman/Caiman Plus exchange pairs the company could bring into the shop and the time they were scheduled to arrive. Once the company received the order, its Soldiers prepared each Caiman, cleaning and emptying it of all nonessential equipment.

Next, the platoon owning the prepared, fully loaded Caiman would move it and a bare Caiman Plus to the exchange shop on the day the BMO had specified. The Caiman/Caiman Plus exchange pairs would be secured at the exchange shop motor pool and left for that evening's work.

As night fell and the exchange crews came to work, the Caiman pairs would be brought into the bay to begin the transfer. The bay could hold up to three pairs simultaneously, but two at a time was more common. The vehicles were parked one in front of the other, and the teams would start by disconnecting wiring and unbolting, relocating, and reinstalling the equipment. A communications Soldier supplemented the many mechanics by testing radio systems and Blue Force Trackers. The crews gave careful attention to the sensitive items on the MRAPs, ensuring that all necessary items transferred and stayed secure throughout the course of the exchange.

On average, three to four pairs of vehicles were exchanged each night. The crew at the brigade exchange shop was capable of moving all of the equipment with the exception of some IED countermeasures. Transferring those systems required the pair of vehicles to be brought separately to a specialized shop, where civilian contractors made the transfer. The battalion electronic

The Time Factor

Competition with other brigade entities for slots within the necessary shops, combined with operational considerations, led to delays between each step in the process, from the company receiving each Caiman Plus to the transfer of equipment and systems. As soon as the pair entered the exchange shop, both vehicles were considered not mission capable and could not be used in operations.

Fortunately, the Caiman Plus vehicles were not delivered all at once. Instead, they arrived at a steady pace over a 3-month period. The 416th Transportation Company received its first Caiman Plus vehicles in late May 2011 and its last group at the end of August 2011. Each week, the brigade received a number of Caiman Plus MRAPs and divided them among battalions with CETs. The battalions then distributed the newly arrived vehicles to their CET companies. Because of competing requirements, the 416th did not receive Caiman Plus MRAPs every week, but when it did, it received, on average, five vehicles.

The biggest limiting factor in exchanging Caimans for the Caiman Pluses was the time it took to get each pair into the exchange shop. Caimans were often unavailable for exchange because they were being used on missions, and timeslots in the exchange shop were limited. Three to 10 days usually passed between the time a company picked up a Caiman Plus and the time the new MRAP and its counterpart Caiman entered the exchange shop. Once the MRAPs were officially received into the shop, however, the process moved very quickly and took about 2 to 5 days.

Normally, the 416th supported seven CETs, but in order to accommodate the exchange process, the seventh team was stood down. This decreased the combat power available to JLTF 6, but it was unavoidable. The standing

down of the seventh CET freed up the Caimans needed for exchange and freed up the personnel needed to move Caimans between appointments and to work on the exchanges themselves.

Each Tuesday, the JLTF 6 property book officer notified the 416th Transportation Company of the number of Caiman Plus vehicles the company would receive that week. Around midweek, a team from the 416th, made up of mechanics, drivers, and supply and communications Soldiers, would inspect the new vehicles for serviceability.

By the end of the week, a team of drivers and supply personnel would turn in stripped Caimans brought through the exchange process the previous week. The following day, the same team responsible for inspecting the new MRAPs earlier in the week signed for and acquired the vehicles. Concurrently throughout the week, the same team would get the vehicle pairs to their appointments at the necessary shops.

Lessons Learned

The process of exchanging a fleet of one type of MRAP for another was a rewarding challenge. But any units undertaking a similar challenge in the future may wish to consider some of the lessons the 416th Transportation Company took away from the experience.

Keep lines of communication open. It was vital that the company maintain communication at all levels throughout the process. The battalion PBO and company needed to communicate about pickup dates. The BMO and the company needed to communicate about exchange shop appointments, and the electronic warfare officer and the company had to do the same with the IED countermeasures specialty shop.

The operations cell needed to coordinate with the platoons to ensure that their old vehicles were prepared and moved to the right place at the right time. The company communicated with the battalion leaders, keeping them up to date on where each vehicle was in the exchange process.

Prioritize teamwork. In a process with as many tasks as this, teamwork was essential. It was very important that all the players in this complicated ballet of exchanges knew their roles and fulfilled them. The process would not have been possible without the BMO's coordinating appointments or the PBO's notifying the company about pickup dates and quantities. The dedicated mechanics, operators, and communications Soldiers working at the exchange shop were likewise crucial to the success of the exchange.

Without the company operations section ensuring that enough Caimans were kept off the road and ready for exchange, the transfer would not have happened efficiently. The company's supply shop played a vital part in picking up new Caiman Plus vehicles and turning in old Caimans. And finally, without the support of the battalion and brigade commands, which allowed the 416th Trans-

portation Company to stand down a CET, the exchange would not have been feasible.

Develop a system and track it. Although many times the 416th Transportation Company's systematic process was not exactly followed because of active missions and other variables, having a system in place was extremely helpful. The system should be tracked very closely. The 416th's operations section maintained a spreadsheet to track every Caiman Plus in the company, its current location, and its phase in the exchange process. This established system allowed the company to plan carefully and accurately to meet its obligations, enabling it to be proactive and prepared for the next step instead of becoming reactive and scrambling to meet the next deadline.

Centralize operations. While centralization was frustrating at times for those waiting for slots to become available, the efficiencies gained by centralizing the exchange shop yielded significant dividends in the end. Centralizing the exchange process was the right choice for the brigade for several reasons. Having a dedicated team and establishing a rhythm helped expedite the process. Moreover, if each company had been responsible for transferring the equipment of its own vehicles, each transportation company's maintenance team would have lost considerable time, and the exchange process would have detracted from other duties.

Maintain flexibility. Although the system in place was well organized, the exchange was conducted during continuous stability operations. Sometimes Caimans would return from a 10-day mission in the morning and be dropped off for exchange that night. Some exchange shop appointments were not filled because no Caimans were available for the exchange since they were out protecting convoys.

However, flexibility goes both ways. When slots were available, the 416th made every effort to take advantage of them, even on short notice; sometimes this required reacting quickly with limited personnel in order to move Caimans and Caiman Pluses whenever the opportunity presented itself.

Through communication, teamwork, planning, and flexibility, what could have been a very trying task for a company—exchanging a fleet of 42 vehicles while continuing to conduct stability operations—became manageable. In the end, the 416th Transportation Company gained a new fleet of significantly more survivable MRAPs to protect the Soldiers who were protecting their convoys.

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The 87th Quartermaster Detachment's Joint Aerial Operations in Okinawa

BY CAPTAIN APRIL A. CAMPISE
AND SERGEANT TERRANCE J. ALVAREZ



The 87th Quartermaster Detachment (Parachute) has served a unique role as the sole Active Army airborne unit in Okinawa, Japan, since 2005. The unit will inactivate as part of a scheduled Army drawdown in the Pacific theater this year. Made up of Army parachute riggers, the detachment is responsible for servicing and maintaining all equipment for aerial delivery contingency operations in Okinawa and the rest of Japan. Annually, the detachment packs and inspects an average of 14,000 pieces of aerial delivery equipment at Sagami General Depot, near Tokyo, and

maintains hundreds of wartime contingency parachutes stored in Okinawa.

Operation Cobra Gold

Annually, the 87th Quartermaster Detachment participates in Cobra Gold, a bilateral exercise built around the exchange of military training and experience with the Royal Thai Army. During past Cobra Gold exercises, the detachment has built important and lasting multinational and joint relations with both the Thai Army and the U.S. Marine Corps stationed in Okinawa.

A Marine sergeant watches an Army sergeant pack an MCI-1D parachute.

For the past 3 years, the 3d Marine Logistics Group and the 87th Quartermaster Detachment have deployed paratroopers from Okinawa to Thailand to serve as the combined aerial delivery element in support of Operation Cobra Gold.

For years, Marine and Army parachute riggers in Okinawa have been combining efforts to conduct joint parachute rigging operations in the Pacific. Historically, the riggers have executed a broad range of aerial operations, including packing and performing hundreds of day and night low-level static-line parachute and military free-fall parachute jumps. The riggers also have dropped more than 16,000 pounds of cargo, all of which hit the drop zone without a single malfunction or incident.

These missions have provided great opportunities for combined training and team building among the services and have helped to foster an enduring relationship among Army and Marine Corps riggers. All training conducted by the parachute riggers is executed with the safety of the community and participants in mind. All actions

taken by the U.S. participants follow well-established safety procedures. This training remains essential for U.S. troop readiness, the mutual defense of Japan, and regional peace and security.

Army and Marine Corps Collaboration

In October 2010, the 87th Quartermaster Detachment and the 3d Marine Logistics Group signed a memorandum of agreement to operate jointly out of one facility. Since then, both units have strategically combined resources and linked efforts on airborne operations and

daily missions such as inventories and shop maintenance.

The collocation of the two units has been a beneficial learning experience in joint operations for both services. Working closely with one another has enabled an exchange of experience and knowledge that has helped each service grow and learn from the other.

According to Army rigger Sergeant Terrance Alvarez, "Even though we have the same basic skill sets, there are differences in techniques the two branches use to accomplish the same task." Marine riggers, for example, follow slightly different packing protocols than Army riggers.

Each unit has its own strengths and weaknesses. The Marine riggers are known to be experts in heavy drops (loads greater than 500 pounds). Although Soldiers from the 87th Quartermaster Detachment also are proficient in executing the same containerized delivery, bundle, and platform drops, they have more expertise in static-line personnel drops. As a joint force, the units have relied on each other's experiences to become better riggers overall. During exercises, Army jumpmasters work hand-in-hand with Marine jumpmasters to safely execute joint airborne operations.

When it comes to establishing and running a drop zone, standard operating procedures largely remain the same. However, Marine and Army riggers contribute to the shared operation by providing experience and input from their respective services.

"Working with the Marines has provided me with insight into a different world of parachute rigging [that] I wouldn't have otherwise been privy to," said Army Corporal Edwin Bocanegra-Torres. "We reach the same end state, but the process we use for getting there can vary. I wouldn't say one method is better than the other, but the Marines have definitely shared techniques and capabilities with us that we wouldn't otherwise have been exposed to in a standard Army environment."

The bottom line for both units is that as a combined force, they share the same overall goal. "When we conduct an operation together, it isn't about being an Army Soldier or being a Marine; it's about being a rigger," said Army Specialist Kyle McNary. "It's about getting people out of the bird safely and getting the equipment to the ground in one piece."

Advantages of the Joint Relationship

The joint relationship these units have built is rare and special for tactical-level parachute rigging operations. Working as a team has enabled both services to streamline their operations and obtain the most effective use of resources, funding, and training opportunities. Serving as a joint capability in Okinawa has also provided a distinctive learning experience for Soldiers. According to Army jumpmaster and Quartermaster detachment noncommissioned officer-in-charge Staff



A Soldier inspects another Soldier's jump gear before a jump.

Sergeant Archie Gadsen, "Serving with Marine jumpmasters has been a broadening experience, and it's unlike anything else I have done in the Army. We are better Soldiers and technical experts because of this experience."

"The day I leave this island will be a sad day because this is the only place in the military where parachute riggers from the different services can work together, said Army Corporal Jorge Alaniz. "It's been fun, I've made lots of friends, and I have enjoyed this opportunity to work with the Marines."

When asked about serving with the Army riggers, Marine Corporal Elizabeth Myers said, "Out of my 5 years of service, [working with Army riggers] has easily been one of the greatest experiences I've had in that time. The Army riggers brought diversity to not only the job we do but also the daily work environment."

This year, all personnel from the 87th Quartermaster Detachment will be reassigned to other units as the detachment inactivates. By official standards, this means that the detachment could be called back to active duty years down the road. However, for now, the aerial delivery mission in the Pacific must be handed over to another unit.

Although the detachment is inactivating, many feel history has been made through this experience. As Staff Sergeant Gadsen put it, "The relationships that have been made between the Army and Marine parachute riggers cannot be replaced. Even with the unit inactivating, these friendships will last a lifetime, and the lessons learned will stay with us forever."

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The Three Most Common Electrical Safety Issues in Deployed Environments

BY JAMES F. JENNINGS

The U.S. standard voltage of 120 creates problems for Soldiers deployed to countries where the standard voltage is 220. Ignorance and carelessness when working with these voltages can have disastrous results.

Electrical safety problems have bedeviled deployed U.S. military forces for many years. Since 2008, electrocutions and electrical fires in Southwest Asia have been front page news in the *New York Times* and leading stories on CNN. Electrocutions of deployed Soldiers were the focus of congressional hearings in 2009, and the Department of Defense Inspector General (DOD IG) conducted three investigations the same year to determine the scope of the problem and recommend solutions.

A key finding of the DOD IG report on electrical safety problems in Afghanistan was "a lack of education for service members regarding electrical safety, incident reporting, and personal responsibility." (This report is available online at www.dodig.mil/SPO/Reports/D2009-SPO-005%20FINAL_web.pdf.) The report recommends training to resolve these issues and prevent future electrocutions, electrical shocks, and fires. This article, which draws on the author's experience as a safety officer in Bosnia, Kosovo, Iraq, and Afghanistan, discusses the three most common electrical safety issues for forces deployed in support of overseas contingency operations: grounding, unauthorized power strips, and different voltages.

Grounding

Any safety professional or electrician who has worked overseas will immediately highlight poor or nonexistent grounding as the most serious electrical safety issue facing a deployed force. U.S. military units often occupy existing facilities that are wired to local standards, if such standards exist. Unlike the United States, Canada, Australia, or Western Europe, many areas in which our troops are located have little to no oversight to ensure electricians are qualified or certified. Grounding, which is generally considered by Western standards to be the most important aspect of electrical installation and operation, is not a common practice in many countries in Southwest Asia. This is



Unlike devices in most other countries, most U.S. electronic devices use 120 volts. Their plugs have two blades (type A) or two blades and a grounding prong (type B).

partly because of the poor grounding qualities of sandy soil.

Color coding wires, a standard procedure in Western countries, is often ignored in Southwest Asia. In many cases, any available wire, regardless of color, is used. U.S. military and contractor electricians often have difficulty determining which wire is the ungrounded, grounded (neutral), or grounding conductor.

Actions by military personnel, usually caused by ignorance, compound the grounding problem. These



Stripping wires and putting them into outlets is a common method of bypassing adapters. It is illegal and extremely dangerous.

the danger of electrocutions and fires.

Oversight by safety personnel is a partial answer to the grounding problem, but having engaged first-line supervisors—usually junior sergeants, who know what “wrong” looks like because they conduct unannounced inspections of living areas—is the most effective solution. “A First-Line Supervisor’s Safety Inspection Guide for Deployed Living and Work Areas” is a reference published by the 101st Sustainment Brigade in 2009. It is available to download at the Army Combat Readiness/Safety Center website at <https://safety.army.mil/LinkClick.aspx?fileticket=Ds2ULm5fPD4%3D&t-abid=654>.

Unauthorized Power Strips

Although standard operating procedures in Iraq and Afghanistan mandate the countrywide use of electrical components approved by Underwriters Laboratories (UL), the Canadian Standards Association (CSA), or the European Economic Community’s European Conformity/Conformité Européenne (CE), poorly manufactured power strips continue to present major fire hazards in deployed environments.

The primary source for these unsafe power strips is China. The China Compulsory Certification (CCC) logo is intended to be a quality control standard. However, electrical power strips with the CCC logo have consistently been shown to be of poor quality and often catch on fire. Chinese power strips are usually made of very thin plastic, have internal metal components that quickly loosen with use, and have extremely small wire gauges that are unsuitable for the amperage the strip can draw.



This Chinese adapter has multiple sockets. Although these types of adapters are handy, they are poorly constructed and easily catch fire, despite the fuse built into the component. The fuse in this adapter did not prevent the fire.

actions include snipping off grounding prongs on plugs, cutting and splicing electrical wires, jury-rigging or altering circuit breaker panels, and failing to properly ground generators.

The 3 January 2008 electrocution of Staff Sergeant Ryan Maseth of the 5th Special Forces Group while he was taking a shower in the Radwaniyah Palace Base Complex in Baghdad, Iraq, tragically highlighted the grounding problem. The hot-water heater, installed by Iraqi electricians before the arrival of U.S. forces, was not grounded, and the circuit breaker panel was inoperable. Staff Sergeant Maseth was electrocuted in the shower when a short in the water pump electrified the water. The stray amperage was not channeled to the ground through a grounding wire because one was not installed. Subsequent congressional hearings and DOD IG reports focused attention on the problem.

Through a quickly executed contract, dozens of U.S.-trained and -certified master electricians were sent to Iraq and Afghanistan to fix electrical deficiencies. Task Force for Safety Actions for Fire and Electricity (TF SAFE) in Iraq and Task Force Protecting Our Warfighters and Electrical Resources (TF POWER) in Afghanistan were established to provide resources, tracking, and command attention to the problems.

The IG reports identified 19 instances of electrocution in Southwest Asia. Although this full-court press mitigated thousands of life-threatening electrical hazards, the grounding problem remains. The continued use of local electricians by subcontractors and military units seeking ways to cut construction costs is a problem. Soldiers who ignore electrical standards or bypass grounds, especially in living areas, perpetuate

Hundreds of fires have been caused by Chinese power strips. When multiple high-amperage items are plugged in, the strips often melt down and ignite a fire. Chinese manufacturers have become skilled at counterfeiting and applying UL and CE logos, frustrating safety and fire professionals when procurement personnel purchase items locally that appear to comply with the UL or CE standards.

The primary reason U.S. military personnel purchase and use Chinese power strips is their multiple-use outlets. Soldiers are familiar with the National Electrical Manufacturers Association type A and type B plugs, the standard American two-blade plug. (Type A has no grounding prong; type B has one.) Those who are serving or have served in Europe are familiar with the type C, E, and F prong-style plugs. (For an excellent summary of plug configurations, see http://en.wikipedia.org/wiki/Electrical_plug.) However, the type G, or British Standard 1363 plug, is widely used in Southwest Asia. Soldiers are often mystified by the various plugs and outlets.

Although the Army and Air Force Exchange Service post exchanges carry only UL- and CE-approved power strips and adapters, many of the outlying operating bases and outposts have limited access to the safe, approved versions. Unfortunately, local vendors usually only carry the Chinese strips. Units in outlying areas have a vested interest in keeping money flowing through the local area, and most outposts have a small shop or two operated by local merchants.

Education, Training, and Oversight

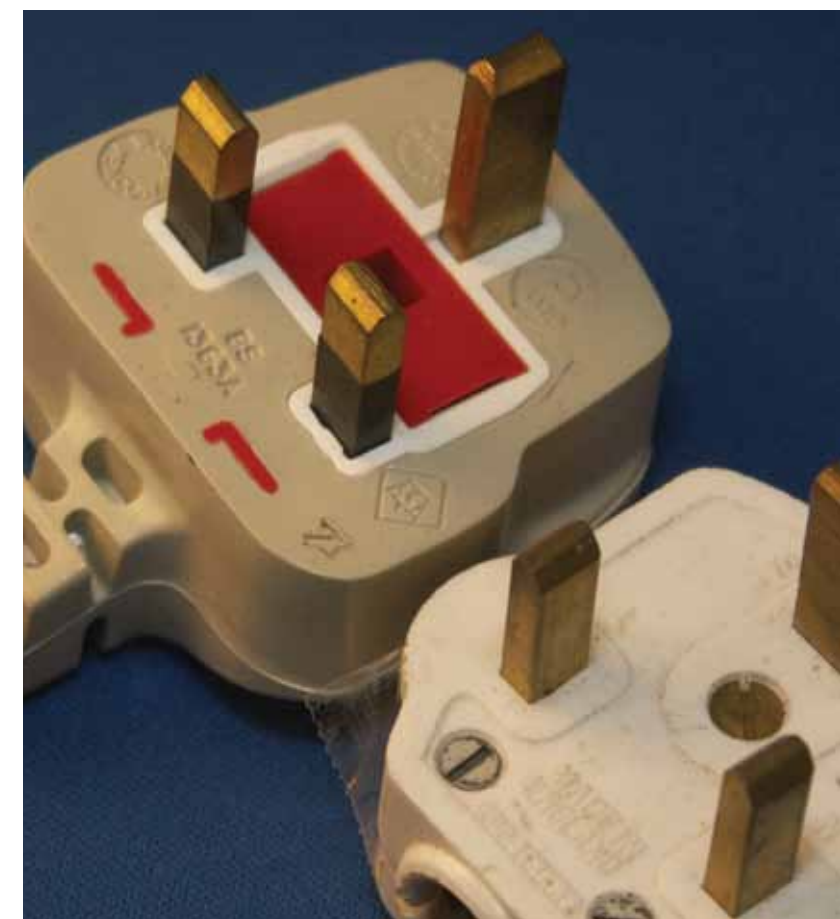
The problem is twofold. As identified in the DOD IG report, the average military member is unaware of the different types of plugs and their capabilities and limitations. Removing grounding prongs and plugging 110-volt equipment into a 220-volt circuit are usually the result of ignorance, not a willful desire to break the safety rules. In many cases, an unsatisfactory response to the use of the unsafe Chinese power strip is, “It was there when I got here.”

The solution is similar to the grounding problem: education, training, and oversight. A proactive safety professional, with the backing of the commander to schedule time on the predeployment training calendar, is the key to educating and training Soldiers. After arriving in theater, periodic inspections by first-line supervisors, especially in living areas, will reveal if unsafe power strips are hidden and present a fire hazard.

This problem also can be mitigated by purchasing and shipping UL-approved power strips and adapters before deploying. Pre-mission planning by the unit safety officer or staff engineer must include an assessment of the anticipated need for electrical power strips, which often can be met by stocking the supply CONEX (container express) with power strips before shipment overseas.



Above, this photo shows type E or F Europlug with ground. Types D, E, and F are very similar. Below, type G British Standard 1363 plugs are often found in Southwest Asia. A fuse below the red cover will blow and protect the circuit.





This non-CE certified step-up/down voltage transformer and regulator was the cause of a fire at an operating base in Afghanistan. Procuring safe transformers is difficult since most are not CE approved and many have counterfeit CE logos applied by Chinese manufacturers.

Different Voltages

With the completion of the military drawdown in Iraq, the 110 volts versus 220 volts problem has virtually disappeared since Iraq has a 220-volt electrical system and Soldiers in Afghanistan are usually on a 110-volt grid (even though the Afghan commercial standard—where there is electricity—is 220 volts).

Base camps constructed by European nations usually use the 220-volt standard, so U.S. military personnel on those camps must be aware of the differences. Many Soldiers discovered the hard way during their initial deployment to Iraq that although a simple adapter will allow one to insert a U.S. blade-style type A or B plug into a two-prong type C, E, or F outlet, doing so can damage the equipment plugged into it. The primary casualties of this lack of knowledge were U.S.-built 110-volt-only printers, which were often fried by 220-volt outlets.

Virtually every unit experienced some kind of adverse event involving 220-volt outlets; most ended up with a smoking, burning piece of electrical equipment, with a dumbfounded private first class standing beside it wondering how he would explain this to the first sergeant.

I personally witnessed a Soldier plug in a desktop computer without switching the red tab on the back

from the 110 to the 220 setting. The wisp of smoke and audible pop were the result of the fuse blowing, protecting the machine as designed. It was quite a while before a replacement fuse could be ordered and sent from the United States, however, and the computer was useless in the interim. (The Soldier who made that error was a sergeant first class, not a private.)

The 101st Sustainment Brigade produced a 12-minute video summarizing these electrical challenges, which is posted at the Army Combat Readiness/Safety Center website at <https://safety.army.mil/multimedia/VIDEOLIBRARY/VideoPlayer/TabId/421/VideoId/213/Electrical-Safety-In-Iraq.aspx>.

To prevent confusion, many units marked each outlet with “110 V” or “220 V,” but these labels or magic marker scribbles often fade or disappear over time. In one case, a contractor wired 220-volt service into an outlet with the U.S. type B blade-style plug-in, which caused a great deal of confusion and a few more fried components.

Step-up/down voltage transformers provide a solution, but the primary source for these appliances is—you guessed it—China. After electricians employed by a U.S. contractor in Afghanistan inspected new locally-purchased step-up/down transformers, they were determined to be unsafe. Manufactured in China, they

Chinese power strips are often poorly constructed and easily catch on fire. However, their multiuse outlet configurations make them very appealing. They are not UL or CE approved and are not allowed on U.S. military facilities in Southwest Asia.



included a counterfeit CE logo carefully stenciled on the side. A visit to the company website revealed a link to the CE certificate—a handsome piece of paper with fancy script suitable for framing. It was counterfeit; there was no CE approval.

When an electrician checked the transformer schematic posted on the website, he determined that the ground was insufficient and the product presented a serious fire and shock hazard. A Google search for “unsafe Chinese transformers” reveals a wide variety of perspectives, with most experts advising caution when purchasing Chinese electrical products and many highlighting the widespread counterfeit certification problem.

The primary solution to the 110 volts versus 220 volts problem, again, is education and training. Soldiers must be trained on the differences between the two electrical systems. The hazard of using adapters is a key part of this education process, and marking outlets is an excellent practice. Determining whether a step-up/down power transformer is suitable for use is a more difficult problem. A blanket rule of “don’t buy Chinese products” is not feasible since most Chinese goods are safe despite widespread publicity to the contrary in recent years. Purchasing American-manufactured transformers ensures excellent quality control, but they are difficult to find because they are not in high demand in the United States.

Most electrical safety issues in deployed environments can be solved with education and training. U.S. military personnel who have not been stationed overseas do not normally have extensive exposure to different electrical systems. Many are completely unaware that other countries have different voltages. Few know about UL or CE certifications. The addition of full-time

civilian safety professionals on brigade staffs creates an excellent resource for educating and training Soldiers on these key issues.

Training must not begin when Soldiers arrive in theater; it must be part of the predeployment process. Since the weeks before deployment are a blur of activity, command emphasis may be needed to ensure that time is set aside for electrical safety training. Periodic refresher training sessions while deployed sustain awareness and combat complacency. Procurement personnel and S-4s also must be educated about the UL and CE certification requirements because they should be able to cut off local purchases that provide an entry route for unsafe electrical equipment.

Last and most importantly, unannounced inspections of living and work areas will identify unsafe practices and eliminate unsafe electrical components. First-line noncommissioned officer leadership and supervision, with the continuous assistance of safety professionals, is the key to successful mitigation of electrical fires, shocks, and electrocutions.

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Logistics and Analysis in the Science of War

BY JAMES A. HARVEY III

Studies conducted by the Army Materiel Systems Analysis Activity are making significant contributions to improving logistics operations.

The analysis of warfare is not new and in fact has been occurring for centuries. More than 2,000 years ago, the Chinese military theorist Sun Tzu took analysis of war seriously enough to put his thoughts down in writing. In the 19th century, two great military theorists, the Swiss-born Antoine-Henri Jomini and the Prussian Carl von Clausewitz, also analyzed war, including the question of whether war was more of an art or a science.

Clausewitz, in the end, determined that war was a gamble and that factors like the “fog of war” and “friction” do not allow war to be completely driven by science. (Friction is what Soldiers today call “Murphy.”) Jomini originally thought that the practice of war, like other disciplines, could be broken down into solid, rational principles that, if followed, would produce success on the battlefield. Ultimately, Jomini seemed to realize that such analysis was not very realistic and that war was both science and art.

However, this article is not meant to reignite the Clausewitz versus Jomini or the warfare art versus science debates. My real purpose is to demonstrate that by using some of the Army’s current analytical capabilities, scientific principles can be applied to the study of battlefield and peacetime logistics. The use of these objective methods would have been appreciated by Jomini because he was one of the first great theorists to actively consider logistics while developing his theories.

I would argue that the logistics aspects of warfare are in fact more open to scientific analysis than other aspects. I think this can be demonstrated by reviewing several examples of the logistics analysis performed by the Field Studies Branch (FSB) of the Army Materiel Systems Analysis Activity (AMSAA).

AMSAA’s Mission

AMSAA, located at Aberdeen Proving Ground, Maryland, is the Army’s materiel analysis organization. Although other analytic organizations focus on tactics, strategy, and lessons learned outside of the materiel realm, examining the materiel aspect of the Army’s functions is the driving force behind AMSAA’s mission.

FSB focuses on the analysis of logistics systems, processes, and materiel. This analysis is conducted by engi-

neers, operations research analysts, mathematicians, and other personnel in objective disciplines. FSB supports the logistics aspects of Army warfighting by providing the types of scientific analysis that Jomini could only dream of.

The Office of Personnel Management classifies operations research and systems analysis (ORSA) as career series 1515 and states, “The primary requirement of operations research work is competence in the rigorous methods of scientific inquiry and analysis rather than in the subject matter of the problem.” The military officer equivalent to the civilian 1515 series is functional area 49. The entire AMSAA workforce, other than the deputy director, who is a colonel, consists of Department of the Army (DA) civilians and contractors.

Deployment of Analysts in Southwest Asia

One use of analysis in logistics has been AMSAA FSB’s deployment of analysts to Iraq, Kuwait, and Afghanistan. These analysts provide logistics analysis support while deployed in support of Army field support brigades (AFSBs). AFSBs provide the critical interface between the materiel enterprise and the warfighter. Currently, the 401st AFSB is in Afghanistan and the 402d AFSB is in Kuwait after leaving Iraq. However, the 402d does continue to support the Department of State mission in Iraq. The FSB deployed analysts to Iraq in September 2006 and to Afghanistan in August 2008 on a rotational basis.

FSB analytic capabilities have led to logistics improvements through studies such as the following.

Fire suppression systems. During 2007 and 2008, fire suppression systems in combat vehicles in Iraq were experiencing premature discharges that made vehicles not mission capable, which in turn degraded combat power. FSB’s Steve Webb was attached to the 402d AFSB and conducted an analysis that helped to resolve this problem. For his efforts in this and other studies while he was deployed, Webb received one of the Army Materiel Command’s 2009 Louis Dellamonica Outstanding Personnel of the Year Awards.

Tactical wheeled vehicle power draw. A tactical wheeled vehicle (TWV) power draw study was used to determine if the electrical load on various TWVs was too

A deployed AMSAA analyst installs devices to gather data on a tactical wheeled vehicle during the AMSAA power draw study.

large for their design specifications and, if not, how much “head room” remained for potential future items to be installed with an additional increase in power draw.

Stryker temperatures. Temperature data collection and analysis of Stryker armored vehicles in Iraq helped lead to the installation of air-conditioning. The data were collected by AMSAA analysts and compared to Army Public Health Command data showing that temperatures in Strykers could exceed those the human body could withstand. Using a \$45 sensor to collect temperature data yielded more than \$20 million in funding to support compartment cooling redesigns in Strykers and tracked vehicles.

These analyses, backed up by data, helped to provide solutions that prevented the degradation of combat power. Such degradation affects lives and resources. As the Army moves into an era of scarcer resources, resource conservation will become even more important, and data-driven analysis should lead the way. The emphasis given to managing financial resources in current operations, as demonstrated by the Commander’s Guide to Money as a Weapons System (Center for Army Lessons Learned Handbook 09–27), testifies to the important role money plays in combat power and sustainment.

Sample Data Collection

Sample data collection (SDC) is an Army G–4 maintenance program that involves the worldwide collection of maintenance data from a sample of Army combat vehicles, TWVs, artillery systems, and aviation assets (including unmanned aerial vehicles and rotary-wing airframes). As the responsible office for executing the SDC program, AMSAA FSB maintains a presence at most Army locations worldwide and uses contractor personnel to collect data. FSB DA civilians and contractors analyze the data for presentation to senior leaders as required. This in turn helps senior leaders to make Army fleet-wide decisions in such areas as new acquisitions, capitalization, and reset.

Unit maintenance personnel and other vested parties outside of the Army’s senior leadership also can request and use the collected maintenance data. Such analytical capabilities allow leaders to make tactical-, operational-, and strategic-level decisions that affect logistics operations on the battlefield supported by actual data. Sample maintenance data can be used to make better informed decisions.

An example of how SDC data help leaders make informed decisions is manpower requirements criteria (MARC), which are used when building or updating Army unit modified tables of organization and equipment (MTOEs) or tables of distribution and allowances



(TDAs). An accurate, data-driven analysis of the true labor hours needed to perform maintenance will result in a more realistic MTOE or TDA. Data can also help illustrate the impacts of any maintenance actions, whether scheduled or unscheduled, on vehicle downtime.

Condition-Based Maintenance

Another analysis program under the SDC program that enhances Army combat power is the AMSAA condition-based maintenance (CBM) program. This program grew out of the larger Department of Defense CBM initiative, which was designed to make maintenance practices more prognosis-driven. Ultimately, CBM’s goal is to focus maintenance more on responding to the actual condition of equipment than on simply performing services at fixed intervals. The result will be more maintenance dollars saved and fewer mission failures caused by equipment breakdowns.

In 2006, AMSAA FSB began installing instrumentation devices on most TWV variants throughout the world; these TWVs operate in different climates and terrain and with different usage profiles. The instrumentation devices collect critical data points for analysis from the vehicles' J1939/J1708 sensor network. Additional data are received from other instruments feeding into the data recorder, such as accelerometers and global positioning system devices installed on the vehicles. The data are then collected and analyzed to look for any outcomes that can help to support CBM goals.

One such analysis matches the SDC maintenance records with a CBM-instrumented vehicle. Provided a mechanical failure occurs during the data collection period, analysts try to determine predictive algorithms that match the maintenance records with the sensor data on that particular failure event recorded from the instrumentation devices. The goal is to use any developed algorithms to predict the future better and thus prevent mechanical failures before they happen. The hope is that this will mitigate mission failures caused by mechanical issues.

While much work remains to be done in this area, the usage data analysis has already provided returns. One such area is in reducing the fuel consumption caused by high idling rates among TWVs operating in Iraq and Afghanistan. The high idling rates have interested senior leaders as a potentially easy target for cutting fuel costs in a resource-conscious Army. For example, as a result of the CBM analysis, Product Manager Heavy Tactical Vehicles will soon refit some line-haul trucks with tactical idle-reduction systems.

Like SDC itself, the CBM data analysis has numerous other benefits. These examples serve as a demonstration of the usefulness of CBM data analysis in making better-informed logistics decisions for the Army's vehicle fleets and equipment.

AMSAA Materiel Lessons Learned Analysis

Another subcomponent of the SDC program is AMSAA Materiel Lessons Learned Analysis (AMLLA). This is a program that identifies systemic maintenance issues that can be resolved at the lowest level possible. The AMLLA program uses SDC contractor personnel to gather data "on the ground" and research systemic failures firsthand. Using reach-back capabilities, FSB analysts then can apply the full range of AMSAA capabilities to the problem, such as using modeling and simulation to conduct physics-of-failure analysis and determine how failures are occurring.

These three examples resulted from analysis of Stryker platforms:

A coolant hose ruptured, spraying hot coolant on the vehicle's gunner. As a result of the analysis, General Dynamics Land Systems agreed with AMLLA's recommendations to install additional covers and add the item to the preventive maintenance checks and services table.

The telescoping steering column mechanism of the

Stryker vehicle was seizing. After AMLLA analysis, General Dynamics Land Systems recommended implementing short-term changes suggested by the steering manufacturer (TRW Automotive) as a high-priority way to improve durability.

The bolts on the mounting for the Stryker driver's hatch were gouging supplemental armor and would not allow the hatch to open all the way. After AMLLA analysis, General Dynamics Land Systems implemented engineering design changes.

Given the high pace of current operations, the absence of the AMLLA program would likely have left these types of systemic failures in the "just deal with it" category. However, that approach would have affected missions because the failures could have adversely affected safety, morale, or lives.

After serving in Afghanistan as a deployed AMSAA representative from August 2010 to February 2011, I appreciated the role played by analysts in trying to affect the warfight. Most noticeable was the use of ORSA analysts in combat support roles, such as countering improvised explosive devices, and in social demographic work, like determining election results. Surprisingly, I found that very few ORSA analysts knew much about theater logistics or what an AFSB was. Very little rigorous analytical support such as ORSA was evident in addressing logistics concerns.

The logistics aspects of current operations offer no shortage of work for analysis. Based on my experience, some logistics areas that I believe are candidates for further analysis include new equipment fielding processes, Afghanistan intratheater aviation transportation, dining facility efficiency (including the convoys that supply them), forward operating base traffic patterns, and non-combat unit utilization and workload ratios.

It is rather easy to demonstrate the need for analysis and the use of science applications in warfare. In particular, given modern advances in technology and the logistics tail needed to support them in an increasingly budget-constrained environment, logistics is an area in which analysis can pay huge dividends. It appears that now is the time to focus more of our analysis capabilities on logistics to preserve combat power in the future Army.

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A Road to War for Reconnaissance Squadron Forward Support Companies

BY CAPTAIN JEREMY P. BROWN

Every 4 to 6 weeks, a forward support company (FSC) attached to a reconnaissance or cavalry squadron goes to the National Training Center (NTC) at Fort Irwin, California, to validate its past 12 to 16 months of training in preparation for a deployment. Unfortunately, the FSC arrives with the mindset that sustainment operations should be centered on the forward operating base (FOB). Because of that mindset, the Soldiers miss opportunities to learn what requirements are needed for the Army's "next" mission.

That next mission is about to come to fruition. We combat trainers at NTC are currently focusing on how we migrate to hybrid threat rotations. The scenario will not only incorporate the traditional force-on-force scenario similar to pre-2003 training events, but it will also blend in the elements from counterinsurgency (COIN) operations.

The return to the force-on-force portion of the scenario is the main concern. Are logisticians prepared for this? Have we been too focused on contracting, FOB to FOB logistics, and other "current fight," COIN-centric logistics operations? Have we missed the core competencies that have sustained our Soldiers for over 100 years? Why do many of the logisticians who rotate through NTC not fully understand the doctrinal missions of the reconnaissance and cavalry squadrons? Should we change our curriculum to match this transition?

Logistics Command Relationships

We logisticians must first understand exactly who we support. One of the greatest challenges to this understanding is the problem of doctrinal task organization between the FSC and the brigade support battalion (BSB). According to Field Manual (FM) 4-90, The Brigade Support Battalion, the FSC is organic to the BSB and may be attached to or operationally controlled by one of the maneuver battalions for direct support. Each command relationship has inherent challenges that must be addressed through mission analysis. That relationship is a seam that can be exploited, just as the enemy likes to exploit seams between units on the ground.

The relationship between the FSC and the BSB is tenuous at times. The FSC commander should be considered similar to a liaison officer (LNO) from the BSB. He is the eyes and ears of the support operations officer (SPO) and the maneuver battalion commander. His ability to tie the SPO's concept of support into the squadron's scheme of

maneuver is critical. The FSC commander, however, must absolutely know how his supported unit maneuvers and how the brigade sustainment plan ties into it. This understanding allows for a plan that is tied to the principles of sustainment.

The squadron S-4 should work hand in hand with the FSC commander to plan sustainment for the squadron. The S-4 is charged with developing the plan, but the FSC commander should be heavily involved to ensure adherence to the principles of sustainment.

Supporting Reconnaissance Squadrons

A reconnaissance or cavalry squadron is an evolving entity. [Reconnaissance squadrons are found in brigade combat teams and battlefield surveillance brigades, and cavalry squadrons are found in armored cavalry regiments, but they serve similar functions.] It has a very crucial doctrinal mission. FM 3-20.96, Reconnaissance and Cavalry Squadron, describes the squadron in this way:

Within the complex, dynamic conditions and threat profiles of future OEs [operational environments], the squadron is essential to successful Army and joint operations in several ways:

- It provides a significant dismounted or mounted reconnaissance force.
- It enables the higher commander to decisively employ his maneuver battalions and joint fires and to choose times and places for engagement to his advantage.
- It maximizes security of the higher headquarters by providing timely, accurate, and relevant combat information. It helps the higher commander achieve advantages over an enemy or adversary in terms of the ability to collect, process, and disseminate information.

So how do we logisticians frame our mission analysis and support planning into these broad operational brush strokes? How do we plan for class III (petroleum, oils, and lubricants) and class V (ammunition) to move forward with the potentially rapid advance of the brigade's reconnaissance assets?

The answer is simple. We are directly tied into the military decisionmaking process (MDMP) at the squadron level and essentially become the cavalrymen we support. We do not focus solely on getting the supplies to the unit. We accept that resupply operations are a no-fail mission, but we need to understand and feel the operational envi-

ronment throughout our planning process.

Looking at the doctrinal fundamentals of reconnaissance paints a very clear picture of why understanding what the reconnaissance and cavalry squadron does is so critical. FM 3–90, Tactics, states—

The seven fundamentals of successful reconnaissance operations are as follows:

- ❑ Ensure continuous reconnaissance.
- ❑ Do not keep reconnaissance assets in reserve.
- ❑ Orient on the reconnaissance objective.
- ❑ Report all information rapidly and accurately.
- ❑ Retain freedom of maneuver.
- ❑ Gain and maintain enemy contact with the smallest element possible.
- ❑ Develop the situation.

How do we maintain our supply lines as they perform operations to apply these fundamentals? Are logisticians used as the enabler that we are, or are FSCs not given the priority as that enabler? Too often during NTC rotations, an FSC is given the base defense operations center mission and mayoral responsibilities that cripple its ability to perform its wartime mission. Because of that, the FSC is rarely in a position to be proactive in resupply and struggles with reactive sustainment. These are a few of the considerations that the FSC commander and squadron S–4 need to address before the MDMP begins.

The squadron commander and S–3 are concerned with the scheme of maneuver. Terms such as reconnaissance push, reconnaissance pull, zone recon, area recon, and route recon are ingrained into their psyche. Security operations are critical as well. Likewise, screen, guard, cover, and area security are significant to the squadron and, more importantly, the adjacent units and any maneuver attachments to the squadron. Typically, these operations are the main effort or the decisive operation for the brigade mission. How are FSC capabilities affected by each one of these operations? Are we planning for them? Do we even know how they are tactically performed?

When the training at NTC goes into the hybrid rotational scenario, numerous challenges face the squadron and its sustainment assets. Keep in mind that as NTC ramps up the hybrid rotations, the combat power shortages inherent in the reconnaissance squadron’s table of organization and equipment will become painfully apparent. At that point, brigade commanders will compensate by task-organizing tanks and other assets to the squadron so that its mission set will expand. How will we plan for these changes to ensure that the sustainment needs are met? This is where the FSC commander’s understanding of the squadron’s mission set is critical.

Reconnaissance Squadron FSCs

The reconnaissance and cavalry squadron FSCs are the tip of the sustainment spear. FM 4–0, Sustainment, lays out the following principles of logistics:

- ❑ “Integration is the most critical principle. Integration is

joining all the elements of sustainment (tasks, functions, systems, processes, and organizations) to operations assuring unity of purpose and effort.”

- ❑ “Anticipation is the ability to foresee events and requirements and initiate necessary actions that most appropriately satisfy a response.”
- ❑ “Responsiveness is the ability to meet changing requirements on short notice and to rapidly sustain efforts to meet changing circumstances over time.”
- ❑ “Simplicity fosters efficiency throughout the operations process and allows for more effective control of sustainment. Clarity of tasks, standardized and interoperable procedures, and clearly defined command relationships contribute to simplicity.”
- ❑ “Improvisation is the ability to adapt sustainment operations to unexpected situations or circumstances affecting a mission.”
- ❑ “Economy means providing sustainment resources in an efficient manner to enable a commander to employ all assets to generate the greatest effect possible.”
- ❑ “Survivability is the ability to protect personnel, information, infrastructure, and assets from destruction or degradation.”
- ❑ “Continuity is the uninterrupted provision of sustainment across all levels of war.”
- ❑ “Improvisation is the ability to adapt sustainment operations to unexpected situations or circumstances affecting a mission.”

They are all priorities. So which one has priority over the other? How are they applied? The FSC commander and squadron S–4, in synchronization with the SPO, have to tailor their support plan to each of these principles, but the scheme of maneuver ultimately dictates the way forward.

During the Combined Logistics Captains Career Course, company commanders learn the art, not the science, of contiguous battlefield sustainment. The course curriculum, culminating with the tactical logistics exercise, touches on exactly the things that most sustainers do not remember about contiguous battlefield sustainment. One of the benefits of the tactical logistics exercise is the ability to understand each of the missions of the reconnaissance squadron and how we conceptualize sustainment as it fights.

It is imperative that logisticians understand how reconnaissance assets move across the battlefield in order to fully support them. How long is a screen, and what distances does it involve? How are the sustainment assets moving to support it? These questions can and should be asked during the MDMP.

Observations and Lessons Learned at NTC

One of the unique opportunities of a combat trainer at NTC is the ability to watch, and sometimes learn from, each unit that crosses the light line on Main Supply Route Bull Run. Higher echelons than the operations group

combat trainer have dictated the operating tempo of each unit in the Army. However, the Army Force Generation process and other constraints placed on unit commanders have not taken away the inherent responsibility of commanders to train their troops. Commanders must train their formations to be not only technically proficient but also tactically proficient.

The single most important sustainment observation witnessed at NTC is the overall lack of knowledge of contiguous sustainment operations and supply chains ending at the FSC level. This knowledge is critical as we transition from the COIN-centric fight and prepare for the hybrid environment. During each rotation, the reconnaissance or cavalry squadron participates in a named operation and the brigade-level “attack/defend during full-spectrum operations.” This mission dictates some type of sustainment planning concerning combat trains, field trains, and logistics release points.

What combat trainers are seeing, however, is an inability to know or understand that methodology when planning. Most logisticians at the FSC level have either not experienced or do not remember what a contiguous battlefield looks like and how sustainment operations are conducted on it. Who is responsible for the combat trains? Who is responsible for the security of those trains? What are the major criteria for site selection? Where is the FSC commander located during all of this?

As the Army transitions to hybrid operations, that tactical knowledge becomes the single most important factor for logisticians. If we logisticians cannot secure or understand our place in the lines of the operation, how can we get the right stuff to the right places at the right time? Numerous questions—besides anything having to do with classes of supply—need to be asked and integrated into the plan.

The next observation concerns logistics synchronization among the brigade S–4, BSB SPO, FSC commander, and squadron executive officer and S–4. The ability to synchronize the sustainment mission to the current operation plan alleviates many of the hurdles that the FSC commander would face. That ability hinges on whether or not he understands what exactly the squadron is doing. What are the triggers for our logistics packages (LOG-PACs) to move? When, exactly, is the line troop going to need to be topped off with fuel? How and where do we set logistics release points? What is the squadron’s operational reach, and where and when is the culminating point during the operation?

The Army Training and Doctrine Command needs to consider updating the Soldier training publication tasks for sustainers. Most of them have not been updated in several years. This new hybrid focus may require sustainers to switch from outdated training that is based on Army Training Evaluation Program publications and Soldier training publications to training based on Army- or theater-mandated mission essential task lists.

To prepare for the Army’s next mission, FSC commanders’ first step is to read doctrine relating to the unit they support. FM 4–90 reintroduces the sustainment principles for supporting maneuver units through contiguous scenarios and COIN-centric theaters. Training Circular 7–100, Hybrid Threat, also offers a guide for many hybrid scenarios. Only when we understand the operational missions, constraints, and limitations of each will we understand where the “beans and bullets” considerations fit.

We must fully feel like we are that troop, company, or battery commander, or troop platoon leader, or even that fire team leader and understand the decision points and triggers that they consider in their mission planning. We must plan for and adjust our external support from higher units. Our planning is only as good as our operational reach. If we are not fully synchronized with our higher support echelons, we will not be able to maintain our support.

We must train our Soldiers in their craft, but more importantly, train them in the critical areas that they need to survive on tomorrow’s battlefield. We need to be creative in our training at home station. Resupply operations at home station can be conducted under any conditions that the command can create or replicate. For example, “Maintenance Monday” may be the main task, but it can be executed under simulated combat conditions. LOGPAC and recovery battle drills can be rehearsed by tasking a patrol to recover a vehicle somewhere on post.

We can maximize range time by making Soldiers shoot under stressful conditions. How will they react to a complex attack with an improvised explosive device or vehicle-borne improvised explosive device, followed by a rocket-propelled grenade attack and small-arms fire? We should replicate at the ranges as best we can. The situational training exercise lanes at NTC can be replicated at any home-station field training exercise. Role players can be identified and integrated, and most battlefield effects simulators used at NTC are in the Army supply system. We should not wait until the NTC rotation to start from scratch on tactical standard operating procedures and LOGPAC battle drills.

Effective sustainment operations are a no-fail mission in the Army. Efficient sustainment operations are our goal. We can achieve our goal by truly knowing and understanding who we support, taking care of the Soldiers who execute that support, and accomplishing our mission to provide support.

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“Fueling the Team” for Better Health and Performance

BY BILL ROCHE

Providing nutritious meals that are easy to make and that customers enjoy is the goal of a new program underway throughout U.S. Army Europe.

U.S. Army Europe’s (USAREUR’s) Fueling the Team program is aimed at helping Soldiers, Department of the Army civilians, and family members across Europe eat healthier to improve their performance and their lives. The program involves a variety of agencies that are working together to transform what is on the menu in the 24 Army dining facilities in Europe and to teach the USAREUR team how to make healthy food choices all of the time.

As the agency that oversees Army dining facilities in Europe, USAREUR’s logistics directorate is responsible for the Fueling the Team program. Although it is USAREUR’s program for now, the hope is that what is learned in Europe will become the model for the entire Army.

Origins

Fueling the Team has its roots in the Army’s Soldier Fueling Initiative, a program started by USAREUR commander Lieutenant General Mark Hertling when he was deputy commander of the Army Training and Doctrine Command. Under the Soldier Fueling Initiative, dining facilities at a dozen basic training locations across the United States were reshaped to provide healthier meals designed to boost Soldier performance.

Chief Warrant Officer 4 James Donaldson, the USAREUR food advisor when the program was planned and launched, said the Army’s Soldier Fueling Initiative is a good model for basic training units, where diners are trainees who can eat only in their unit dining facilities. However, it does not quite fit the broader Army, where

Soldiers can easily opt for fast food over dining facility fare. That is why USAREUR’s fueling program has taken that basic training model and modified it for the Army community beyond basic.

Breaking Out of the Comfort Zone

The Soldier Fueling Initiative removed deep fat fryers from dining facilities without consulting dining facility staff, but Fueling the Team has left the decision to remove deep fat fryers to dining facility managers.

A medic and eye technician at the Heidelberg Health Center in Germany bakes chicken for a unit event in the center’s dining facility under the direction and guidance of the dining facility staff. The meal follows the guidelines of the USAREUR Fueling the Team program, under which baking has replaced frying in many dining facilities. (Photo by SGT Joel Salgado)

A 2d Stryker Cavalry Regiment Soldier samples turkey yakisoba and glazed green beans during a “Go for Green” lunch at the Stryker Inn dining facility at Rose Barracks in Vilseck, Germany. The “Go for Green” program labels dishes served in dining facilities by their level of nutrition and effects on Soldier performance. It is linked to the Fueling the Team program aimed at helping Soldiers, civilian employees, and family members in USAREUR to eat healthily. (Photo by Jeremy Buddemeier)



“In a garrison environment, we have to make it more competitive and allow the managers to think about what they are doing,” Chief Donaldson said.

He explained that deep fat fryers have provided a comfort zone to dining facility managers because they can quickly prepare french fries or other backup items when the dining facility runs out of what it planned to serve. However, the Army and the larger American society are moving away from fried foods, and food service personnel have to get used to new processes and workflows. French fries that took 3 to 4 minutes to cook in a deep fryer, now take 10 to 15 minutes to bake.

“This process initially takes us out of the comfort zones of what we are used to, or taught to do,” Chief Donaldson said. He explained that the workforce has to be reeducated, and changes to the thought processes of dining facility managers and personnel are required. Personnel will now have to spend a little more time planning menus and costing out plates and meals to ensure that they still stay within the Army budget.

Fueling the Team challenges food service personnel to analyze how they can conduct business better and provide diners with nutritious meals and nutrition information about those meals. When customers know upfront what they are getting, they can more easily make solid food choices.

Serving lines are being set up in ways that encourage diners to choose more nutritious dishes, and the Army “Go for Green” labeling system designates foods as red, yellow, or green based on their nutritional value.

In addition to replacing deep-fat frying with other longer, cooking methods, some challenges to making healthy meals have arisen, including the ability of food service program personnel to get the ingredients and equipment needed to create new menu items. Chief Donaldson said it sometimes takes months to get supplies

to Germany that can be in stateside dining facilities in a week or two.

Changing a Frame of Mind

Chief Donaldson and other program officials agree that the biggest hurdle for the program is overcoming the mindset of diners, who rely on what Chief Donaldson called a “fast food, drive-through lifestyle,” and food service personnel, who learned their trade before deep-fat fryers were the enemy.

Sergeant First Class Cheavlier Slaughter managed the dining facility at the Miesau Army Depot in Germany when Fueling the Team was put in place. He said the toughest part about bringing healthier meals to his diners is that it takes extra effort to come up with creative ways to manage the program and bring to the menu appealing new dishes that are healthier than past dining facility fare.

“Some of the changes are the changes within our thought process and creativity, to include our menus, our production, and management,” Sergeant First Class Slaughter said. “We have to look for ways to buy the most nutritious products, like brown rice or whole-grain pastas. With creativity and production, we have to figure out ways to prepare foods that give Soldiers the best nutritional value (i.e., taking the skin off chicken or not adding sugars or fats to some of our other food items).”

Cooking Like a Ninja

Captain Jeremy Brooks, dietitian at Landstuhl Regional Medical Center, has been closely involved with Fueling the Team. He said the program does take effort from those who manage dining facilities and plan, prepare, and serve meals, but healthier food is often unnoticeable to diners. Captain Brooks and Chief Donaldson have labeled the method of giving the diner something healthier



without sacrificing taste “stealthy cooking.”

Stealthy cooking provides diners with the same menu items, such as meatloaf and baked fish, but makes the items healthier by using leaner meat and different varieties of fish (higher in omega-3 fatty acids) and by changing preparation methods.

“We’re reviewing a lot of the dining facilities’ menus and just making sure that they are using nutrition in a stealth way,” Captain Brooks said. “Maybe adding whole-wheat pasta or whole-grain rice to dishes (in place of) regular white pasta.”

Sergeant Slaughter said the Miesau dining facility has been quite successful at providing nutritious meals that diners swear were prepared the old-fashioned, “deep fry them all and let the gods sort them out” way.

“Our customer base doesn’t really notice all the changes we’ve actually done,” said the dining facility manager. “We took the deep-fat fryers out of our dining facility, and our fried chicken is not fried any more. We bake it in the oven, and to my surprise our customers didn’t notice it.”

Variety and Creativity: Keys to Success

Captain Brooks admitted that there is a tradeoff in the fueling program because removing all the so-called “bad food” from dining facility menus could drive diners away. He said the program is about offering healthy alternatives, not simply deleting less healthy ones.

“We usually try to offer a variety, so that it’s not all green,” said Captain Brooks. “We are not trying to get rid of all the fried food, but we are trying to offer healthier choices so that the customer has an option if they want to eat healthy.”

Dining facility staffs have begun competing to see which facility can go the longest without using its deep-fat fryers, and other initiatives are prompting patrons to make healthy choices. Chief Donaldson pointed out that the Miesau dining facility team has risen to the challenge of offering novel approaches to getting diners to eat healthily.

One creative approach is to offer meals that emulate the combo meal menus offered at fast food restaurants but with a healthy twist. The meal is called the “High Performance Meal of the Day,” and it includes the most nutritious entrees from the meal menu.

Miesau also had a “Biggest Loser” competition that included nutrition classes taught by dining facility staff. The winner was a senior officer who lost 17 pounds in 60 days while eating in the dining facility.

Miesau’s dining facility also has made its healthy eating competitions and educational programs available to all members of the community.

Educating the Public

In addition to dining facilities, Captain Brooks said partnerships are being forged with agencies ranging from wellness centers to commissaries to create “public

health-type” initiatives to reach the entire USAREUR team. The concept of performance is key to the program, and the USAREUR team needs to know how to fuel their bodies and minds to be at their best.

“We are trying to treat these people as athletes. It’s not just for performance nutrition; you’ve got to think, too, of cognitive nutrition,” he said. “Just because you sit behind a desk doesn’t mean you still can’t eat healthy.”

No matter what jobs people hold, their brains need to function properly. Captain Brooks said this requires fueling up with the nutrients, vitamins, and minerals found in healthy foods.

Analyzing Success

Fueling the Team program leaders are using a variety of measures to gauge success. Chief Donaldson said the program is using lessons learned, periodic diner surveys, and headcount analysis to continually adapt and improve during its year-plus “phase in” to dining facilities in Europe.

Captain Brooks added that other analyses adopted from the original Soldier Fueling Initiative, such as looking at Soldiers’ eating habits before and after the program’s implementation, might be employed as well.

Of course, the real measure of whether the program is working is the response of diners. Chief Donaldson said he chats with diners to get a sense of their likes and dislikes, and those discussions indicate that for the most part diners appreciate the program and are showing a growing interest in it.

Sergeant Slaughter said he has talked to diners, too, and read the comment cards some fill out after their meals. He said the consensus is that there is no consensus. The program has mixed reviews.

The Fueling the Team program is a trailblazing effort that could revolutionize the way the Army eats and its overall level of fitness and performance. Chief Donaldson said the program is a building block, a foundation for accomplishing the Army’s mission one Soldier at a time.

“Of course [the program’s] success makes the Soldier a better Soldier because they can recover faster from PT [physical training] injuries or they have more energy to last longer and accomplish their missions,” he said. “And a stronger Soldier makes a stronger team, makes a stronger Army.”

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Operational Risk Management

BY MAJOR JEREMIAH O’CONNOR

Failure to conduct efficient operational risk management can cause unnecessary accidents. A few simple operational risk management procedures can reduce accidents and increase Soldier safety.

Army risk management doctrine is second to none in its depth, breadth, and clarity, yet many leaders fail to take advantage of the power of existing tools to accomplish missions safely. The most serious accidents (classes A through C) still occur in significant numbers despite the use of existing risk management tools. Changes must be made if the Army is to achieve breakthrough results in safety and entrench risk management in its culture. The purpose of this article is to demonstrate how current practices in the application of risk management doctrine at the unit level prevent the Army from reaching its safety goals and to propose modifications to the risk management worksheet that will correct those practices.

Ineffective Practices

While deployed to Baghdad from November 2007 to January 2009, I served as the company commander of the 57th Transportation Company and reviewed risk assessments for more than 800 missions. I also observed the battalion commander review more than 2,000 logistics convoys. While in Baghdad, my unit served under two Active Army support battalions from two installations and received convoy escorts from three different Army Reserve Infantry companies.

I observed a number of ineffective practices that were common among multiple units throughout the deployment. Many of these practices were the same ones that I was guilty of practicing as an airborne Infantry platoon leader. These practices included—

- Allowing risk to compound.

An M1 Abrams tank is loaded onto a flatbed trailer for retrograde from a small base in Baghdad, Iraq, back to Victory Base Complex. Following composite risk requirements for loading the tank will help ensure that it arrives at its final destination without accident.

- Using a previous risk assessment as a template without performing a mission-specific analysis.
- Completing the risk management worksheet (RMW) as an afterthought.
- Generating laundry lists of hazards and controls.
- Failing to enforce controls.
- Not reassessing risk as conditions changed.

During the deployment, the battalion commander was constantly training senior noncommissioned officers and junior officers to fix these practices.

Some will argue that these practices are isolated and are not widespread in the Army. However, conversations with peers, reviews of preliminary loss reports, data from the Army Combat Readiness/Safety Center, and personal experience all suggest that composite risk management has not yet become the norm in the Army.

Compounding Risks

The most detrimental practice affecting the successful execution of missions is the failure to identify compounding risks. In nearly every serious accident, multiple factors combined to set the conditions for a mishap.





A not-mission-capable piece of engineer equipment is loaded onto a trailer for transport from Forward Operating Base Hammer to Victory Base Complex. Composite risk management requirements must be followed in this operation to ensure the safety of both personnel and equipment.

In isolation, the contributing factors would not likely have caused an accident; combined, the hazards resulted in catastrophe.

The stories frequently told by Soldiers about catastrophic events highlight inexperienced leaders in unfamiliar environments with improperly trained and supervised Soldiers using poorly maintained equipment. This reality emphasizes one of the major shortfalls of the RMW: Instructions for completing the worksheet state that the overall risk for a mission is determined by the hazard that has the highest residual risk. This would place a mission with five hazards having a residual risk of medium at the same risk level as a mission that has only one hazard with a medium risk level. Clearly, these two missions do not have the same risk level, yet there are no concrete procedures for addressing the increased risk of the first mission.

To address this shortfall, the instructions for the RMW should include a requirement to upgrade mission risk to the next level if the mission has four or more hazards at medium or high levels. Missions with low residual risk should be excluded because all of the hazards will have a residual risk of low.

A mission with four medium-level risks should be upgraded to high because of the effects of compounding risk. This informs the next-level authority of the level of difficulty of the mission with respect to the importance of the mission. That authority then may choose to bring more resources to bear, postpone the mission, or direct execution because of the mission's importance. Determination of hazard severity and probability is largely a judgment call by experienced leaders using subjective criteria. This method takes advantage of that experience and improves leader visibility of elevated risk missions.

Laundry List of Hazards and Controls

The next negative practice is the inclusion of a laundry list of hazards and controls. This often results in a three- to five-page RMW. While long RMWs make

leaders feel more comfortable about all of the risks being addressed by controls, they do not result in safer operations. I frequently found that critical hazard controls were buried under trivial ones. During my tour, a convoy commander often read off a long list of hazards and controls at the end of an already long convoy brief. Few Soldiers listened to the litany of hazards and controls. Some of this was due to the repetitive nature of the missions, but some of it was also due to human limits for information retention.

Within the safety brief, the list of controls included actions such as rehearsals that were already complete and the designation of the minimum rank of the leader of the convoy. Rebriefing these controls provided information that the Soldiers did not need and initiated the mental trigger for them to stop paying attention. Also on the list were many known standards and regulations. Reinforcing the most relevant standards for a mission has significant value, but an extensive list has the opposite effect and negates any intended emphasis. As a result, Soldiers may have successfully executed the controls that prevent minor accidents but neglected the controls that prevent a catastrophe.

The Soldiers and leaders did not intend to execute some of the controls. I believe the primary cause for this trend was the dilution of emphasis and competition among the laundry list of tasks on the RMW. It is the approval authority's responsibility to provide clear, prioritized instructions free of nuance. The current form of the RMW does not set the conditions for this.

Foundation for Accident Prevention

Although long risk assessments address every conceivable risk, they fail to provide a foundation for preventing the most serious accidents. The solution to this situation is twofold.

First, conduct a thorough risk assessment. Prioritize the list of hazards based on residual risk. Controls identified in the planning and preparation phase of the mission should be executed. Selecting the right level of leader for the mission, inspecting equipment, and conducting rehearsals are all essential elements to successful mission execution and should be part of company

standard operating procedures. Rehearsals in particular aid in developing the subconscious execution that is so critical to effective units. These controls, however, need not be reinforced in the mission brief as they are already completed. This leads to the second component of the solution.

During the mission brief, the controls requiring specific Soldier actions during execution, particularly those that are not routine, are the most important elements of the RMW. I call this component of the RMW "the execution list." Soldiers and noncommissioned officers already have a tremendous amount of information to process, and it is critical that they do not receive any that is unnecessary.

The number of hazards for a specific activity should be limited to seven on the execution list. This facilitates greater emphasis on the most salient hazards. It also provides leaders with specific areas on which to focus. Research shows that it takes many repetitions of a task to make it part of the subconscious. Limiting the number of hazards to seven improves the probability that Soldiers will listen to, remember, and execute the controls and that leaders will enforce them.

As specific controls are repeated and enforced over multiple cycles, nonprogrammed behaviors become programmed. Once a control becomes habitual, remove it from the RMW and move the next hazard by priority onto the execution list. This method results in a dependable ratcheting down of risk over time.

The approval authority should approve missions based on the full list of hazards and controls and validate the top seven hazards on the execution list. This will allow leaders to address lower risk hazards with specific controls in the mission planning phase while preventing the dilution of the most critical controls during execution.

Reused RMWs

A secondary effect of long RMWs is the copying of risk assessments from previous missions without performing mission-specific analysis. During my tour, I required handwritten RMWs from leaders to combat this trend. Convoy commanders frequently handed the battalion commander risk assessments that contained hazards irrelevant to the current mission. Most officers have seen RMWs for winter operations that included hot-weather injury risks. While limiting the number of hazards for the execution list will not eliminate the tendency to reuse RMWs, it causes leaders to think harder about which hazards and controls are on that list.

RMW Approval

The last habit to be addressed is the timing of the completion and approval of the RMW. One of the key characteristics of risk management is that it is a continuous process. Unfortunately, the current Army culture surrounding risk management involves a single evaluation that is rarely modified or reevaluated as the mission

progresses through planning and execution.

One of the lessons I learned as an approval authority was that reviewing the RMW the day of the mission did not provide the time needed to make adjustments. As mission execution gets closer, fewer risk control options are available. Identifying specific leaders for more difficult missions, rehearsals, and equipment inspections is a critical control that is not available as time runs out. Mission changes in this timeframe result in greater risk as leaders include unplanned activities in their timelines. This stress before execution often leads to confusion about priorities and results in the neglect of other controls. A leader racing out to notify Soldiers of modified timelines close to execution also causes subordinates to lose confidence in him.

The corresponding problem with completing the RMW too early is that conditions on the ground, such as enemy and weather, can change significantly or new hazards can emerge before execution, affecting mission risk. The solution to this problem is to include boxes on the right-hand side of the RMW for each hazard, where leaders can input the residual risk for hazards during planning, preexecution, and execution. The approval authority signs the risk assessment in the planning phase and may delegate the pre-execution and execution reevaluations one level down. Delegation of the reevaluation includes specific instructions about notification in the event that the hazards of the mission are upgraded because of changes in conditions. The approval authority may choose to retain direct reevaluation responsibility if he wishes.

Composite risk management doctrine is sound, but it is not embedded in Army culture. The operational risk management worksheet embeds this doctrine and will help the Army reduce on-duty accidents in a dramatic way over the long term. Operational risk management will help the Army keep its promise of "Mission First, Soldiers Always" by providing the right information at the right time, resulting in improved decisionmaking, resource allocation, Soldier survivability, and mission accomplishment.

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The Army Reserve Expeditionary Railway Center

BY COLONEL DAVID T. POLLARD, USAR

To meet its Title 10 requirement to support the geographic combatant commands in using rail service as a combat multiplier, the Army Reserve has created the Expeditionary Railway Center.

In 2010, the Chief of Transportation, Brigadier General Edward F. Dorman III, identified a requirement gap in the Army's Title 10 responsibility to support the geographic combatant commands (COCOMs) in effectively employing rail as a strategic multiplier throughout full-spectrum operations (FSO). The gap was significant because a functional analysis identified effective rail planning, assessment, analysis, and advisement as a geographic COCOM requirement.

Force Design Update

Host-nation support will undoubtedly become a larger function of the geostrategic environment of the 21st century. Since infrastructure and theater transportation are inextricably connected to the broader geostrategic environment, the current Chief of Transportation, Colonel (P) Stephen E. Farnen, has focused on modernizing Army rail capabilities that can exploit host-nation resources within the transportation spectrum.

This effort has led to a force design update (FDU) that will provide the rail capabilities required for the contemporary operational environment. This FDU for the existing Army rail structure is essential since it has been more than 22 years since the last Army rail FDU. The FDU's result is the Army Reserve (USAR) Expeditionary Railway Center (ERC), which will be an enduring Army rail capability for FSO. This FDU was approved by the Army Training and Doctrine Command's Army Capabilities Integration Center.

This new rail force structure will augment any COCOM's efforts in planning and advising on the use of host-nation railroads to expand and expedite distribution within its area of responsibility. This new design will provide full-spectrum capability in all phases of an operation. In a period of diminishing military transportation assets, we must look at doing more with less, and using host-nation railroads is one way of rising to this challenge.

Expeditionary Railway Center Mission

The mission of the ERC will contrast significantly with the mission of the 757th Transportation Battalion (Railway). The ERC will—

- Provide rail network capability and infrastructure assessments.
- Perform rail mode feasibility studies and provide advice on the employment of rail capabilities.
- Perform and track railway rolling stock capability assessments, and provide an Engineer officer to facilitate railroad capability assessments and rebuild efforts.
- Coordinate rail and bridge safety assessments.
- Perform and assist with rail planning in support of military strategic and operational requirements.
- Perform functions as the primary advisers on railway operations, including collaborating with host-nation railway officials to improve the national railroad business model and support nation building.
- Coordinate use and deconfliction of host-nation or contracted rail assets.
- Perform contracting officer's representative duties to oversee contracts and provide quality assurance.
- Provide command, control, and supervision for subordinate railway personnel.

The ERC is designed for the contemporary Army rail planning and COCOM assistance mission. The ERC can provide the expertise needed to aid in restoring and developing railway systems in foreign nations in support of national security. It also can directly improve the present and future global security environment.

The nature of the global security environment is increasingly complex. With it is the need to understand globalization that is driven by rapid technological advances, interdependent economies, and empowerment of individuals. In this environment, we must recognize the need to operate continuously within the human terrain, where peace and stability are only sustained by providing safety and security.

At the high and low ends of full-spectrum operations, we must recognize the ERC's capabilities as the means of providing enduring security for the local population and the host nation. The ERC can simultaneously contribute to military deployment and distribution velocity, employment of a local population, and regional economic development.



The railroad at the Hairatan Gate Border Crossing not only provides residents in northern Afghanistan a chance for economic stability but also gives troops a means of getting cargo and equipment back home during the future drawdown. (Photo by SFC Peter Mayes, 101st Airborne Division PAO)

The ERC will contribute to the Defense Distribution Process Owner's (DDPO's) alternatives for sustaining the velocity of deployment, distribution, and redeployment. Understanding that conditions of anti-access or area denial to theaters of operations are turbulent, the DDPO must not depend on a single host nation for a theater-sustaining line of communication (LOC). For example, today the Northern Distribution Network has multiple LOC options from origin to destination, and it provides an alternative to the Pakistan ground LOC for movement of military and other cargo into and out of Afghanistan.

Army Rail Transformation

It has been evident since early in Operation Iraqi Freedom that the existing Army rail capability must be transformed to provide relevant support for the contemporary conflict. In Iraq, the Army missed the opportunity to maintain an Army rail planning and assessment capability at interagency and various military headquarters levels, along with an assessment, advisory, and training assistance presence with the Iraqi Republican Railroad. Coalition distribution and the nation of Iraq could have benefited significantly from this investment. Dave DeCarme, who served as the Department of State (DOS) transportation attaché in Baghdad, Iraq, from 2008 to 2009, made the following observation:

As part of civil/military coordination and cooperation efforts in developing host-nation capacities,

the U.S. Army rail transformation, working with U.S., coalition, and host-nation civilian elements, has the potential for improving rail system operations which in turn can be a significant contributor to broader economic development.

First, the ERC offers a capability to see and plan for rail LOCs, such as the Northern Distribution Network, early in the geographic COCOM's planning effort. Next, the ERC team can conduct peacetime military engagements for country rail system restoration and development. Finally, the ERC responsively deploys to contribute to stability operations or combat operations in the execution of a theater distribution plan and host-nation rail system strategic development.

This capability is designed not only as a deterrent to persistent conflict but also as a response for persistent containment. The safety and security of an indigenous population is a compelling and powerful force against insurgency and radical political or religious groups.

How Railway Use Affects the Host Nation

Historically, a developing country's stability and economic growth can be tied to a national railroad system that is regionally connected. Any use of a host-nation railroad system for sustaining theater deployment, distribution, and redeployment should be accomplished with the intent of developing the nation's economic engine and employing as much of the local population as possible. In so doing, we improve individual security

as well as national and regional stability. The strategic objective is to deescalate hostilities as quickly as possible and return to peace and stability operations. Then the challenge is to continue to create conditions that discourage a reescalation of hostilities.

The USAR ERC, if fully resourced, can facilitate sustained international trade. It is at its best when employed along with a joint, interagency, intergovernmental, and multinational team. Understandably, the USAR ERC contribution to this team provides the greatest expeditionary capability that can be mobilized for deployment. Under many conditions, the same responsiveness is not likely with Government civilian employees, nor is it prudent to assume that private sector contractors will be readily available.

Benefits of the ERC to the Army

Early and continuous Military Surface Deployment and Distribution Command (SDDC) Transportation Engineering Agency analysis, coupled with ERC rail expertise drawn from civilian-acquired skills and integrated in COCOM planning efforts, can contribute to a multimodal theater distribution program (TDP). Deliberate incorporation of the rail mode into theater engagement and TDPs provides a means of countering inaccessibility and area-denial conditions.

This is not only smart business within the human dimension of contemporary operations, but it also adds to military equipment life-cycle savings and management of theater military personnel caps (military truck drivers and maintainers). An ERC will help contribute to global security, which contributes to economic stability in the United States and potentially better bottom-line earnings for our U.S. partner rail companies.

The ERC operates with less than 200 Soldiers, making this capability a tremendous bargain at the relative cost of less than 2 truck companies. The bottom line is that, in terms of the Army force structure, it is good business to have the ERC capability resourced and available.

The Fiscal Year 2013 Command Plan Guidance, which was published on 4 January 2011 by the Headquarters, Department of the Army, provides the following key structure guidance:

The Army's goal is to build a versatile mix of tailorable and networked organizations, operating on a rotational cycle, to provide a sustained flow of trained and ready forces for full spectrum operations and to hedge against unexpected contingencies, at a sustainable tempo for our All-Volunteer Force. The Army continues to experience tremendous change. We remain at war and are balancing the operating and generating forces across the program while addressing the challenge to balance requirements with affordability.

With these qualities in mind, the Army rail FDU is

best sustained in the Army Reserve for affordability and access to civilian-acquired skills through partnership with the private railway industry.

Chief of Army Reserve Lieutenant General Jack C. Stultz stated his vision: "An enduring operational force, the Army Reserve remains the premier force provider of America's Citizen-Soldiers for planned and emerging missions at home and abroad. Enhanced by civilian skills that serve as a force multiplier, we deliver vital military capabilities essential to the total force."

**EMPLOYER PARTNERSHIP
OF THE ARMED FORCES
OFFERS A GREAT OPPORTUNITY
FOR THE ARMY RESERVE
TO TAKE ADVANTAGE OF THE
RAIL EXPERTISE OFFERED
BY U.S. RAILROAD
EMPLOYEES.**

The USAR ERC provides a great return on investment for the United States. The Army Reserve will generate a sustained flow of trained and ready Army rail forces for FSO on a rotational cycle with five railway planning and advisory teams, and it will do this at well below the cost for the Active component to maintain the structure. The ERC is a low-density capability with a critical contribution to the Army's versatile mix of modular organizations. The Army Reserve is ideally suited to provide the ERC for expeditionary military operations and international engagement activities, such as nation building and security cooperation.

Employer Partnership Initiative

Sustaining this critical expeditionary and international engagement capability can be accomplished in part through effective stationing of the ERC planning and advisory teams in cities where we find Class 1 railroad headquarters or their interchange points. We will continue to capitalize on the benefits of the employer partnership of the Armed Forces, an initiative begun by Lieutenant General Stultz. This partnership is a win-win situation for servicemembers, employers, and the Nation. Today, several U.S. railroads are employer partners.

Our railroads are a fine example of the potential for access to civilian-acquired skills. Employer partnership of the Armed Forces offers a great opportunity for the Army Reserve to take advantage of the rail expertise offered by U.S. railroad employees. Many of these

railroads actively seek to hire employees with military experience who are a good fit for the 24-hours-a-day, 365-days-a-year culture of the railroad industry. Military experience translates to management opportunities with U.S. railroads.

Army Railway Planning and Advisory Team

The Army will benefit by capitalizing on the skill-rich characteristics of Army Reserve warrior citizens. However, the Army Reserve must not run the ERC without SDDC, the Army's "Global Surface Transportation Experts." The SDDC mission is to "provide expeditionary and sustained end-to-end deployment and distribution to meet the Nation's objectives." The SDDC vision is for its employees to be the "recognized and trusted leaders in delivering innovative end-to-end deployment and distribution excellence across the full range of military operations." Rail is a significant component and enabler of the SDDC mission and vision. SDDC plays an important role in Army rail transformation for FSO.

SDDC and the Army Reserve, in support of the U.S. Central Command and the International Security Assistance Force, have had an Army railway planning and advisory team deployed to Kabul, Afghanistan, since October 2011. The team brings with it strong civilian-acquired management and operations experience from CSX, the Sierra Northern Railroad Company, and the Terminal Railroad Company.

In Afghanistan, this team is contributing to the following main objectives:

- Acquire strong visibility on the Government of the Islamic Republic of Afghanistan's (GIROA's) initiatives to start effective operations on the new Mazar-Hairatan Railway, which contributes to middle- to high-spectrum military operations through the improved velocity of military cargo movement into and out of Afghanistan.
- Work with the International Security Assistance Force, the U.S. Department of State, the U.S. Department of Transportation, the U.S. Federal Railroad Administration, and the GIROA to develop a rail strategy for Afghanistan, focusing on sustained regional stability and economic development with a return to peacetime military engagement.

The team, working closely with the GIROA's Ministry of Mines, will strategically link GIROA's national rail system to coal and iron ore deposits. This is a strategy with potential for sustained revenue streams and regional economic development.

SDDC is also working with the U.S. Africa Command to conduct peacetime military engagements between Army Reserve Soldiers and representatives of the Uganda Peoples Defence Force (UPDF). In Uganda, the U.S. Army rail team will assess and provide advice on the UPDF unit's mission, force structure,

typical operations, maintenance tasks, exercise participation, and training programs at Lugazi University. The team will discuss ways to assist the UPDF in developing a concept of operations for a Ugandan railroad battalion, along with all of the training, curriculum, and tactics, techniques, and procedures that may be required. This effort will continue with a visit by UPDF officers to the United States in 2012 as part of continuing to develop the military-to-military engagement.

The engagements in Afghanistan and Uganda can be a springboard to overcoming the capabilities gap discerned by Brigadier General Dorman in 2010. The gap can be closed if the Army acts with foresight to use the talent and synergy of the USAR ERC along with SDDC, the Transportation Engineering Agency, and the employer partnership of the Armed Forces initiative. If integrated and used in a concerted and continuing way to answer the rail advisory requirements of geographic COCOMs, the gap remains closed. Rail support to Afghanistan and Uganda can be the beginning of a wider policy that promises significant benefits at an affordable cost.

The Army should fully resource the ERC FDU. SDDC and the Army Reserve should continue to assist geographic COCOMs in fielding Army railway planning and advisory teams until the ERC can be activated. The Office of the Chief of Transportation and the Sustainment Center of Excellence should continue to collect and analyze current rail team efforts and develop future doctrine and organization for the ERC. Finally, when the ERC activates, it should be with a stationing plan that facilitates close employer partnership with the U.S. rail industry.

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Military Culinary Arts Competition 2012

Twenty-two full teams and 320 competitors from all 5 branches of the armed services participated in the 37th Annual Military Culinary Arts Competition from 29 February to 7 March 2012 at Fort Lee, Virginia. Additions to this year's culinary arts competition included two new categories—an international competition and live showcase cooking—and a new student category for each of the main competitive categories.

Canada, Germany, and the United States competed in the international competition. Two chefs, hand-picked from each country's military, competed in the "mystery basket" event, where they had 4 hours to prepare a 4-course meal for 4 people. The U.S. Team, two enlisted aides to Chairman of the Joint Chiefs of Staff (CJCS) General Martin E. Dempsey, Sergeant Major Mark Morgan and Master Sergeant Jesus Camacho, came in first. German competitors came in second place (and also received a gold medal), and Canadian chefs placed third (with a silver medal).

In other categories, Team Fort Stewart, Georgia, won several major awards this year, including Installation of the Year (ahead of Team Pentagon and Team Fort Hood, Texas), the Baron H. Galand Culinary Knowledge Bowl, and the Student Team Competition.

Members of the Fort Stewart team also claimed the top individual honors. Sergeant Major David Turcotte was named the Armed Forces Senior Chef of the Year. Specialist Jacquelyn Canidy, also from Team Fort Stewart, was named the Armed Forces Junior Chef of the Year. Chief Petty Officer Derrick Davenport, an aide to



A Canadian chef prepares fish during the international competition portion of the Military Culinary Arts Competition at Fort Lee, Virginia. (Photo by Julianne E. Cochran, Army Sustainment)



Chief Food Service Specialist Jason Stagnitto, Team Coast Guard, prepares dishes for judges during the Enlisted Aide of the Year Competition. Stagnitto and his partner, Food Service Specialist First Class Edward Fuchs, were named the Nutritional Hot Food Challenge champions. (Photo by Julianne E. Cochran, Army Sustainment)

the CJCS, was named the Armed Forces Enlisted Aide of the Year.

The Field Cooking Competition went to Team Fort Hood (followed by Team Pentagon and Team Fort Stewart). Team Fort Hood also won an award for the best theme for their dining tables.

Chief Food Service Specialist Jason Stagnitto and Food Service Specialist First Class Edward Fuchs, Team Coast Guard, were named the Nutritional Hot Food Challenge champions, and Team Coast Guard won the Judges Special Award for their cold food table display.

The following are the individual results for the major culinary arts categories:

- ❑ Specialist Shawn Hafele from Fort Carson, Colorado, and Specialist Alexandria Long from Team Fort Hood tied for the best exhibit in show, cold platter.
- ❑ Staff Sergeant Billy Daugette, Team CJCS, received best exhibit in show, hot food shown cold.
- ❑ Sergeant Major Mark Morgan, Team CJCS, received best exhibit in show, patisserie/confectionary.
- ❑ Specialist JanMichael Calma, Team Joint Base Lewis-McCord, Washington received best exhibit in show, culinary showpiece.
- ❑ Private First Class Dennis Escaner, Team Korea, received a student award for best exhibit in show, culinary showpiece.
- ❑ Chief Petty Officer Ernesto Alvarez, Team White House, received best exhibit in show, live action centerpiece.
- ❑ Staff Sergeant Carlos Quiles, Team Fort Drum, New York, received a most artistic exhibit in show award.
- ❑ Sergeant First Class Motavia Alston, Team Pentagon, received best in show, contemporary cooking.
- ❑ Staff Sergeant Orlando Serna, Team Pentagon, received best in show, contemporary pastry.
- ❑ Chief Warrant Officer 3 Jeffery Lein and Master Sergeant Travis Jones from the Army Special Operations Command, Fort Bragg, North Carolina, had the best in show, ice carving.

—Story by Julianne E. Cochran



Above, Private First Class Dennis Escaner, Team Korea, received a student award for best exhibit in show, culinary showpiece, for this dragon centerpiece. Below, Brigadier General Gwendolyn Bingham, the Quartermaster General, and Command Sergeant Major James K. Sims, the Regimental Command Sergeant Major, present the award. (Photos by Julianne E. Cochran, Army Sustainment)



Army Fiscal Year 2013 Budget Request Reflects Fiscally Constrained Environment

President Barack Obama submitted his proposed budget for the Army to Congress on 13 February. The fiscal year (FY) 2013 budget request totals \$184.64 billion, a 14.51-percent decrease from the FY 2012 budget request. The FY 2013 base budget request is \$134.588 billion, 7.1 percent less than the FY 2012 request, and the overseas contingency operations (OCO) funding request for FY 2013 is \$50.052 billion, a decrease of 29.61 percent from FY 2012.

Spending requests by major category are—

- ❑ Military personnel: \$63.301 (very close to the FY 2012 level).
- ❑ Operation and maintenance: \$76.008 billion (15.35 percent less than the FY 2012 request).
- ❑ Procurement: \$19.649 billion (19.28 percent less).
- ❑ Research, development, test, and evaluation: \$8.949 billion (a decrease of 7.68 percent).
- ❑ Military construction: \$2.843 billion (down 33.73 percent from the FY 2012 request).
- ❑ Family housing: \$535 million (down 21.55 percent from the request for the previous fiscal year).
- ❑ Joint Improvised Explosive Device Defeat Fund: \$1.902 billion (down 32.05 percent).
- ❑ Chemical demilitarization: \$1.453 billion (down 10.86 percent).
- ❑ Afghan Security Forces Fund: \$5.749 billion (down 55.09 percent).

The procurement request for FY 2013 includes funding for the acquisition of—

- ❑ 59 UH-60M Black Hawk helicopters for \$1.222 billion.
- ❑ 44 CH-47 Chinook helicopters, including 25 new and 19 rebuilt helicopters, for \$1.391 billion.
- ❑ The upgrade of 2,224 mine-resistant ambush-protected (MRAP) vehicles for \$1.055 billion.
- ❑ 441 items in the family of heavy tactical vehicles,

including 103 light equipment transporters, 8 heavy expanded-mobility tactical truck load handling systems, 327 enhanced container handling units, 2 M978 tankers, and 1 M984A4 wrecker, totaling \$54.983 million. (This is a 91.85 percent decrease in the request from FY 2012.)

- ❑ 1,298 trucks and 99 trailers in the family of medium tactical vehicles for \$374.362 million.
- ❑ Recapitalization of 2,128 up-armored high-mobility multipurpose wheeled vehicles for \$271 million.
- ❑ 211 petroleum and water distribution systems for \$38.385 million.
- ❑ 1 Force Provider module for \$39.7 million.
- ❑ 228 field-feeding systems, including 149 M65801 refrigerated container systems and 79 assault kitchens, for \$27.417 million.

Department of Defense Funds Army-Led Programs to Improve Battlefield Energy Security

On 31 January 2012, the Department of Defense announced the release of \$18 million to fund military programs aimed at reducing energy demands of future expeditionary outposts. More than half of the money for the Operational Energy Capabilities Improvement Fund Program is going to three Army-led projects.

The Innovative Cooling Equipment (ICE) Development/Demonstration Program, led by the Army Communications-Electronics Research, Development, and Engineering Center at Aberdeen Proving Ground, Maryland, is receiving \$2.5 million this fiscal year. The project focuses on implementing advances in thermodynamic cycles, electronics and digital controls, components, and waste-heat recovery to reduce the electric loads of heating and air-conditioning systems on the battlefield and, in turn, fuel consumption and fuel convoys on the battlefield.

Advanced, Energy Efficient Shelter Systems for Contingency Basing and Other Applications, led by

PROFESSIONAL DEVELOPMENT

New Reference Guide Provides Antiterrorism Guidelines for Contract Support

A new desk reference provides tools to reduce the possibility of terrorist attacks related to commercially provided services on Army-controlled installations and facilities. The reference, entitled “Integrating Antiterrorism and Operations Security Into the Contract Support Process,” was published on 25 January in response to the Army’s awareness of the possibility of terrorist attacks by contract employees. The guide outlines the tactics, techniques, and procedures contracting specialists need to integrate into the contract support process to reduce the possibility of terrorist actions.

The reference describes the antiterrorism and operations security steps that need to be taken during each phase of the process and offers suggestions for performance work statement language and elements for a quality surveillance plan.

The desk reference is available through Army Knowledge Online at <https://www.us.army.mil/suite/page/605757>.

the Army Natick Soldier Research, Development, and Engineering Center at Natick, Massachusetts, will receive \$5.997 million to develop and demonstrate the next generation of energy-efficient shelters. The goal is to demonstrate and transition to shelter systems that will reduce heating and cooling requirements by 50 percent, while providing improved capabilities and quality of life.

Operation Enduring Freedom Energy Initiative Proving Ground, led by the Army Research, Development and Engineering Command’s Field Assistance in Science and Technology Center at Bagram Airfield, Afghanistan, will receive \$1.425 million. The program is designed to establish a baseline for energy and fuel use in expeditionary operations in Afghanistan and to evaluate the benefit of energy-related technologies, such as improved heating and air-conditioning units, insulating tent liners, solar tent shades, and hybrid solar-electric power.

Army Leaders Unveil 2012 Posture Statement

Secretary of the Army John McHugh and Army Chief of Staff General Raymond Odierno presented the Army’s 2012 Posture Statement to Congress on 17 February 2012. A Statement on the Posture of the United States Army 2012 lays out the priorities and guiding principles for the upcoming year.

This year’s focus is on a force that is “smaller but reversible” as well as fiscally responsible and energy efficient. According to the Army Posture Statement, the Army “must avoid the historical pattern of drawing down too fast or risk losing leadership and capabilities, making it much harder to expand again when needed.”

The posture statement says that the Army’s operational focus remains on Afghanistan, but the country’s geography, distance, infrastructure, and harsh environment will make a drawdown from Afghanistan more difficult and complex than the drawdown from Iraq was. According to the statement, the Army will require reset funding 2 to 3 years after the drawdown from Afghanistan is complete.

Along with funds needed for reset, the posture statement notes that the infantry fighting vehicle has reached the limit of its capacity to receive critical upgrades. As a replacement, the Army is

pursuing its ground combat vehicle (GCV) strategy over a 7-year period. The posture statement notes that the Army has reduced risk within the GVC program by requiring industry to identify potential cost, schedule and performance tradeoffs, and cost targets throughout the GCV’s life cycle. The Army has also worked to maximize competition within the program to support innovation, cost containment, and schedule requirements.

The Army will also be pursuing the joint light tactical vehicle (JLTV) program this year with a goal of replacing one-third of its high-mobility multipurpose wheeled vehicles. The posture statement notes, “The JLTV balances protection, payload, performance and improved fuel efficiency.”

One initiative guiding fiscal responsibility efforts is the Army Financial Improvement Plan, which is designed to enable the Army to be fully auditable by fiscal year 2017. Another is acquisition reform. The Army has made changes in four broad areas by—

- ❑ Realigning acquisition requirements and placing more focus on the needs and competencies of acquisition professionals.
- ❑ Expanding stakeholder participation in acquisition requirements, planning, and solicitation.
- ❑ Streamlining acquisition strategies and reappraising the risk associated with this streamlining.

U.S. Army Reserve Vessel Supports Operation Enduring Freedom

The U.S. Army Vessel Kennesaw Mountain began a yearlong deployment in support of Operation Enduring Freedom in January. Kennesaw Mountain is part of the 824th Transportation Company, a U.S. Army Reserve unit from Morehead City, North Carolina. The 174-foot-long watercraft has a crew of 17 Soldiers and a mission to carry materiel throughout the Persian Gulf during its deployment. (Photo by CPL Jeffrey Daniel)



- Improving the selection, development, and accountability of those involved in the acquisition process. Energy efficiency is also helping to save money directly and indirectly. According to the posture statement, the Army will continue to invest in energy saving technologies that are “key to saving lives and increasing the Army’s flexibility by reducing costs” for both garrison and deployed environments.

RECENTLY PUBLISHED

Army Techniques Publication (ATP) 4–91, Army Field Support Brigade, published 15 December 2011, is the second ATP published by the Army under the Doctrine 2015 initiative. The ATP provides an overview of the Army field support brigade (AFSB) organization and outlines the missions the AFSB has in contingency operations and in supporting units throughout the Army Force Generation process.

First Stryker Maintainers Class Graduates From Army Ordnance School

On 16 February 2012, 20 Soldiers graduated from advanced individual training at the Army Ordnance School at Fort Lee, Virginia, to become the Army’s first military occupational specialty (MOS) 91S Stryker systems maintainers.

During the 17-week course, MOS 91S Soldiers acquired skills previously performed by three specialized maintainers. Before the MOS was created, Soldiers trained on Stryker systems were MOS 91B wheeled vehicle mechanics who were awarded the additional skill identifier (ASI) R4 (Stryker maintainer) after completing a 4-week course on the automotive portion of the

Stryker system. Stryker maintenance also required an MOS 91K (armament systems mechanic) and an MOS 91C (air-conditioning/refrigeration mechanic), each with an ASI R4 identifier, to fix other components of the system.

The new MOS not only provides the Army with Soldiers specifically dedicated to maintaining this type of vehicle, reducing the number of maintainers needed for each Stryker repair; it also provides a better avenue for the Army to track Soldiers with Stryker training and place them with the Army’s Stryker brigade combat teams, which are based in just six locations.

The Ordnance School is expected to graduate 250 students from MOS 91S training this year.

Army Accessions Command Is Inactivated

The Department of the Army inactivated the Army Accessions Command on 18 January 2012. The command was stood up just 10 years ago at Fort Monroe, Virginia, to handle the heavy recruiting mission needed to support a Nation at war and to be the parent organization of the Army Recruiting Command, the Army Cadet Command, and initial-entry-training organizations. Since the size of that mission has decreased, last year the Department of Defense and the Department of the Army selected the Army Accessions Command for inactivation as an efficiency measure.

During the inactivation ceremony at Fort Knox, Kentucky, former commanding general Lieutenant General Benjamin Freakley noted that during its existence the command accessed 1.5 million Soldiers, officers, and warrant officers.

The Army Accessions Command’s subordinate organizations, the Army Recruiting and Cadet Commands, now report directly to the Army Training and Doctrine Command, as they did before the Army Accessions Command was established.

Joint Petroleum Seminar Hosts Its Largest Class

The Joint Petroleum Seminar hosted its largest class ever from 5 to 9 December 2011 at the Defense Logistics Agency (DLA) Energy headquarters at Fort Belvoir, Virginia. Forty-three military and civilian fuel officers from across the services took part in the week-long seminar, now in its 10th year, sponsored by the Joint Staff Joint Petroleum Office and DLA Energy.

The seminar is designed to strengthen the professional education development of fuel officers, military service fuel staffs, DLA Energy field office personnel, and others who work in the joint petroleum arena. During the seminar, students were exposed to a wide range of topics, including petroleum characteristics, Department of Defense and joint fuel organizations, joint doctrine, global combat support systems, alternative fuels, fuel exchange agreements, fuel pricing, DLA Energy business processes, and war and peacetime fuel requirements determination.

Air Force Lieutenant Colonel Todd Cheney, Joint Petroleum Office Chief on the Joint Staff and the seminar’s course moderator, said that the Joint Staff’s view

Continued from page 5

horizon and chart a course for success for the next year.

We will take a hard look at where we are as a corps and where we want to go across all three of our core competencies. A series of presentations and break-out sessions will provide a great opportunity for each of you to contribute to mission analysis and course-of-action development for issues facing the Ordnance Corps.

We look forward to inducting 12 distinguished Ordnance leaders into the Ordnance Corps Hall of Fame on 16 May. The 2012 Hall of Fame selection board met on 8 November 2011 in the Zello Conference Room at the Army Ordnance School. The historical inductees are Major General Henry A. Rasmussen, Chief Warrant Officer 4 Grayford C. Payne, William Baumbeck, and Carl Hansen. The contemporary inductees are Major General (Retired) Jerome Johnson, Colonel (Retired) Robert “Bruce” Harrison, Jr., Chief Warrant Officer 5 (Retired) Lee D. Brush, Chief Warrant Officer 5 (Retired) Arthur G. Dahl IV, Command Sergeant Major (Retired) Dennis W. Crandell, Command Sergeant Major (Retired) Daniel K. Elder, Susan H. Gooch, and Dr. Aileen W. Tobin.

Additional events include two memorialization ceremonies that will dedicate the North Recovery Range to Lieutenant Colonel Harry M. Downer and the Ordnance Campus Parade Field to Major Hulon B. Whittington, who was the only World War II Ordnance Corps Medal of Honor recipient.

We will also have the Regimental Chief Warrant Officer (RCWO) change of responsibility ceremony to honor the outgoing RCWO, Chief Warrant Officer

is that the joint petroleum community needs a strengthened identity, cross-pollination among the services, an understanding of DLA Energy roles and responsibilities, and a common understanding of relevant issues.

Assistant Secretary of Defense for Operational Energy Plans and Programs [ASD (OEPP)] Sharon Burke, briefed seminar attendees on the Department of Defense (DOD) Operational Energy Strategy. Burke said that using less fuel and taking trucks off the road reduces the risk of casualties along the supply line. She emphasized that the goal to supply forces with fuel will be fulfilled through three methods. DOD aims to reduce the volume of fuel used in operations, diversify the range of fueling options so that a variety of sources are available to meet the mission, and ensure more capability for less cost by improving fuel efficiency and effectiveness in building the future force.

Burke said that the acquisition community holds the key to changing the way the department uses fuel, but she reminded the audience that the acquisition process is complicated and it will take some time to change the system.

5 Bernard L. Satterfield, and welcome the incoming RCWO, Chief Warrant Officer 5 Terry W. Hetrick. We will also have an investiture ceremony to welcome the new Honorary Colonel of the Regiment, Lieutenant General (Retired) Richard A. Hack, and honor the outgoing General (Retired) John G. Coburn.

Various demonstrations and displays throughout the week will focus on the 200 years of history and the core competencies of the Ordnance Corps. The official Ordnance Week activities will conclude with a golf tournament at the Cardinal Golf Course, sponsored by the Ordnance Corps Association, and the annual Ordnance Ball, which will be held at Hatcher Hall on 18 May.

Please continue to monitor the Ordnance webpage (www.GoOrdnance.army.mil) and Facebook page (www.facebook.com/USAODS) for information on Ordnance Week and other key upcoming events.

The entire Ordnance Team continues to work hard to get our message, initiatives, and priority of efforts out to you. I appreciate your candid feedback. If there is anything that the Regimental Team can do to help, please let us know. Go Ordnance!

BRIGADIER GENERAL CLARK W. LEMASTERS, JR., ASSUMED COMMAND OF THE 13TH EXPEDITIONARY SUSTAINMENT COMMAND IN AFGHANISTAN AT THE END OF MARCH. HE SERVED AS THE 36TH CHIEF OF ORDNANCE FROM 2010 TO 2012.

UPCOMING EVENTS

Army Quartermaster Symposium

The Army Quartermaster Symposium will be held from 13 to 15 June at Fort Lee, Virginia. The theme for this year’s event is “Quartermaster Strong: Lean, Agile, and Ready!”

This year’s symposium focuses on engaging the entire sustainment community in discussions on relevant topics. During this time, the Quartermaster Corps will also be celebrating its 237th birthday with the Quartermaster Run, the Quartermaster Ball, a regimental review, and a recognition reception hosted by the Quartermaster General. For more information about the event, visit www.quartermaster.army.mil.

Performance-Based Life-Cycle Support 2012

Worldwide Business Research will host Performance-Based Life-Cycle Support 2012 from 16 to 18 July 2012 at the Washington Plaza Hotel in Washington, D.C. The event includes panel discussions on the future of outcome-based life-cycle product support, streamlining the supply chain to reduce costs through performance-based agreements, and the effect investing in human capital can have on sustainment.

For more information or to register, go to the conference website: www.pblusa.com.

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COMING IN FUTURE ISSUES

- Supplying the Forces While Rightsizing Ammunition Storage
- Developing Logistics and Property Accountability in Afghanistan
- Rethinking the Last Tactical Mile
- Split-Based Medical Support Operations
- Rapidly Redeploying the Global Response Force From Haiti
- Hybrid Airships for Lift
- Defining the CSSB Mission at JRTC
- Operational Contract Support Beyond Contingencies
- The 3d Sustainment Brigade Embraces Finance
- The Road to Sayed: Recovery Operations in Northern Afghanistan
- SSA Operations in Regional Command North