

JANUARY-FEBRUARY 2015

ARMY SUSTAINMENT

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Setting A Theater

Establishing Transit Center MK

Inside

Sustaining
Reconnaissance

Logistics
and Analysis

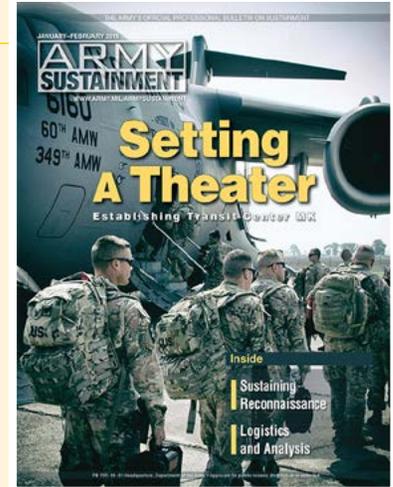
ON THE COVER

FEATURES

- 18 **Setting a Theater: Establishing Transit Center MK**
The tiny commune of Mihail Kogălniceanu houses the Department of Defense’s sole operational passenger transit center, Transit Center Mihail Kogălniceanu. By Maj. Gen. Jack O’Connor and Maj. Craig A. Daniel
- 26 **Sustaining Reconnaissance**
An airborne reconnaissance forward support troop successfully sustained its reconnaissance squadron throughout a forcible entry operation at the Joint Readiness Training Center. By Capt. Luke P. High

TRAINING AND EDUCATION

- 32 **Logistics and Analysis**
The Operations Research/Systems Analysis–Military Applications Course prepares logisticians to conduct analyses that help planners solve problems. By Maj. William T. Smith



Oregon Army National Guard Soldiers from the 41st Infantry Brigade Combat Team load onto an Air Force C-17 Globemaster III aircraft, Aug. 13, 2014, bound for Afghanistan from the U.S. transit center at Mihail Kogălniceanu Air Base, Romania. The flight was one of hundreds of deploying and redeploying transportation missions the transit hub has managed since opening in February 2014. (Photo by Sgt. Brandon Hubbard)

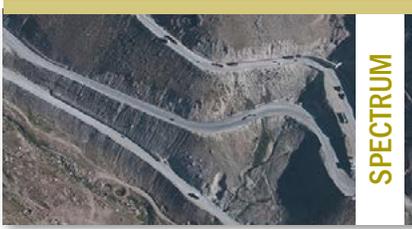
DEPARTMENTS

“The establishment of Transit Center MK reinforced the importance of defining both mission command and support roles and relationships.”

*Maj. Gen. Jack O’Connor and Maj. Craig A. Daniel
Setting a Theater: Establishing Transit Center MK, p. 18*



- 2 **Mission Command and Swift Trust**
Dr. Christopher R. Paparone and George L. Topic Jr.
- 3 **Becoming the Modern Logistician**
1st. Lt. Charlotte R. Krause
- 5 **Transportation Officers Suggest a Consolidated Surface Mobility Specialty**
Maj. David J. Forsyth, Maj. Joel M. Machak, and Maj. Curtis L. Yankie



SPECTRUM

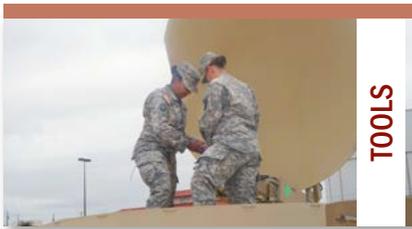
10 **Developing Smarter Logistics Support to Remote Areas**
Maj. Linda C. Wade, Capt. Adam G. Bradford, Capt. Timothy P. Gibbons, and Capt. Nathan D. Platz



TRAINING AND EDUCATION

34 **An Introduction to Uniformed Operations Research**
Maj. James R. Henry and Maj. William T. Smith

36 **Partnering to Provide Finance Leaders Essential Training**
Capt. Brandon S. Broadus



TOOLS

38 **Gas Cylinder Exchange Solutions**
Chief Warrant Officer 2 Nathaniel L. Meins

40 **Maintenance Management in a Military Intelligence Brigade**
Maj. Joseph C. Zabaldano and Chief Warrant Officer 4 Louis Watkins



HISTORY

44 **The Army Goes Rolling Along**
James A. Harvey III



PB 700-15-01
VOLUME 47, ISSUE 1
JANUARY-FEBRUARY 2015

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Army Sustainment (ISSN 2153-5973) is a bimonthly professional bulletin published by the Army Logistics University, 2401 Quarters Road, Fort Lee, Virginia 23801-1705. Periodicals postage is paid at Petersburg, VA 23804-9998, and at additional mailing offices.

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

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Mission Command and Swift Trust

The authors consider two key dimensions of trust: reputation and vulnerability.

■ By Dr. Christopher R. Paparone and George L. Topic Jr.

Mission command and professional military relationships in general are usually expressed in terms of the mutual trust between superiors and subordinates. In the context of logistics support, however, mission command is especially complex because it relies on the trustworthiness of a web of interconnected organizations, processes, and often confusing or informal authorities.

This interorganizational network must “self-organize” as missions rapidly change and complex operations fold and unfold. As a substitute for management controls, trust permits this necessary self-organization process. Trust as a substitute for formal control is not only a key driver of efficiency; it is a key enabler of effectiveness.

There is one special type of trust we would like to highlight with regard to mission command and logistics networks: the requirement for swift trust. Swift trust refers to the quick formation of socially reliable relationships that enable logistics networks to unify their efforts.

The Chairman’s Capstone Concept for Joint Operations, Joint Force 2020, and the emergent Joint Concept for Rapid Aggregation highlight the growing need for swift trust. The future joint force qualities of being globally dispersed and of having a rapid aggregation of capabilities rely on logistics not being “owned” by military command and control systems.

Unity of effort in rapid aggregation is possible only with high levels of mutual trust, without which nothing will work as it should. Usual trust-building among organizations takes time; however, rapid aggregation disallows having time available

to foster trustworthiness.

We want to highlight two critical dimensions of swift trust: institutional reputation and vulnerability. Institutional reputation includes the degree to which other customers have experienced relationships with participants in the network of logistics providers.

is what we would call logistics network intelligence, which ideally reveals a web-like picture of threats to our global, self-organizing logistics network.

Will our supply chain partners take the initiative to manage change and resolve problems without waiting for centralized or top-down directives

Unity of effort in rapid aggregation is possible only with high levels of mutual trust, without which nothing will work as it should.

For example, while we may not know individuals who work at Amazon.com or its fulfillment centers, we can confirm the company’s reputation rather quickly. Almost every Amazon item is backed by transparent customer ratings and comments on both the product and the level of service provided by either Amazon.com or its vendor.

Performance track records play heavily in attracting customers. Although even a minor negative review can be extremely damaging, having 4,800 excellent ratings out of 5,000 will build a good reputation—hence, swift trust.

Could the Army’s logistics enterprise establish excellent fulfillment reliability and include transparent customer ratings about its supply chain performance? Could we develop a similar customer rating program for defense logistics transactions?

Continuously assessing how vulnerable the global logistics network is to disruption is central when dealing with relatively disaggregated customers who need to aggregate rapidly. The ongoing appraisal of that vulnerability

or lethargic contract modifications? What are the barriers to taking such initiative? What “bad guys” are out there, seeking to prevent access to our rapidly changing distribution schemes and data streams? How can we produce products and services closer to the point of need? Can we design materiel systems that reduce demand and the need for complex physical distribution networks?

We believe that understanding the swift trust dimensions of mission command—reputation and vulnerability—is crucial to the development of effective future logistics capabilities. Swift trust is central in designing and building disaggregated logistics capabilities that can aggregate as swiftly as the operators they support.

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George L. Topic Jr. is the vice director for the Center for Joint and Strategic Logistics at Fort McNair, Washington, D.C.

Becoming the Modern Logistician

A junior officer learned that relationships build logistics and became a valuable asset to her unit.

■ By 1st Lt. Charlotte R. Krause

Many recall their entrance into the officer world. The adrenaline rush hits you the first time you walk into a room of your peers after taking the oath of your commission. You have no expectations or knowledge of what you will experience on your new path—just the understanding that the path is required.

Upon entering the Basic Officer Leader Course (BOLC), junior logisticians belong to one of three branches—Transportation, Ordnance, or Quartermaster—until they complete the Logistics Captains Career Course and become a part of the Logistics Branch. But it is not just the captains course that prepares an officer for the Logistics Branch; lieutenants learn a lot from their first years on the job.

Learning the Basics

There was plenty of tension in the room on the first day of my BOLC. The newly commissioned officers were buzzing with fear, anxiety, and excitement. We did not realize that our days would be filled with the Army's famous "death by PowerPoint" and that we would spend hours poring over technical manuals that had been worn out from hundreds of hands searching feverishly for capacities, formulas, and weights.

Classroom days filled with paperwork and property accountability were the opposite of what we were expecting based on the exciting endorsement for the Transportation Branch that we received at the career fair. The importance of property accountability and equipment maintenance to mission capability was burned into our minds.

Starting Out

When I graduated from BOLC,

I was terrified to learn that I would become the executive officer of a forward support company in a light infantry battalion. Although lectures in BOLC had stressed how that was a prized position to obtain, all I could think about was how I should have placed more priority on my physical fitness.

In my unit, there was an air of distrust about filling a senior lieutenant position with a second lieutenant, especially one without any platoon leader experience. The lack of time in a learning position left me with no previous knowledge or experience to draw from.

Another downside to being an executive officer was that I did not have a direct noncommissioned officer (NCO) counterpart. Having that counterpart is how many lieutenants gain their expertise and technical proficiency.

At the battalion level, I was largely invisible. No one seemed to believe that a second lieutenant could be an executive officer, and everyone was waiting for me to fail. Knowing that I wasn't ready, I spent my time learning everything possible about the company property book and the Soldiers I would be working with.

Meeting the neighboring infantry companies proved to be an adventure. Some were demanding, some were ready to learn, and others were busy with their own missions. Most were dismissive and tried to go around me and use the contacts that they had previously built in the company. No one had warned me about the challenges of simultaneously learning about a new area, a new lifestyle, and a new profession.

After a few months of hard lessons

and a steep learning curve, I began to catch my stride. My initial approach of a hard-nosed, steel-fisted nature did not end up making good relationships. I quickly learned that relationships build logistics. The number of moving pieces in logistics operations requires a team working across the facility, post, nation, and theater to make things happen.

I went from being dismissed to being a valuable resource for many infantry leaders. Requirements became easier to fulfill. The effort put into building relationships began to pay off.

The infantry companies began to put their requests in earlier and would double check their paperwork, demonstrating that they understood that we also required preparation and had execution time lines outside of their requests.

While we were providing sustainment support, there was little time to provide ourselves with basic Soldier and marksmanship training. When our Soldiers provided ammunition for training events, in return they were given the opportunity to qualify on their individually assigned weapons.

The more time I spent working with different units and building friendships, the deeper my resources became. A large list of favors came to fruition and more often than not a pay-it-forward scenario commenced.

Deploying on the Battalion Staff

Before long, I found myself preparing to deploy to Afghanistan. The bridge into my new position on the battalion staff was established during my unit's rotation at the National Training Center.

I had attended the battalion staff



Lieutenants listen to a briefing during a Basic Officer Leader Department field training exercise. (Photo by Julianne Cochran)

leader training program, where I served as the logistics counterpart. This was the first time I had officially been integrated into the logistics fusion cell, and I began to understand the big picture of the mission. As a company-level asset, I provided input to the battalion to help make things run smoothly.

In Afghanistan, I was placed in a three-role position; I was the contracting officer's representative, battalion maintenance officer, and assistant S-4. With a new job title and location, I had no experience, contacts, or resources to draw from.

Soon I began to build rapport. It started with meetings, phone conferences, and emails. Rapidly, I saw a whole new side of communication; portals of information and examples I could use piled into my email from people whom I had never met.

I was involved in providing contracts and maintenance for three locations. In all of my tasks, I had to consider each location individually because they all had different

challenges and needs. Luckily, I was paired with an NCO who provided the experience and insight I needed to make a plan. An officer will never forget the NCO who took the time and had the patience to teach someone with a quarter of their experience how to handle a situation.

Distance and technology problems challenged my ability to communicate with the locations I was supporting. Halfway through the deployment, relationships began paying off as the battalion retrograded outlying locations. The more issues that came up, the more people came to help. It seemed that the customer service I provided throughout my time in Afghanistan was being paid back tenfold.

I have used my experiences from BOLC, as an executive officer, and while deployed on a battalion staff to help me become a modern logistician. I experienced what it takes to become a valued asset to the Army, despite not going through the normal career

progression of a lieutenant.

Through trial and error, I learned the importance of being a firm leader and devoted to the mission and its requirements. Creating contacts and learning to employ resources gave me a great sense of accomplishment.

In the Army, it takes a community to complete any major task. Very often we chalk it up to good planning or organization, but the bridge to success is made up of hard working people.

My recommendation to someone beginning the journey to becoming a logistician is to reach out and learn about your resources. If your senior NCOs have taken the time to build a relationship with someone, you should know why they have that contact and make an effort to maintain that contact as well. Logistics is customer service, and it requires you to make use of many different resources and agencies.

Pay attention to what it takes to run an operation. Although it may not seem important at the platoon level, at some point you will be expected to understand the basics of an operation and implement one for a larger element.

Finally, devote an extensive amount of time to understanding classes of supply and property. You will become a valuable source of information if you have a fundamental knowledge of these two items. Hone that skill and be a knowledge bank for those around you.

Every choice you make in your early career as a logistician will train you to become an asset or a burden. Make the effort count for you and for your future Soldiers.

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Transportation specialists from the 823rd Movement Control Team and the 1120th Transportation Battalion ground-guide a vehicle in the marshaling yard of the joint maneuver training center at Camp Atterbury, Indiana. (Photo by Spc. Caitlyn Byrne)

Transportation Officers Suggest a Consolidated Surface Mobility Specialty

■ By Maj. David J. Forsyth, Maj. Joel M. Machak, and Maj. Curtis L. Yankie

If one thing remains constant in the Army, it is change. Whether it is in the camouflage pattern for the combat uniform, the way we conduct physical training, or force structure, change is constant. In this ever-changing environment, Army sustainers must be adaptive and responsive in order to provide the best possible support.

The Army may be able to provide

increased support by combining the three transportation military occupational specialties (MOSs) that perform most of the tasks associated with the deployment processes. These include MOSs 88H (cargo specialist), 88M (motor transport operator), and 88N (transportation movement coordinator).

Consolidating MOSs is hardly a new concept. In 1993, the Army

created the MOS 92A (automated logistical specialist) by combining MOSs 76C, 76P, 76V, and 76X. Today's 92A Soldier performs the duties of 16 supply MOSs from the Vietnam War era.

Recent and Upcoming Changes

The regionally aligned forces (RAF) concept is an example of one of the latest major changes un-

dertaken by the Army. Under RAF, forces are aligned with a geographic combatant commander on a full-time basis with the goal of deterring crises through partnerships rather than deploying Soldiers in response to a crisis. Simply put, the vision of RAF is to transform the Army into a regionally engaged, agile, culturally savvy force capable of global response.

In addition to the RAF efforts, the Army is in the process of transitioning from an Army at war to an Army of preparation for rapid response. This preparation involves a great deal of focus on the command supply discipline and command deployment discipline programs.

At the same time, the Army is downsizing to meet budget con-

straints, meaning that units will have to meet mission requirements with fewer resources.

Meeting Transportation Needs

With the known requirements to engage partner forces globally and prepare to deploy forces rapidly with fewer resources, we must ask this key question: Does the Army have the right transportation occupational specialty structure to support future deployment requirements?

Currently, the roles of unit movement officer, hazmat certifier, and air load planner are additional duties appointed by unit commanders to Soldiers within their formations. These additional duties are not the Soldiers' primary role within the

organization, and quite often they do not perform these roles until it is time for a unit to deploy.

Additionally, the personnel who are appointed to these duties tend to have limited longevity in the position, meaning that periodically replacements must be appointed and trained. As a result, organizations often require a great deal of assistance from movement specialists in higher or adjacent organizations in order to properly deploy their units.

The population of movement specialists who most often assist Army units in the deployment process is composed of the installation transportation office or transportation management office civilian workforce, mobility warrant officers, and Soldiers with the MOS 88N.



The military personnel in this group fall into the category of low density MOSs, meaning that they account for an extremely small portion of the Army population. For example, a typical light infantry brigade combat team of approximately 3,300 Soldiers will have three or four transportation movement coordinators.

Career Management Field 88

The Army will benefit from restructuring the career management field 88 because of the shortfall in deployment expertise at the tactical and operational levels and an increasing requirement for deployment preparedness.

Currently, MOSs 88H, 88M, and 88N perform much of the deploy-

ment process. All of these specialties share in planning, preparing, and executing unit deployments, but they receive highly functionalized training, which results in a stove-piping of involvement in the overall deployment process.

Soldiers with 88H and 88M MOSs spend comparatively less time performing their actual MOS duties in garrison than do Soldiers of many other specialties. According to the current career management field 88 career map, an 88-series Soldier will have little opportunity to interact with or supervise other 88-series Soldiers outside of his primary MOS until he reaches the grade of E-8. This further perpetuates the functional nature of the career field, leaving senior noncom-

missioned officers somewhat unprepared to provide expert advice and training to those outside of their immediate MOSs.

A Mobility Specialist MOS

The Army should combine the 88H, 88M, and 88N MOSs, creating an MOS 88C (mobility specialist). By combining these three MOSs into one, the Army will reap the benefits of widely proliferated deployment expertise, which directly affects deployment readiness and maximizes the use of personnel.

The core competencies of the 88C must be centered on the requirements that are uniformly applicable to every deployment: deployment planning, distribution, and documentation. By focusing on these



Staff Sgt. Erik A. Jordan, an Army Transportation School instructor, grades Spc. Yessinia Y. Beyer, a student in the Kalmar RT-240 Rough Terrain Container Handler's Course, during the operator exam portion of the course at Grafenwoehr Training Area, Germany. (Photo by Staff Sgt. Alexander Burnett)

core competencies, 88C Soldiers will be the process owners and functional experts for unit deployments.

Deployment planning. The core deployment planning competencies could include movement planning, Integrated Computerized Deployment System load planning, cargo preparation, transportation movement release procedures, and general equipment maintenance.

Distribution. The core distribution competencies could include mobility operations, in-transit visibility, the Battle Command Sustainment Support System, and general equipment operation.

Documentation. The core documentation competencies could focus on hazmat documentation and certification, Transportation Coordinators–Automated Information for Movements System II, and customs documentation.

The requirement to operate materials-handling equipment and trucks will become a corollary duty for MOS 88C personnel based on unit-specific requirements. Every unit is equipped differently; therefore, each unit has different requirements for licensed operators.

The model for equipment training relies heavily on the concept of postponement. Postponement is a concept in supply chain management where the manufacturer produces a generic product that can be modified at the later stages before shipping it to the customer. In this case, the product is the 88C Soldier, and the demand refers to the unit-specific equipment operator requirements they must fill upon arrival at their new unit. All the while, the 88C Soldier maintains the core competency skills to assist in the deployment process regardless of duty assignment.

Implementation

The implementation of this MOS consolidation would require a significant amount of effort from a broad group of stakeholders and involve all aspects of doctrine, organi-

zation, training, materiel, leadership and education, personnel, and facilities. The Army must first determine the demand for this MOS in the Active and Reserve components.

Perhaps, like the railway-specific specialties (MOSs 88P, 88T, and 88U), the Reserve component may benefit from retaining some 88M, 88N, and 88H authorizations based on component-specific circumstances.

Initial-entry requirements, programs of instruction, and new career maps would also have to be developed. Initial-entry requirements should include the ability to obtain a security clearance and achievement of minimum general technical scores. Tables of organization and equipment would have to be modified for units with 88C Soldiers in their formations, increasing the dissemination of automation systems for deployment and distribution.

Currently the training for the three specialties occurs at three different Army installations: Joint Base Langley-Eustis, Virginia; Fort Lee, Virginia; and Fort Leonard Wood, Missouri. From these locations, the Army must choose the optimal location for MOS 88C training based on yet-to-be-determined criteria.

The employment of MOS 88C could manifest in any number of ways. One such way could be that the subordinate unit that has the most 88Cs will serve as the deployment preparation process owner for the next echelon of command. For example, forward support companies would take on the responsibility for preparing its battalion's equipment for deployment. This general principle also could be applied to combat sustainment support battalions and sustainment brigades.

The current Army transportation force structure should be optimized in order to better meet emerging deployment requirements brought about by the RAF concept and other requirements. By establishing a new, consolidated mobility

MOS, the Army can optimize the deployment process, increase key deployment skills among a greater number of units, and create a single deployment process owner at the unit level.

As the military faces an environment of diminishing resources, it is vital that we look to maximize the utilization of our personnel; an MOS consolidation of the 88H, 88M, and 88N would do just that.

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Maj. Curtis L. Yankie is the division transportation officer of the 4th Infantry Division at Fort Carson, Colorado. He holds a bachelor's degree in criminal justice from the University of Arkansas and a master's degree in supply chain management from the University of Kansas. He is a graduate of the Field Artillery Officer Basic Course, the Combined Logistics Captains Career Course, the Division Transportation Officer Course, and the Command and General Staff Officers Course.



Let's Get Social!

It has been a little more than one year since *Army Sustainment* established a presence on Google+ and Twitter. It has also been a year and half since we established our first social media presence on Facebook. Today we are richly engaged with an audience of more than 285 on Google+ and 469 on Twitter, and we have more than 1000 followers on Facebook.

Why is this important? It means that we are getting content to our readers whenever, wherever, and however they are connected to the Internet. It also means we are reaching new and potential sustainers who will be a part of the Army 2020 and providing them with information from leaders and units within the sustainment community. So, are you connecting with these Army sustainers and accessing the additional content



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During June 2014, Army Sustainment reached 3.16 million Twitter users. This tweet drew a particularly large audience.

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The Salang Pass has been called one of the most dangerous roads in the world. Supply contractors must traverse this route to sustain the many remote bases in Afghanistan. (Photo by Sgt. Michael K. Selva)

Developing Smarter Logistics Support to Remote Areas

■ By Maj. Linda C. Wade, Capt. Adam G. Bradford, Capt. Timothy P. Gibbons, and Capt. Nathan D. Platz

The Army Logistics Innovation Agency and Department of the Army G-4 chartered the Maj. Gen. James Wright Program of the College of William and Mary's Mason School of Business to research supply chain optimization for remote locations. The intent was to garner insights from civilian organizations with the objective of

improving Army sustainment for remote locations.

The study focused on sustainment in areas with minimal or no local infrastructure or supply sources in environments similar to inland central Africa and isolated Pacific islands.

Comprehensively studying current commercial supply chain innovations revealed many best practices

that should be adopted by the Army. The Army can better support combat operations in the most remote areas on earth by accomplishing these six improvements:

- Reduce packaging waste.
- Increase use of local and renewable resources.
- Employ regional logistics experts.

- Increase the prevalence of commonality of parts.
- Improve logistics communications systems.
- Generate operational power efficiently.

The research revealed how all six recommendations would lead to an increase in combat power. Combat power would be generated through a smaller footprint, greater use of assets, reduced inventory, simplified logistics, and increased operational flexibility. All six recommendations have been proven to reduce costs for commercial companies.

Reduced Packaging

The Army can learn from initiatives in the private sector to reduce packaging waste. Walmart has decided that the punt (or dimple dent) at the bottom of a bottle of wine is wasteful. Walmart worked closely with its supplier to redesign the Oak Leaf brand wine bottles to reduce that punt, resulting in a shorter and lighter bottle.

This small change reaped big cost savings in glass consumption, packaging materials, and transportation, which created a win-win scenario for both Walmart and its supplier¹ and reduced Walmart's annual shipping requirement by 280 trucks.²

Likewise, Freeport-McMoRan, one of the top mining companies in the world, worked closely with a supplier to completely redesign its packaging for cobalt hydroxide. The new design resulted in a larger, square-shaped product bag that was more rigid. The new design fits the exact dimensions of the company's cargo trucks and has doubled the amount of material that can be shipped in one truck.

The company paid two dollars

more for the rigid bag, but the new design doubled the efficiency of its transportation network. The new design also made the packing process at the mine more efficient. Freeport-McMoRan gains a competitive advantage through its supplier relationships because it views its suppliers as strategic partners.³

What can the Army learn from

A single case of meals ready-to-eat (MREs) is a great example of poor packaging. Not only does the cardboard case create solid waste, but the individual MRE package design causes unused space within a case. (See figure 1 on page 12.) This increases the cost of packaging and printing, and it creates waste along the supply chain as these cases move

Inefficient packaging results in trucks being on the road unnecessarily, poor use of air delivery assets, and inefficient use of storage space.

these initiatives to reduce packaging waste? An initiative to reduce or redesign packaging would have a significant effect on combat operations.

Inefficient packaging results in trucks being on the road unnecessarily, poor use of air delivery assets, and inefficient use of storage space. Improved packaging would decrease the exposure of vulnerable assets along the supply chain, increase air and ground asset utilization, and reduce transportation requirements.

Most of the current packaging materials used for food, water, ammunition, and repair parts become a solid waste burden during combat operations. Solid waste must be disposed of for tactical, political, and sanitary reasons in a combat zone.

In remote areas, the common method for disposing of solid waste is to burn it. Burning packaging materials can lead to future health problems for Soldiers.⁴ But removing unnecessary packaging materials does not go far enough. Packaging materials should be designed to burn cleanly in a power-generating incinerator.

on ships, vehicles, and aircraft.

Smaller and lighter packaging offers significant benefits to Soldiers who receive resupply by containerized delivery systems on air-only combat outposts. The U.S. Army Natick Soldier Systems Center has developed improved packaging for the MRE that is smaller and lighter, but it has not yet been approved by the Department of Defense (DOD).⁵

Natick has also considered designing dual-purpose packaging to create more value for Soldiers. For example, an MRE package could be redesigned to be used as a sandbag, a field-expedient latrine, or a camouflage net case. Soldiers should be able to use almost every piece of material the Army sends them.

The improved packaging initiative should also extend to how the Army awards contracts to suppliers who are key partners in the supply chain. Contracts should be awarded only to suppliers who comply with efficient packaging standards, to include minimum required packaging, lighter packaging, dual-purpose packaging, and clean-burning packaging.

¹ Michael S. Lasky, "What wineries can learn about sustainability from Walmart," *Wine Business Monthly*, December 2011, www.winebusiness.com/wb-m/?go=getArticle&dataid=94994.

² John Kalkowski, "Walmart highlights sustainability efforts," *Packaging Digest*, March 4, 2012, www.packagingdigest.com/smart-packaging/walmart-highlights-sustainability-efforts.

³ Bill Dare (Freeport-McMoRan), personal interview, July 11, 2014.

⁴ "Sustainable Forward Operating Bases," Strategic Environmental Research and Development Program, May 21, 2010.

⁵ "MRE Packaging Factsheet," U.S. Army Natick Soldier Research, Development, and Engineering Center, provided by Dr. Jo Ann Ratto.

Packaging and Waste Reduction Initiatives



Smaller MRE Packaging



Dual-Purpose Packaging

An MRE package could be redesigned to be reused as a sandbag.

Figure 1. The Army Natick Soldier Systems Center has developed ideas for smaller, lighter packaging for meals ready-to-eat (MREs). The packaging could also be modified to be dual-purpose to create more value for Soldiers.

Strict contracting requirements would no doubt put American ingenuity to work in developing smart solutions to packaging challenges. The Army must recognize that suppliers are a critical part of the value stream in the supply chain.

Local and Renewable Resources

Freeport-McMoRan operates mines in remote areas of Central Africa. It has adopted methods of maximizing local and renewable resources in order to reduce its logistics resupply requirement, increase its operational effect, and maximize its profits. Methods employed by Freeport-McMoRan include digging wells, partnering to refurbish a hydroelectric plant, and providing equipment and training to create local sourcing options.

Each of these methods reduces the distribution resources required to sustain operations at remote sites, freeing up assets and money to sup-

port core operations.

The Army can drastically increase combat power while reducing support requirements by using local and renewable resources. The Army would save dollars in the supply chain, and every dollar saved in logistics is another dollar that can be spent on combat power.

When Freeport-McMoRan is in a remote area, its water requirements are similar to those of an Army forward operating base (FOB) in Afghanistan. Instead of shipping bottled water to the remote site, Freeport-McMoRan constructs a freshwater well, which supplies the site and the local village with fresh water.⁶

The tactical benefits of building a freshwater well are fourfold: It reduces the number of resupply convoys, frees up assets for combat missions, strengthens relationships with the local community, and increases the

funding available for combat power.

Reduce resupply convoys. In 2008, 20 percent of all materiel sent by convoy in Iraq and Afghanistan was related to water.⁷ Implementing a freshwater well to support a remote Army FOB would eliminate a significant number of resupply convoys.

Free up assets for combat missions. Resupply convoys operating in Iraq and Afghanistan often require Kiowa or Apache Helicopter air support. In 2007, the number of water convoys required was 3,725 (3,287 in Iraq and 438 in Afghanistan), which comes out to a little more than 10 convoys per day solely for water.⁸

Assuming two helicopters are required to escort one convoy, adequate air support requirements would be 20 attack helicopters per day. Reducing resupply convoy requirements by 10 or 20 percent would free up these valuable air assets for combat missions.

⁶ Bill Dare (Freeport-McMoRan).

⁷ "Sustain the Mission Project: Casualty Factors for Fuel and Water Resupply Convoys Final Technical Report," Army Environmental Policy Institute, Arlington, Virginia, September 2009, http://www.aepi.army.mil/docs/whatsnew/SMP_Casualty_Cost_Factors_Final1-09.pdf.

⁸ Ibid.

Strengthen relationships with the community. Establishing good relationships with the local population is critical to long-term security in any operation. Building a freshwater well that supplies water to the local village as well as the Army FOB would establish an enduring relationship. Funding could be established to pay the locals for the water at far less than the cost of transporting bottled water. This would strengthen the local economy, support counterinsurgency operations, and reduce logistics support requirements.

Increase combat power. Combat power is increased through a number of ways but especially through freeing up assets. Using local resources to provide water would lessen the requirement for support personnel on the FOB, which would allow for an increase in combat personnel and combat power.

Freeport-McMoRan requires essential buildings for their mines in central Africa to be made of brick.

Bricks are heavy and expensive to move.

Instead of transporting bricks into Africa, Freeport-McMoRan transported the equipment required to make bricks into the remote area and trained the locals how to make them. Freeport-McMoRan then purchased the bricks from the locals.

The Army also used this method in 2007 during Operation Iraqi Freedom. Cement barriers were needed in mass quantities to cordon off areas for the Iraqi presidential election. Transporting cement barriers into Iraq was not practical, so barriers were produced locally and then procured by the Army.

Procuring materials locally might also be more reliable. A 2011 report by the Government Accountability Office stated that the “DOD has not always met delivery standards and time lines for shipments to major logistics bases in Afghanistan ... due in large part to the various difficulties in transporting cargo on surface routes

through neighboring countries and inside Afghanistan.”⁹ (See figure 2.)

Waste in the Army supply chain negatively affects combat power by making Soldiers wait for or go without needed supplies or by causing a crippling buildup of inventory. Locally sourcing supplies, as Freeport-McMoRan does, would lessen the requirements of the Army supply system and improve the delivery time of supplies to the front line, increasing combat power.

When moving into a remote location, one of the first requirements is class IV (construction materials). Soldiers need it to improve fighting positions, establish areas to operate out of, and improve their foxholes. Class IV is bulky and heavy, and it requires several transportation assets to move.

The Army’s current solution when deploying to a remote area is to procure class IV at home station and transport the supplies to the forward location, moving it through every

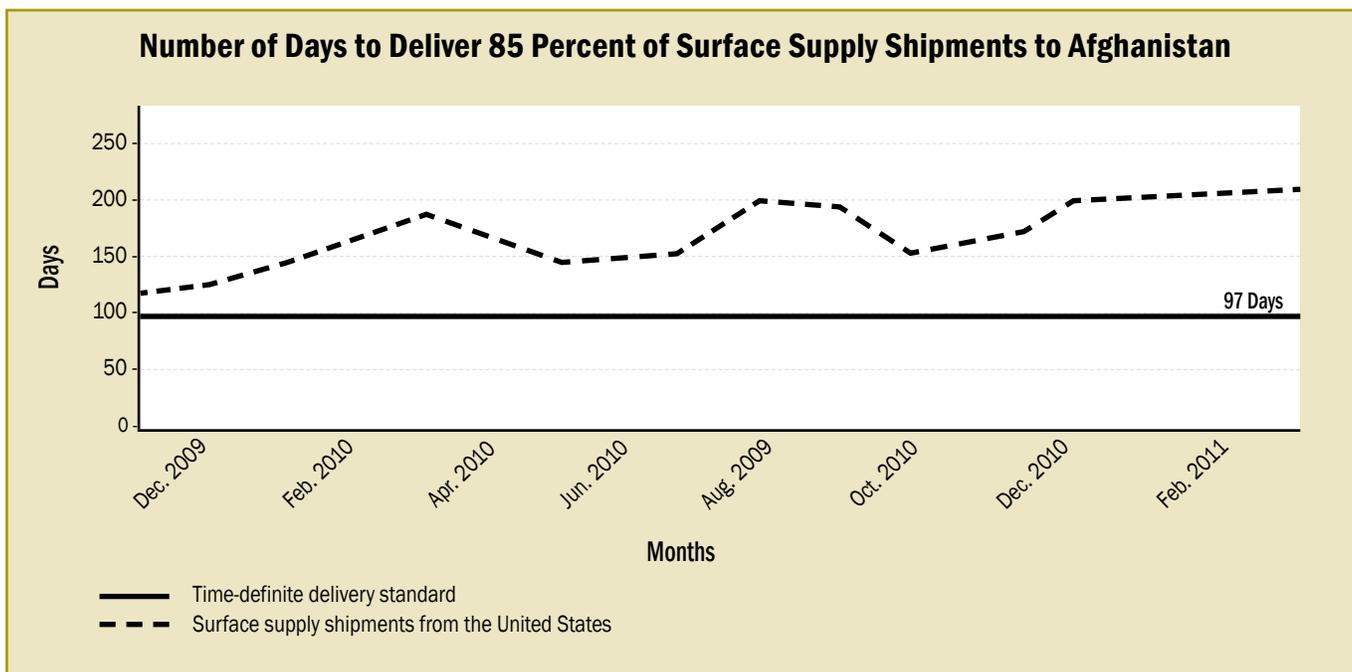


Figure 2. From December 2009 through March 2011, surface shipments of requisitioned supplies did not once meet the time-definite delivery standard that calls for 85 percent of shipments to arrive within 97 days of being ordered.

⁹ “Warfighter Support: DOD Has Made Progress, but Supply and Distribution Challenges Remain in Afghanistan,” Report to Congressional Addressees, Government Accountability Office, October 2011.

node along the way. This is expensive and time consuming, and it takes up valuable transportation assets that are needed for other critical items.

Locally procuring building materials would alleviate the requirement to ship class IV from the continental United States, increase the timeliness of arrival, and improve relations with the local population.

Regional Logistics Experts

Army logisticians face significant challenges in navigating cultural boundaries and bureaucratic processes while resupplying troops in the field. Civilian corporations face these challenges every day, but they have logistics experts working with government officials, learning the bureaucracy, and adjusting their systems to provide seamless support.

Combatant commands are charged with contingency planning, but commands often lack the continuity and resources required for a deep understanding of regional challenges. The Army requires a team of professionals dedicated to making contacts with local support options, navigating bureaucracy, and learning from partnerships.

Local support options can free logistics and combat assets by reducing transportation requirements. Contracting local support can provide a tactical advantage to maneuver commanders through the good will garnered from conducting business with the local populace.

Regional experts can provide insight for military commanders into the feasibility of procuring supplies locally. They can focus on initiatives similar to those of their civilian counterparts in the area. They can serve on the ground to develop partnerships

that will reduce the strain on the distribution network and free up scarce resources for combat power.

Cultural boundaries in the form of regulations, policy, and hostility are challenges to supporting remote locations. The reliability and consistency of shipments decrease with every border crossing. National borders are the most obvious challenges, but tribal and cultural boundaries also exist.

The regional experts can gain firsthand knowledge of each nation's requirements. They can understand the cultural landscape and calculate the impact on distribution networks throughout the region. The most efficient main supply route will often depend on the cultural landscape rather than distance and infrastructure.

It is not practical for the Army to conduct mock operations in remote locations to learn these lessons, but it is entirely feasible that a team of regional experts could partner with civilian corporations and agencies to gain invaluable insight before an operation.

The U.S. Agency for International Development funds an economic development project across Africa with the intent of reducing barriers to trade. The Trade Hub program understands how to move across borders, and it is actively campaigning to reduce border delays.

The East Africa Trade Hub program has reduced border crossing documentation by 10 percent, established main trade routes, and has an intimate knowledge of trade requirements.¹⁰ The Army should seek to benefit from this effort; regional experts would be the catalyst to ensure the information is shared.

Common Platforms and Parts

In 2011, the Ford Motor Company released news about its global initiative to reduce the number of platforms used for Ford vehicles from 15 to five. This "economies of scale" initiative led to cost savings in engineering time, parts and service, and tooling and machinery.¹¹

In 2014, Subaru announced the implementation of a new Subaru global platform for its vehicles. The initiative promises to cut unit costs by 20 percent by 2020 through "more efficient vehicle designs, standardized platforms, and leaner manufacturing processes."¹²

Freeport-McMoRan purchased 150 of its own cargo trucks to move supplies on the portion of its supply route where it experienced the most challenges and incurred the highest freight costs. The company wanted to handle the last tactical mile itself to reduce lead time, pilferage, and freight costs.¹³

The vendors wanted to sell the company three different brands of trucks. Freeport-McMoRan insisted on purchasing only one brand, and it procured 150 of the same trucks and 200 of the same trailers.

Purchasing the exact same trucks reduced the complexity of the supply chain of parts, the storage of parts and lubricants, operator training requirements, and mechanic training requirements. It also simplified communication with the manufacturer for maintenance expertise or warranty claims.

On the other hand, mine-resistant ambush-protected (MRAP) vehicles fielded in Iraq and Afghanistan consisted of different platforms with parts that were not interchangeable.¹⁴ The Army procured

¹⁰ "USAID East Africa Trade Hub Fact Sheet," U.S. Agency for International Development, Feb. 28, 2014, http://www.competeafrica.org/Files/EA_Trade_Hub_Fact_Sheet_December_2013_Trade_Africa.pdf.

¹¹ Mike Ramsey, "Ford SUV Marks New World Car Strategy," *The Wall Street Journal Online*, Nov. 16, 2011, <http://online.wsj.com/news/articles/SB10001424052970203503204577040343509436550>.

¹² Hans Greimel, "Subaru plans more U.S. capacity, unveils new technology," *Automotive News*, May 9, 2014, <http://www.autonews.com/article/20140509/OEM/140509810/subaru-plans-more-u-s-capacity-unveils-new-technology>.

¹³ Bill Dare (Freeport-McMoRan).

¹⁴ David Vergun, "JLTV testing begins, program on schedule, budget," Army News Service, September 5, 2013, www.army.mil/article/110710/JLTV_testing_begins_program_on_schedule_budget/.



A joint light tactical vehicle (JLTV) is driven on the Quantico Marine Corps Base, Virginia, test track. The Army has insisted on 90-percent commonality of parts for the JLTV family of vehicles. This is a step in the right direction, the authors note, but to go the whole way, the Army needs to create vehicles with common parts for the entire fleet. (Photo courtesy of Lockheed Martin)

the MRAP as a stopgap measure to combat the improvised explosive device threat, but the challenges placed on the Army supply system as a result of the low commonality of parts between variants of MRAPs should serve as a lesson for future vehicle procurement.

As the Army moves forward in procuring the newly designed joint light tactical vehicle (JLTV), using common platforms and common parts should be a high priority. The Army has wisely insisted on 90-percent commonality of parts for the JLTV family of vehicles. This is a tremendous step in the right direction for the Army; unfortunately, it is only halfway.

To go the whole way, the Army needs to source vehicles with common parts between families of vehicles. The goal should be commonality of parts within the entire fleet of Army vehicles, not just within the JLTV family. The road toward that level of commonality is long,

but the benefits would be worth it.

Tires, oil filters, mud flaps, light bulbs, belts, fans, and batteries can be shared across vehicle platforms. Picture having a light cargo truck, gun truck, and forklift that all share the same parts. Every vehicle has the same tires, same brake system, same lights, same battery, and same seat belt clips. This vehicle fleet would be ready for the most austere and logistically challenging locations on earth.

Common platforms, viewed from both the manufacturer's and end-user's perspectives, offer tremendous advantages. By embracing a more robust common platform initiative in the design and purchase of vehicles, the Army can reduce the logistics burden of parts, storage, transportation, operator training, mechanical expertise, and manufacturer support.

Logistics Communication Systems

In surveys conducted for this

study, both Army professionals and civilian agencies listed communication as the leading cause of logistics problems that occur while resupplying remote locations and during operations in general.

The Army is often inefficient in supply distribution because of a lack of simple communication platforms that can accurately forecast the needs of those on the front lines. These platforms include in-transit visibility (ITV), inventory management, and the collection of historical data.

ITV is designed to provide near-real-time status on the movement of materials from supplier to user. The DOD defines ITV as "the ability to track the identity, status, and location of DOD units, and nonunit cargo (excluding bulk petroleum, oils, and lubricants) and passengers; patients; and personal property from origin to consignee or destination across the range of military operations."¹⁵

¹⁵ Army Regulation 700-80, Army In-Transit Visibility, Oct. 24, 2008.

The Army uses this capability poorly; it does not adequately track the distribution of all classes of supply to remote locations. The Army's ITV scope and platform must be updated in order to become more efficient in resupply operations.

Providing decision-makers with effective ITV systems will allow for improved inventory manage-

Companies are also more successful when they use collaborative forecasting and foster relationships with their suppliers.¹⁸ Companies within the supply industry use vendors to manage inventory, sharing demand data with suppliers to enable better forecasting.¹⁹

The Army often hires the lowest bidder. This practice is not strategic

gade's maneuver battalions while in Mahmudiya, Iraq, in 2005.

The Army needs a simple, web-based, customizable system that collects historical data by location, unit, and class of supply. This data would be invaluable to forecasting the requirements of units in all locations, but especially in remote locations.

Keeping this data would also allow units to simulate demands in the supply chain during training events. These simulations would increase accuracy in forecasting and result in more efficient supply chains and, ultimately, an increase in combat power.

Civilian companies such as Caterpillar use a combination of methods to forecast. This global leader in mining equipment cited forecasting as its biggest competitive advantage.²⁰

The Army needs to move in the direction of civilian agencies and improve communication systems in order to capture and use data to improve the logistics network.

Power Generation

Freeport-McMoRan has instituted systems at its remote mining sites to turn waste into energy. These systems reduce the fuel requirement for base operations, save money, and reduce the strain on the distribution network.

They also provide the company with a responsible and safe manner in which to dispose of waste through the use of incinerators that cleanly burn used oil to produce energy.

The Army can adopt this method to reduce resource requirements at remote locations and improve combat power. In 2007, 50 percent of all Army convoys were dedicated to the transportation of fuel.²¹

Scanning capabilities that allow all classes of supply to be tracked to the point of consumption would significantly improve the Army's ability to manage inventory.

ment. The Army's current inventory management system is not synchronized in a manner that allows leaders at higher echelons to see the total logistics picture. According to a congressional report from the Government Accountability Office in 2012, the Army has \$8.4 billion worth of excess inventory.¹⁶

Walmart and Caterpillar use advanced scanning mechanisms to track items from supplier to point of sale in real time. Walmart cashiers update the company's elaborate tracking system simply by scanning items that customers purchase when they check out, also called the point of consumption.¹⁷

In order to better manage resupply missions and, ultimately, resupply to remote locations, the Army should conduct research and make efforts to embrace technology that supports superior ITV and inventory management. Scanning capabilities that allow all classes of supply to be tracked to the point of consumption would significantly improve the Army's ability to manage inventory.

in nature and does not add value to inventory management. Whenever possible (when not tactically, operationally, or strategically detrimental), the Army should have suppliers manage and maintain inventory; this will simplify the supply chain and shorten lead time on deliveries.

The lack of a simple, dependable, and accurate ITV platform combined with inadequate inventory management results in historical data being lost and underused in forecasting supply operations.

With respect to logistics, the Army collects data, uses the information momentarily, and then dumps it. The Army's scanning systems do not have the capability to archive historical data that could be accessed easily by leaders and logistics professionals several years in the future.

For example, it would be extremely difficult for the logistics officer in the 2nd Brigade Combat Team, 101st Airborne Division, to retrieve the number of tires or the amount of fuel distributed to one of the bri-

¹⁶ "Defense Inventory: Actions Underway to Implement Improvement Plan, but Steps Needed to Enhance Efforts," Report to Congressional Committees, Government Accountability Office, May 2012, <http://www.gao.gov/assets/600/590607.pdf>.

¹⁷ Todd Traub, "Wal-Mart Uses Technology to Become Supply Chain Leader," *Arkansas Business*, July 2, 2012, <http://www.arkansasbusiness.com/article/85508/wal-mart-used-technology-to-become-supply-chain-leader?page=all>.

¹⁸ C. Deloitte, personal interview, July 30, 2014.

¹⁹ Ibid.

²⁰ Paul R. Cusack (Caterpillar), personal interview, July 25, 2014.

²¹ "Sustain the Mission Project: Casualty Factors for Fuel and Water Resupply Convoys Final Technical Report."

Reducing the amount of fuel required to sustain operations would result in cost savings, a more efficient supply chain, increased asset utilization, increased operational flexibility, and increased combat power.

The Army has operated many combat outposts in Iraq and Afghanistan over the past decade-plus of war. These posts are located in remote areas next to small villages or town centers. Generators for operational power are mission-essential and are responsible for approximately 40 percent of remote base fuel consumption.²²

Given the small quarters inside the combat outpost, efficient waste management is critical to both the health of the Soldiers on the post and the relationship with the local population. Waste is collected into one location at these sites and is burned to keep the amount of waste under control, often with serious and lasting negative health consequences.²³

Implementing a modular waste-to-energy incinerator would offer the Army a solution to both of these issues. With this piece of equipment, the Army could provide energy to remote locations just by burning trash. And incinerators have been shown to produce fewer air particulates than open burn pits.²⁴

Implementing waste-to-energy incinerators at remote locations would not only reduce the sites' logistics requirements and increase their operational flexibility; it would also be safer for the Soldiers.

Another problem is how the Army has been using its generators. Currently, the Army relies on generators to supply energy for base operations on remote locations. However, the

Army is extremely inefficient in how it employs and operates these generators, and the consequences greatly hinder combat power.

At Camp Leatherneck, a remote base in Southern Afghanistan, "the 5 MW [megawatts] of demand is met by 19 MW of capacity, with 196 generators running at 30 percent capacity and consuming 15,431 gallons of fuel per day."²⁵

Operating generators at 30 percent capacity results in "wet stacking." Wet stacking occurs when a generator is run with a minimal load, which causes the generator to use fuel more quickly and burn oil. It causes unnecessary wear and tear on the equipment, leading to higher maintenance requirements.

Fluor, a major defense contractor, highlighted the wet stacking of generators as a major focus for how they are striving to improve remote logistics support. According to Fluor's research, running the required number of generators at an 80-percent load factor would save 2,000 fuel tankers per year to one FOB.²⁶

Simply running generators as they are designed to be run reduces the amount of fuel required, which reduces the number of convoys required, which improves combat power and saves lives.

If reducing the fuel requirements to a FOB is truly this simple, why is it not practiced more across the Army? The Army lacks the appropriate command emphasis and does not properly deploy knowledgeable Soldiers to enforce how generators should be operated.

The chairman of the Joint Chiefs of Staff, Gen. Martin Dempsey, recently stated that "our force will be

smaller, so it must be more agile, more lethal, and postured to project power wherever needed."²⁷ The path to achieve a more agile and lethal force capable of projecting power anywhere and anytime lies in creating logistics efficiencies.

The research conducted by the Maj. Gen. James Wright Program found six solutions to gain efficiencies in the supply chain. Through these efficiencies, the Army will be able to decrease waste, decrease delivery times, increase accuracy, increase asset utilization, and free up valuable funding that can be applied to increasing combat power.

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²² "Sustainable Forward Operating Bases."

²³ Harrison Jacobs, "The Military's Open-Air Burn Pits Have Left A Generation Of Troops With Health Problems," *Business Insider*, Nov. 5, 2013, <http://www.businessinsider.com/open-air-burn-pits-leave-troops-sickly-2013-11>.

²⁴ Jeff Schogol, "New incinerators to aid air quality in Kandahar," *Air Force Times*, Oct. 22, 2012, <http://www.airforcetimes.com/article/20121022/NEWS/210220302/New-incinerators-aid-air-quality-Kandahar>.

²⁵ "Sustainable Forward Operating Bases."

²⁶ David Vaughn and Tony Montalvo (Fluor), personal interview, July 28, 2014.

²⁷ Martin E. Dempsey, "The Bend of Power," *Foreign Policy*, July 25, 2014, http://www.foreignpolicy.com/articles/2014/07/25/the_bend_of_power_us_leadership_military_martin_dempsey.



TEA



A Soldier from the 114th Transportation Company, Minnesota Army National Guard, awaits transportation to Transit Center MK in Romania to redeploy to the United States from Afghanistan. (Photo by Sgt. Brandon Hubbard)

Setting a Theater: Establishing Transit Center MK

■ By Maj. Gen. Jack O'Connor and Maj. Craig A. Daniel

MI21

On the western shores of the Black Sea sits a bustling tourist resort, port complex, and one of Romania's largest and oldest cities, Constanta. Just 30 minutes inland, the tiny commune of Mihail Kogălniceanu houses the Department of Defense's sole operational passenger transit center, Transit Center Mihail Kogălniceanu.

Transit Center Manas (TCM), Kyrgyzstan, proved to be a reliable platform for force projection into Afghanistan for more than a decade. However, as 2013 approached and plans began to gain traction for an Afghanistan without the International Security Assistance Force, the ability to continue conducting force projection and retrograde operations at TCM was increasingly unclear.

Military planners, spanning multiple combatant commands, began the arduous task of planning retrograde operations around TCM and simultaneously sought a replacement location.

The site they identified for the new transit center is near the tiny commune of Mihail Kogălniceanu, Romania, about 15 miles inland from the Black Sea. In 2014, Transit Center Mihail Kogălniceanu (MK) became the Department of Defense's single operational passenger transit center.

The Road to Romania

Negotiations between the United States and Kyrgyzstan failed to extend the U.S. lease agreement at TCM beyond July 2014. Consequently, joint planning sessions involving the U.S. Central Command (CENTCOM), the U.S. European Command (EUCOM), and the U.S. Transportation Command (TRANSCOM) sought to transfer TCM's passenger transit mission to MK Air Base, Romania.

EUCOM began planning to support CENTCOM's termination of operations at TCM while ensuring the following:

- Uninterrupted support to forces in Afghanistan.
- Support for the planned drawdown of U.S. forces.
- Support for a continued U.S. presence in Afghanistan after 2014.

EUCOM's vision for the establishment of a strategic passenger transit movement hub at MK Air Base had to achieve the following:

- Support a timeline for transfer-

ring onward movement passenger transit operations from TCM.

- Support the concurrent deployment of the U.S. Marine Corps Black Sea Rotational Force.
- Remain expeditionary.
- Minimize an enduring large-scale footprint.

In October 2013, Secretary of Defense Chuck Hagel and the Romanian Minister of Defense Mircea Dușa established an agreement for Romania to support the movement of cargo and personnel into and out of Afghanistan. Romania's support to future operations at its MK Air Base signaled Romania's dedication to International Security Assistance Force operations in Afghanistan and commitment to its NATO allies.

Once Romania formally agreed to support personnel and cargo movements into and out of Afghanistan, EUCOM proceeded with plans to locate a passenger transit center at the Romanian air base. With an agreement in place between the United States and Romania, CENTCOM planners began to develop and execute a planned drawdown to conclude U.S. operations at TCM.

The formalized agreement enabled planners from TRANSCOM, EUCOM, U.S. Army Europe (USAREUR), and the 21st Theater Sustainment Command (TSC) to take the actions required to establish a passenger transit center in Romania. Less than 100 days after the formalized agreement was signed, the first aircraft transporting U.S. forces arrived at MK.

Setting Multiple Theaters

EUCOM rapidly designated USAREUR as its lead service component command for future operations at MK. USAREUR delegated the 21st TSC to provide mission command for passenger transit operations at MK. Ninety days before the first transiting passengers set foot in Romania, the 21st TSC began planning to execute this mission, focusing on strategic and operational



Soldiers unload from a C-17, operated by the Air Force's 780th Expeditionary Airlift Squadron, after a late night flight from Afghanistan into Mihail Kogălniceanu Air Base, Romania. The U.S. transit center at the base has become a major air transportation hub for movement in and out of Afghanistan. (Photo by Sgt. Brandon Hubbard)

sustainment management.

Team 21, which is the 21st TSC, all of its direct subordinate units and organizations, and its strategic and coalition partners, was chosen as the ideal unit to establish and operate EUCOM's new transit center. Team 21 was ideal because of the strategic sustainment focus and structure inherent in a TSC.

TSC Strategic Partners

As one of only three active duty TSCs, the 21st TSC provides the commanders of both EUCOM and USAREUR with a sustainment management capability not found in the structure of an expeditionary sustainment command (ESC), a sustainment brigade, or a combat sustainment support battalion.

During the initial stages of Transit

Center MK mission analysis, Team 21 integrated elements from the Army Materiel Command and the Defense Logistics Agency (DLA) into operational planning teams. Given a truncated timeline for planning and execution, Team 21 relied heavily on the functions and services provided by its national strategic partners.

Effective communication and direct coordination between Team 21 and its strategic partners proved paramount in the weeks leading up to Transit Center MK's initial operating capability. Strategic partners, including DLA Energy, DLA Distribution, and DLA Europe and Africa, the Army Materiel Command, the Expeditionary Contracting Command, TRANSCOM, and the Army Finance Command, exemplified the

eight principles of sustainment, most notably integration, anticipation, responsiveness, and improvisation.

Structure of the 21st TSC

Team 21's diverse composition of active duty and Army Reserve Soldiers, including those in its subordinate brigades, was vital in establishing Transit Center MK. The following organizations participated in the mission analysis:

- The 21st TSC.
- The 16th Sustainment Brigade.
- The 18th Engineer Brigade.
- The 18th Military Police Brigade.
- The 30th Medical Brigade.
- The 7th Civil Support Command.

The modularity of the TSC's structure allowed for tailorable force pack-



Spc. Francisco Ochoa, a carpentry and masonry specialist with the 902nd Engineer Company (Vertical), 15th Engineer Battalion, 18th Engineer Brigade, 21st Theater Sustainment Command, saws a wooden board during a construction project at Transit Center MK. (Photo by Staff Sgt. Warren W. Wright Jr.)

aging to support the requirements of planners and those units assigned to execute the mission. Immediately following the mission analysis process, the 21st TSC staff and units shifted their efforts to transform guidance into reality.

Joint and Multicomponent

The execution of the passenger transit mission at Transit Center MK is led by the 21st TSC and US-AREUR. However, the passenger transit center is actually a joint and multicomponent environment supplemented with NATO forces from the Romanian Air Force.

Elements from U.S. Air Forces in Europe (USAFE) and TRANSCOM work shoulder to shoulder with the 21st TSC. Romanian airmen and U.S. Navy personnel augment other aspects of support to

the passenger transit mission.

Because of operational requirements in Europe, not all capabilities required to operate and sustain this new transit center mission were available within the EUCOM area of responsibility. Through the request for forces process, members of Kansas and Illinois Army National Guard units integrated with active duty units from Fort Riley, Kansas; Fort Hood, Texas; Fort Bliss, Texas; Fort Bragg, North Carolina; Fort Campbell, Kentucky; Fort Leonard Wood, Missouri; and Joint Base Lewis-McChord, Washington, in support of the Transit Center MK mission.

Resourcing

When the 21st TSC received mission command of passenger transit operations at MK with less than

100 days until execution, the 409th Contracting Support Brigade, US-AREUR's expeditionary contracting capability, stepped in to initiate contracting support.

A variety of options were available to unit supply personnel and contracting officers supporting the establishment of Transit Center MK. Services and support under contract at the center now range from base life support activities to construction equipment rentals to ministerial religious support for transiting personnel.

Prior to the establishment of passenger transit operations at MK Air Base, the USAREUR support contract (USC-II), a preexisting support contract, was used at the air base to provide basic base operations and support services to Department of the Army civilians and a contingent of U.S. Marine Corps personnel ex-

ecuting Black Sea Rotational Force missions.

The USC-II was later used to provide modified base operations and support services for the transit terminal. KBR, Inc., the USC-II, provided expanded base operations and support services, which allowed the Team 21 partners from the 21st TSC, the U.S. Air Force, and Romanian Armed Forces to focus on establishing and refining the policies and procedures required to execute large scale and continuous passenger transit missions.

Regional Support Element

The 21st TSC Regional Support Element (RSE) is not a doctrinal organization. However, the RSE concept was adapted from Army Techniques Publication (ATP) 4-94, Theater Sustainment Command.

The concept of the theater RSE was modeled after the 2009 to 2012 U.S. Army Central support element found in Iraq and Afghanistan. Both U.S. Army Central and the 21st TSC provide their Army service component commands with a small capability to handle Army U.S. Code Title 10 support at a forward location.

As stated in ATP 4-94, the TSC headquarters may operate from outside an area of responsibility and may employ an ESC to provide forward mission command within an area of operations, or the TSC may echelon forward an early-entry command post. Lacking the capabilities associated with an organically assigned ESC, Team 21 applied the RSE concept at Transit Center MK in an effort to overcome forward mission command issues.

The strategic importance associated with establishing and operating a transit center led to the designation of a colonel from the 21st TSC headquarters as the RSE officer-in-charge. The political and military environment and frequent interaction with host-nation military and governmental members also required the senior leader pres-

ence and leadership at MK Air Base.

An accompanying support team of seven personnel (specializing in communications, operations, law, and contracting) with an ability to be flexible in size and composition based on mission requirements served as the nucleus of operations for the 21st TSC forward at Transit Center MK. The RSE integrated the activities of various organizations and elements (Army, Air Force, Marine Corps, Navy, and other governmental agencies) across MK Air Base.

The RSE remains the 21st TSC commanding general's eyes and ears forward; it is the face of Team 21 and demonstrates the command's commitment to Romania and to mission success at Transit Center MK. Additionally, the RSE can reach directly back to the 21st TSC headquarters and staff in Germany, to receive support from a national strategic partner sustainment network.

Host-Nation Support

Most of the European theater allows the United States to leverage existing infrastructure and support facilities and establish formal support agreements with host-nation governments. During the establishment and execution of passenger transit operations at Transit Center MK, the Romanian government continuously demonstrated its strong alliance with

reduced the U.S. logistics footprint in Romania. For transiting service members, Romania provided buses for personnel transportation, cargo trucks to transport baggage, and several preexisting Romanian facilities for processing personnel.

The forward presence of the 21st TSC in Europe allows Team 21 to set multiple theaters in support of multiple combatant commands. The maturity of the environment in which the TSC operates, coupled with strong host-nation relationships and agreements, further allows Team 21 to support enduring USAREUR objectives in the region, including the following:

- Strengthening relationships with NATO, allies, and partners.
- Ensuring interoperability with NATO and allies.
- Enhancing partner capacity.
- Ensuring strategic access.

Lessons Learned

Passenger transit operations are now being fully executed at Transit Center MK. At the time this article was written, more than 90,000 bidirectional passengers had processed through it. Several key lessons were learned from establishing a strategic-level operation on a compressed timeline.

The RSE concept works. The RSE is not an early-entry command post

The RSE remains the 21st TSC commanding general's eyes and ears forward; it is the face of Team 21 and demonstrates the command's commitment to Romania and to mission success at Transit Center MK.

the United States and its NATO partners.

The Romanian government modified preexisting acquisition and cross-service agreements and inter-service support agreements through a series of political and military negotiations. The robust logistics support provided by the Romanian Air Force at MK Air Base significantly

or a liaison officer. The RSE is the commanding general's on-site integrator and serves as the nucleus for all passenger transit operations. It serves as a single point of entry and exit for information and action flow back to the command.

The RSE allows the headquarters to free up the commander of the Army service component command

Spc. Jason Burns and Pvt. Keiffer Martin of 3rd Platoon, 902nd Engineer Company (Vertical), 15th Engineer Battalion, 18th Engineer Brigade, 21st Theater Sustainment Command, place girders to support a "pole barn" roof system during the early stages of construction of Transit Center MK in Romania. (Photo by 1st Lt. Jonathan Kasprisin)



to focus on immediate operational requirements.

Although the RSE remains a non-doctrinal term and concept, the 21st TSC's has adopted the practice of creating and establishing an RSE for distant missions, allowing the commanding general to increase his span of control and mission command functions. Location matters, and there is no substitute for leadership presence as far forward as possible.

With no set organization for personnel, the RSE is tailored to fit mission requirements and its composition can be rapidly increased or decreased based on present and projected events.

Mission command versus command and control. Mission command is an Army command philosophy and a warfighting function. The joint community recognizes "command and control" and "command relationships," but the term mission command is just that—a term. The goal among the services is the same: a defined and functional command and support relationship structure, but the terminology and techniques to reach this goal may vary.

The principles of mission command defined in Army Doctrine Publication 6-0, Mission Command, remained at the forefront of planning cells and those principles continue to thrive today during the execution of passenger transit operations.

Although the Air Force implements "command relationships" and the Army implements "mission command," the importance of building cohesive teams through mutual trust, creating shared understanding, exercising disciplined initiative, and accepting prudent risk are principles that transcend the color and pattern of a uniform.

The establishment of Transit Center MK reinforced the importance of defining both mission command and support roles and relationships. Having three combatant commanders involved adds to the complexity of the command and control structure.

Request for forces units and the mobilization of Reserve personnel from across the United States also adds to the complexity. Actively capturing all involved individuals and organizations and clearly defining relationships is crucial.

Host-nation support. The relationships built with Romanian personnel (civilian, military, embassy, and

ship in the 21st century. Included in this document is the idea the "Army provides decisive landpower through a credible, robust capacity to win and the depth and resilience to support combatant commanders across the range of military operations in the homeland and abroad."

By shaping its operational environment, Team 21 has provided a

By shaping its operational environment, Team 21 has provided a sustained presence, demonstrating enduring U.S. commitment to its allies and partners.

customs) exceeded all expectations; Romanian agencies sought to provide 24-hour-a-day support to the U.S. forces-led passenger transit mission. Members of the Romanian Air Force were involved in all phases of planning and assisted in streamlining processes designed to expedite passenger throughput.

Relationships matter, and a single word can have strategic impact. In accordance with Joint Publication 3-17, Air Mobility Operations, USAFE designated an Air Force colonel to serve as the senior airfield authority between the U.S. forces operating on the Romanian air base and civilian officials operating a commercial civilian airport with co-located facilities.

On the ground, the senior airfield authority quickly adapted to his environment and shifted his title from "authority" to "adviser" because he had no true authority over a civilian airport and he understood the negative connotation authority might have with his Romanian counterparts. The subtle shift in titles was applauded by both Romanian military and civilian airport officials.

Training and Doctrine Command Pamphlet 525-3-0, The U.S. Army Capstone Concept, addresses some of the challenges the Army faces in an effort to sustain U.S. global leader-

sustained presence, demonstrating enduring U.S. commitment to its allies and partners. It has built partners and capacity with its host nation. And it has set a theater of operations for major contingencies, providing multiple combatant commanders with the ability to seize initiative and rapidly deploy in order to win the nation's wars.

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EST Sustaining



Paratroopers from the 3rd Brigade Combat Team, 82nd Airborne Division, conduct rehearsals at Dara Lam Airfield during a Joint Readiness Training Center rotation in August 2013. (Photo by Sgt. 1st Class Allan N. Baros)

■ By Capt. Luke P. High

Reconnaissance

An airborne reconnaissance forward support troop successfully sustained its reconnaissance squadron throughout a forcible entry operation at the Joint Readiness Training Center.

Within the 82nd Airborne Division, the 3rd Brigade Combat Team (BCT) is assigned the Global Response Force mission to conduct forcible entry operations. During forcible entry operations, the 3rd BCT's 5th Squadron, 73rd Cavalry Regiment, is responsible for several specific tasks that include clearing the flight landing strip (FLS).

The main tasks of this operation are conducting reconnaissance and screening operations in the security zone surrounding the airhead. These actions provide early warning and prevention of an enemy attack on the airhead by finding, fixing, and destroying the enemy.

A forcible entry operation has several conditions-based phases. Phase one consists of notification, alert, planning, and outload. Phase two consists of the forcible entry operation that includes seizing an airfield. The sequencing of phases three and four depends on the situation and mission but includes offensive and defensive operations.

At a Joint Operations Readiness Center (JRTC) rotation, the 5th Squadron's reconnaissance forward support troop (FST) practiced sustaining all phases of the 3rd BCT's forcible entry operation.

Planning

The planning and preparation of sustainment operations during phase one set the conditions for success for the 5th Squadron's operation at JRTC. Sustaining the squadron involved supporting two dismounted reconnaissance troops, two mounted reconnaissance troops, a headquarters and headquarters troop, and the FST for all phases of the defense.

Understanding the mission of each troop and its sustainment needs is critical to planning sustainment for any operation. Without tactical competence and situational understanding, sustaining such a complex force would be extremely difficult, especially when the sustainment element is separated from the maneuver ele-

ment by a significant distance.

Phase two, the airborne assault, was initiated by the first parachutist exiting the aircraft. It continued through the clearing of the FLS and establishment of the arrival/departure airfield control group. The unit prepared to receive air landings and facilitated the reception, staging, onward movement, and integration of the BCT's combat power. The only elements on the ground from the 5th Squadron at that time were the assault command post (ACP) and the two dismounted reconnaissance troops.

Sustaining the Seizure

How do you sustain units when you are not on the ground with them? This is where the planning in phase one paid off. The brigade support battalion (BSB) heavy dropped the forward area refueling equipment and the forward area water point supply system. The BSB also dropped numerous containerized delivery system bundles of meals ready-to-eat (MREs), water, and ammunition to sustain the BCT for the first 48 hours.

The ACP consisted of several humvees that were heavy dropped during initial entry. These trucks carried the sustainment assets, including MREs, fuel jugs, water jugs, and ammunition, to sustain the personnel on the ground for 48 hours and offer redundancy in the sustainment options.

Additionally, one of the dismounted reconnaissance troops (C Troop) jumped into the operation with only assault packs, which allowed them to rapidly clear the FLS without being bogged down by modular lightweight load-carrying equipment (MOLLE) backpacks. However, they needed their MOLLEs as soon as possible after the clearing the FLS in order to facilitate their movement off of the airhead and into the security zone.

There were two options for getting the MOLLEs into the operation once the FLS was secured. One was to sling load the equipment in from the intermediate staging base (ISB), where all non-airborne assault per-

sonnel were located. The second option was to make them a secondary load on a vehicle being air-landed as a part of the BCT's prioritized vehicle listing.

Both options carried risk. Rotary-wing aircraft could get shot down by enemy forces, weather could affect flight times, equipment could become frustrated at the ISB, situations at the airfield could cause the prioritized vehicle listing to get shifted, or aircraft could go down for maintenance issues. The FST decided to sling load the MOLLEs.

The FST developed an aerial delivery team to stay at the ISB to conduct aerial delivery operations into the airhead. This aerial delivery team also conducted all sustainment operations for the other dismounted reconnaissance troop (E Troop).

E Troop was sustained through the use of speedballs. Speedballs are prepackaged mission configured loads containing anything that can be kicked out of a rotary-wing aircraft and survive a drop of approximately 30 feet. The FST commander and aviation battalion S-3 planned for a speedball sustainment mission every 48 hours at predetermined grid coordinates.

The FST made the speedballs by placing supplies in body bags, which are durable, weather resistant, large, and tactically colored. Water was packaged in collapsible 5-gallon water jugs that were mass purchased before the operation. The water jugs were duct taped at the spout and around the entire jug and placed in an empty MRE box that was also taped.

Ice was prepackaged in a commercially purchased thermal bag. The bag was filled to maximum capacity with up to 8 pounds of ice and taped with one turn of duct tape around the bag.

Each body bag contained 144 individual, field stripped MREs. Small-arms ammunition was placed in the body bags as well. It was left in the crates and cans and belly banded with CGU-1B tie down straps. Empty MRE boxes were crushed and used as padding to line the inside of the

body bag for extra protection. Medical supplies, batteries, small-arms repair parts, and any other equipment that could fit in a body bag were also included in a speedball if needed.

The FST also planned and was prepared to sling load several tons of class IV (construction materials) on palletized loading system (PLS) flat

taining themselves internally for 48 hours. The FST had a secondary load capable of sustaining the entire squadron for an additional 24 hours, which gave the squadron a total of 72 hours of sustainment.

Providing sustainment throughout the defense was challenging because the squadron was dispersed several



Paratroopers conduct a night raid during their brigade's August 2013 Joint Readiness Training Center rotation. (Photo by Sgt. 1st Class Allan N. Baros)

racks to facilitate the defense. The class IV materials would be received by air landing. However, the FST never needed to execute this mission.

Sustaining the Defense

Phase three consisted of establishing the defense. It conditionally ended after the enemy's main attack. Key tasks for the squadron and brigade during this phase were the reception of combat power through the arrival/departure airfield control group, expanding the lodgment, and establishing the screen line.

During this phase, the remainder of the squadron entered the BCT's area of operations (AO). This element consisted of the two mounted reconnaissance troops (A and B Troops), the remainder of the headquarters and headquarters troop that was not a part of the ACP, and the FST. Each of these units was rigged with secondary loads capable of sus-

taining themselves internally for 48 kilometers throughout the BCT's AO. Because of the dispersion, communication was one of the squadron's biggest challenges.

Radio communications could not provide the platform needed for logistics status reports, so the FST relied solely on the Blue Force Tracking system or relays from closer units. Both methods were extremely unreliable because of the enemy's capability to jam, block, or intercept the transmissions. So, the FST had to have the foresight to plan and calculate what the troops needed on a daily basis.

Tactical convoy operations (TCOs) were conducted every 24 hours to logistics release points (LRPs). Deliveries were staggered so that each troop received sustainment every 48 hours.

During these TCOs, the FST did not use any large sustainment assets, such as a PLS, heavy expanded mo-



bility tactical truck (HEMTT), load handling system, or compatible water tank rack system (HIPPO). The FST strictly exchanged fuel and water cans or water buffaloes.

Another challenge during phase three was sustaining C Troop. C Troop was the farthest forward troop for the BCT in the security zone and hidden from the enemy in hide sites.

In order to facilitate C Troop's sustainment, C Troop's supply representatives were co-located with the FST in the brigade support area (BSA). The supply representatives prepackaged what C Troop needed daily based on information from logistics status reports.

Their sustainment worked much like E Troop's, but it was conducted

by ground instead of air. Supplies were prepackaged in speedball configuration as well. The difference was that C Troop's speedballs were labeled and delivered by squad or team. They were delivered to the A or B Troop LRPs or troop trains for the respective C Troop squads or teams that operated forward of their AO.

Two methods were used to get these speedballs forward of the troop trains to the C Troop paratroopers. One option was to have the C Troop first sergeant use a Gator vehicle and deliver them himself in the vicinity of his troops without having them compromised. The other option was that the troop first sergeant of the AO that the C Troop team members were operating in would conduct the

same operation. They could also be conducted simultaneously.

The squadron S-1 and S-4 were co-located with the FST in the BSA. This enabled the squadron S-4 to interact directly with the FST commander, the BCT support operations officer, and the BCT S-4, who were all located in the BSA. This allowed for more effective communication, processing, and throughput of information and commodities.

The S-1 could track casualties moving in and out of the BSA because the brigade medical company was also located in the BSA. The brigade personnel reception area was also located there, which enabled the S-1 to track and move personnel into the AO by TCO.

Paratroopers with the 3rd Brigade Combat Team, 82nd Airborne Division, prepare to board a C-17 Globemaster III aircraft in August 2013. They would later jump into Fort Polk, Louisiana, and start a month-long exercise at the Joint Readiness Training Center. (Photo by Sgt. 1st Class Allan N. Baros)



Sustaining the Offense

Phase four of the operation, the offense, was even more complex than phase three. The squadron was task organized with two M1A2 Abrams platoons, two Stryker platoons, and a Bradley platoon, which is a lot of armor. An airborne reconnaissance FST is not equipped to sustain these assets.

The mission of the BCT and squadron was to attack an objective that was tens of kilometers from the airhead, and the time frame for movement was nearly 48 hours.

The biggest concern was fuel. Internally, the FST could provide 4,600 gallons of jet fuel, but the daily requirement for fuel with the additional armor assets was nearly triple the

FST's fuel storage capacity.

To support these units with the remainder of the squadron so far forward during the attack, the FST established the combat trains and combat trains command post (CTCP).

Through direct work with the support operations officer, the FST resourced four additional fuelers, bringing the capacity to 13,800 gallons. It also planned resupply operations from the BSB every 24 hours at designated LRPs, contingent on the speed of the attack.

The CTCP comprised four M1152 gun trucks, six M978 fuelers, five M1083 cargo trucks (two for chemical decontamination, one for fuel jugs, one for water jugs, and one for

small-arms ammunition), a load handling system for tank munitions with an M1076 PLS trailer and HIP-PO, an M984 HEMTT wrecker, an M997 field litter ambulance, and five M1151 enhanced armament carrier humvees.

The combat trains and CTCP moved directly behind the main assault as the routes were cleared by the two mounted troops. The plan was to establish the CTCP approximately two kilometers or two terrain features from the main objective to avoid sight, smell, and sound detection. A refuel on-the-move was planned for midway between the line of departure for the attack and the main objective.

Incorporating these assets in the CTCP created flexibility, efficiency, and the ability to sustain the squadron and its enablers through a complex operation several kilometers from the airhead where the rest of the sustainment capabilities remained. It was critical for the CTCP to be composed in this fashion in order to rely less on resupply from the BSB for all classes of supply other than fuel. This enabled the squadron to be self-sustaining for more than 72 hours.

There are many ways to sustain a maneuvering element; every situation will be different and will present its own challenges and complexities. The keys to a successful sustainment operation are detailed analysis, planning, foresight, flexibility, adaptability, and teamwork. Regardless of what situation you find yourself in, remember those principles, leverage your leaders and subordinates, and you will succeed.

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An instructor provides input to ORSA-MAC students as they prepare their final analysis and briefing during the capstone project. (Photo by Adam Gramarossa)

Logistics and Analysis

■ By Maj. William T. Smith

Appreciating great analysis is much like enjoying a meal from a fine restaurant. We order from a menu and anticipate the outcome when simple ingredients are put into the hands of an expert chef. When the meal arrives, we judge its value commensurate with our expectations. Despite recognizing the ingredients and even which tools were likely used by the chef, we would be hard pressed to reproduce the process that led to the result laid out before us.

This is similar to the military logistics community today. We have data and know great analysis when we see it, but we are often unable to find analysts who are capable of evaluating the data in a manner that would benefit logicians.

A naive approach would be to rely

on software to churn through data and provide results. However, if the user is unfamiliar with various analytic methodologies, he may be faced with the old adage of garbage in, garbage out. For this reason, the Army logistics community would benefit from officers trained in the core competencies of analysis.

ORSA-MAC

The Army Logistics University offers a course dedicated to the mathematics and art of analysis. The Operations Research/Systems Analysis-Military Applications Course (ORSA-MAC) is designed primarily for officers and civilians entering the military ORSA community. Currently, most Army officers attend as they transfer to functional area (FA) 49 (ORSA). However, other Army officers may

attend, earning the ORSA additional skill identifier 4B upon completion of the 14-week course.

Students first complete a four-week refresher on calculus, statistics, probability, and data analysis. The students then advance to graduate-level study in linear statistical modeling, simulation, mathematical modeling, cost analysis, and other topics for the remaining 10 weeks.

Logistics officers attending this course leave with a better understanding of what data is important, which questions can be answered, and how to present that analysis to decision-makers in a way that is easily understood.

Finding Qualified Candidates

ORSA-MAC students must have knowledge of calculus and a mathe-

mathematical acumen to successfully complete the course. So, given that we have data and a course to inculcate officers in data analysis, how do we ensure we have logistics officers with the right skill set to qualify for the course?

Finding a multifunctional logistics officer (FA 90) with an undergraduate or graduate degree in mathematics may be difficult. However, most degrees in business administration cover the basic mathematics required for ORSA-MAC. A degree in a technical field is not a prerequisite for the course.

The Army should attempt to commission more logistics officers with the ORSA prerequisite skill set, identify them for possible ORSA-MAC attendance after company command, and create an environment that recognizes them for their willingness to learn about analysis. This would provide the Army with more logistics officers who are equipped with the skills to do front-end analysis and the knowledge to effectively engage the ORSA community when necessary.

Why Take ORSA-MAC?

In ORSA-MAC, logistics officers learn several disciplines applicable to supply concerns. One such subject, mathematical modeling, teaches students to deconstruct larger problems into key components that are linked to a desired outcome. Once the problem is deconstructed, students learn how to optimize the problem based on various constraints to achieve a desired maximum or minimum or a defined goal, such as which route maximizes throughput along a given road network.

Linear statistical modeling, another subject taught in ORSA-MAC, provides the tools of regression and variance, which allow analysts to forecast requirements based on historical data. Students learn how to model using simulation to create systems based on observed behavior. Using simulation, changes to established systems, such as supply net-

works, can be investigated without disrupting operations.

Decision analysis teaches students how to map out decision trees, weigh attributes, and explore trade spaces in ways more useful and insightful than the decision matrix often used in the military decision-making process.

One area that would benefit from analysis is consumption rates. Given situation-specific data, an analyst could develop custom statistical models using regression to determine how much of a commodity is required given various inputs, such as the number of troops, number of vehicles, and type of mission, that might contribute to the rate. Such a model could be developed and maintained for every forward operating base, combat outpost, or unit on the battlefield.

Logistics convoys also could benefit from analysis. Mathematical optimization can assist with scheduling while minimizing route distances and man-hours. Decision analysis, along with other disciplines, can assist in determining whether to use contractors or military convoys to deliver commodities.

Simulations could be used to model an established system of distribution and gain insights as changes are applied to the model. Skills that students learn in ORSA-MAC could also help route logistics convoys in such a manner as to minimize exposure to high-risk areas while identifying random paths during continuous operations.

Enterprise Resource Planning

The biggest benefit of developing a body of logisticians with a capacity for analytics will be fully realized with the enterprise resource planning initiative. A single repository for data that is well-structured, current, and comprehensive across all classes of supply and services would be a treasure trove for analysis. Since the Global Combat Support System-Army is built on an SAP infrastructure, it would be relatively

easy to leverage other SAP products to conduct analysis on real-time and historical data.

Network analysis could be used to uncover which supply chains are historically congested and assist with re-routing future demand. Maintenance work-order times for similar repairs can be compared across the Army to discover if one unit is faster than others, thus leading to insights on best practices.

Comparisons among like units before and immediately following initial deployment could be scrutinized to see if excess supplies are being ordered. The questions that can be asked of the data are endless, but the knowledge to make use of these opportunities is in short supply within our ranks.

Simply trying to adopt best practices from civilian enterprises and systems is not enough. The Army's problems are unique. Using the latest analytical software package does not provide insight; an experienced analyst must build the model before running the numbers. ORSA-MAC provides students with the opportunity to become proficient at these tasks.

Although learning the disciplines of analysis is not easy, the Army must develop logisticians who can ask the right questions, seek the right data, apply the right techniques, and present insights in a manner that can be understood by all.

Maj. William T. Smith is an operations research and systems analysis instructor at the Army Logistics University at Fort Lee, Virginia. He holds a bachelor's degree from Cameron University and a master's degree from the Naval Postgraduate School, both in mathematics. He is a graduate of the Ordnance Officer Basic Course, Combined Logistics Captains Career Course, Combined Arms and Services Staff School, the Defense Language Institute's Russian Basic Course, and the FA 49 Qualification Course.

An Introduction to Uniformed Operations Research

Operations research/systems analysts bring mathematics and computer modeling to decision-making in order to provide commanders with the best available information and improve the success rate of implemented decisions.

■ By Maj. James R. Henry and Maj. William T. Smith

In his article, “Leveraging Information for a Competitive Advantage,” in the May–June 2014 issue of *Army Sustainment*, Col. Jeffery C. Powell argued that “the Army must hire, train, and organize a professional cadre of analysts who will be charged with providing decision-makers with timely and relevant information.”

According to Department of the Army Pamphlet 600–3, Commissioned Officer Professional Development and Career Management, the Army’s operations research/systems analysis (ORSA) functional area (FA) 49 “provides uniquely skilled officers that assist decision makers in solving complex problems by producing the analysis and logical reasoning necessary to inform and underpin those critical decisions.”

The pamphlet goes on to say that, much like analysts in the private sector, “ORSAs introduce quantitative and qualitative analysis to the military decisionmaking process by developing and applying probability models, statistical inference, simulations, optimization and economic models” from the division through Department of Defense levels. This article will discuss the initial transition, education, and operational use of uniformed ORSAs within the Army.

Becoming an ORSA

ORSAs are former maneuver, combat support, and sustainment officers who have transitioned into FA 49 after completing sufficient time in key

development positions at the rank of captain. In the absence of a functional designation board, captains and majors interested in entering FA 49 need to look for open Voluntary Transfer Incentive Program windows and apply.

Officers who apply should be high performers, have a solid mathematics background, and be comfortable working at higher levels within the Army. With fewer than 450 authorized slots within the force, ORSAs comprise a small population, making the application process competitive.

ORSA Education

After being designated FA 49, officers are provided with a fundamental education in the methodologies associated with operations research. Some officers attend graduate school and obtain master’s degrees in approved disciplines, such as operations research, systems engineering, or applied mathematics. Many FA 49 positions are coded for either a master’s degree or a doctorate degree; approximately 80 percent of FA 49 majors hold a degree higher than a bachelor’s.

Operations research and systems engineering are complex skills; therefore, all new ORSAs will receive initial training either through the Advanced Civil Schooling program or the Army Logistics University (ALU) at Fort Lee, Virginia. If officers are not initially selected to attend Advanced Civil Schooling, they

have the opportunity to attend after subsequent assignments.

Many ORSAs receive their initial education at ALU through the ORSA Military Applications Course (ORSA–MAC). ORSA–MAC is a 14-week course designed to provide military and civilian students with the basic skills required of an ORSA. The first four weeks of ORSA–MAC ensure each student has a strong understanding of calculus, data analysis, statistics, and probability. With that mathematical foundation in place, students move on to more advanced subjects.

The second phase of ORSA–MAC exposes students to cost analysis, mathematical modeling, linear statistical modeling, simulation, and decision analysis. Students are also required to demonstrate competency in communicating analytics to decision-makers.

Cost analysis techniques include cost benefit analysis, inflation adjustments, and net present values. Mathematical modeling allows the analyst to explore optimization or utilization of resources, such as maximizing productivity while minimizing cost.

Linear statistical modeling examines variability in data through regression and analysis of variance. An example would be to determine if one vehicle gets significantly more miles per gallon and, if so, ascertain what contributes to the difference. Simulation allows analysts to build models conforming to observed be-

havior and gain insights from changes in the model.

Decision analysis methodologies allow analysts to address risk and competing priorities when leaders are faced with alternative courses of action. Practical application is gained during combat modeling lessons, ORSA studies, and a final capstone exercise that exposes students to the studies process.

Upon graduation from ORSA-MAC, students are generally assigned to organizations with many FA 49 positions, where they can learn from more seasoned officers and civilians. They are expected to continue their education in the specific tools used to perform their duties.

Army officers return to ALU several years later to receive additional education through the FA 49 Qualification Course. They enroll in that course after completing the Command and General Staff Officer Course (formerly known as Intermediate Level Education) and at least one FA 49 assignment.

During the six-week FA 49 Qualification Course, ORSAs learn more about how the Army runs and how FA 49 officers aid the process. They explore the roles of FA 49s in the operating and generating forces, in the Department of the Army, in joint environments, and on the Office of the Secretary of Defense (OSD) staff. Students learn about strategic thinking and the various problem solving methods that their future bosses learn at the Army War College.

FA 49 officers come together from across the Army and learn from one another during class interaction, practical exercises, and a real-world capstone project. Recent projects came from the Army G-3/5/7, the Army G-8, the Army Marketing and Research Group, and the Combined Arms Support Command.

What ORSAs Do

ORSAs can be found throughout the Army, from division headquarters to the OSD staff and commander's initiative groups. ORSAs often pro-

vide insight into problems that are found at the highest levels within the Army. Those problems currently include the following topics:

- Identifying trends in enemy data for theater commanders.
- Predicting the next large-scale cyber attack.
- Recommending the best affordable mix of unmanned aerial vehicles through 2030.
- Examining options to integrate women into combat arms.
- Recommending the best alternative for the joint light tactical vehicle.

Although other branches or functional areas can accomplish some of these tasks, ORSAs bring mathematics and computer modeling to the decision-making process. Col. Powell wrote in his article that the private sector uses "data analytics to shorten decision cycles, make decisions with the best available information, and improve the success rate of implemented decisions," and the Army does that, too.

Operating force. In the operating force, an FA 49 officer serves on a division, corps, Army service component command, or geographic and functional combatant command staff as a commander's lead data analyst and mathematician. ORSAs often help develop a unit's assessment plan and track its progress toward success.

Generating force. In the generating force, ORSAs help shape the Army of tomorrow by providing information for decisions on acquisition, accession, and force design. ORSAs support the efforts of organizations such as the Army Capabilities Integration Center and the Training and Doctrine Command Analysis Centers. The Army Human Resources Command uses ORSAs to forecast requirements for accessions, promotions, and retention. Generating force assignments for ORSAs also include the United States Military Academy, the centers of excellence, ALU, and the Training and Doctrine Command.

Army, joint, and OSD staffs. Because FA 49 officers support senior leaders, it follows that they fill critical billets within Army, joint, and OSD staffs. Serving within the G-1, G-3/5/7, and G-8, ORSAs support program objective memorandum, force design, and planning, programming, budgeting, and execution processes. ORSAs also fill joint billets within the Joint Chiefs of Staff, various OSD organizations, and select NATO assignments.

Few can argue the need for analysts within the Army. In fact, as Col. Powell's article emphasized, the Army's need for ORSAs has increased. FA 49 officers serve across the force, but more organizations could benefit from the mathematical and data analyses that these professionals provide to senior decision-makers. Search out the ORSAs within your organization and leverage their quantitative and qualitative analysis skills to strengthen decisions with mathematical rigor.

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Maj. William T. Smith is an operations research/systems analysis instructor at the Army Logistics University. He holds a bachelor's degree in mathematics from Cameron University and a master's degree in mathematics from the Naval Postgraduate School. He is a graduate of the Ordnance Officer Basic Course, the Combined Logistics Captains Career Course, the Combined Arms and Services Staff School, the Defense Language Institute's Russian Basic Course, and the Functional Area 49 Qualification Course.



The Army Financial Management School at the Soldier Support Institute is teaming up with the University of South Carolina's Darla Moore School of Business to offer two new graduate courses.

Partnering to Provide Finance Leaders Essential Training

■ By Capt. Brandon S. Broadus

The University of South Carolina's Darla Moore School of Business has grown into a thriving center for academic excellence. For this reason, the Army Financial Management School (FMS) is collaborating with the business school to train financial management (FM) leaders in Systems, Applications, Products (SAP) software, business analytics, and cost management.

This partnership allows the FMS

to leverage the business school's seasoned professors of accounting and enterprise resource planning (ERP) systems. These professors provide first-rate instruction in a high-demand area through two courses: the SAP Training in ERP Certification Course (SAP TERP10) and Business Analytics.

Why Now?

The Army realizes that ERP and

business intelligence (BI) systems are extremely important for its daily activities. Information flow is and should be constant. But with a never-ending flow of information, Army organizations can become bogged down with data.

The SAP TERP10 and Business Analytics courses teach students how to manipulate data into meaningful information that leaders can use. BI systems enable financial

managers to represent data analysis in different formats that leaders can understand, such as graphs, charts, and grids. FM sustainers must ensure Army leaders have the most up-to-date information to make the best decisions possible.

As with any new system, it takes time for users to adapt, learn, and gain the required proficiency to ensure organizations maximize their operating potential. As the Army continues to refine its processes, FM professionals are a primary source of information for commanders. They must ensure the Army is on the cutting edge of the latest data management solutions.

SAP TERP10

The inaugural SAP TERP10 course began in June 2014. The goal of the 4-week resident graduate education course is to provide an overall understanding and a working knowledge of the function, design, control, and use of Department of Defense (DOD) ERP systems.

Since the Army uses SAP software for its ERP, the course gives students an overview of SAP systems and the framework in which they operate. The curriculum provides students with the conceptual understanding and applied skills to be able to navigate the complexities of transaction processing and data queries inherent in modern ERP systems.

SAP TERP10 consists of four graduate-level classes:

- Financial Accounting with a Federal Government Emphasis.
- Application of Advanced Databases to Accounting and Business.
- Accounting Information Systems from a Strategic Perspective.
- ERP Systems.

Students who graduate from the course bring value to their respective organizations through improved SAP software skills and advanced accounting proficiency. Graduates also receive 190 hours toward their DOD FM certifications.

Although a few may see it as an opportunity to get away from the office and receive some continuing professional education credit, SAP TERP10 is not something to take lightly. Because of the course's condensed schedule, students must complete approximately 30 hours of prep work before they arrive at the resident course. Students who are new to

improved reporting.

Graduates also earn 40 hours of DOD FM competencies in decision support, accounting analysis, and financial management analysis.

Working Toward FM Certification

The DOD FM Certification Program is a course-based certification program with three certification

The SAP TERP10 and Business Analytics courses teach students how to manipulate data into meaningful information that leaders can use.

ERPs can expect to have more prep work than the more experienced students do.

The day-to-day course work is just as demanding. Students spend much time after class on group work, homework, and studying for quizzes and tests. Results from the SAP TERP10 pilots show that although all students passed the required courses in order to take the SAP Certification Exam, only about 80 percent passed the exam.

Business Analytics

Business Analytics is an intense one-week resident education course taught by the University of South Carolina's Executive Education Department. The course provides Army financial management professionals with an overall understanding of the capabilities and functionality of the SAP BI environment.

The following topics are covered during the course:

- SAP Crystal Reports.
- Manipulating and analyzing Microsoft Excel data.
- Decision modeling in Excel.
- SAP Business Warehouse.
- SAP Business Explorer.

Students completing Business Analytics will provide value to their organizations through improved BI navigation, advanced analysis, and

levels designed to support the professional development of the FM workforce and to provide a framework for a standard body of knowledge across the FM enterprise.

This standard body of knowledge comprises 23 FM competencies, 17 of which most financial managers must train on to meet the certification level assigned to their positions.

Depending on the certification level assigned to a position and the FM competencies that one has to attain to achieve the certification level, the training could be at proficiency levels (PLs) 1 through 5.

PL5 is the highest and is applied to high-level courses. Because SAP TERP10 and Business Analytics are graduate-level courses, all of the lessons associated with them warrant a PL5 ranking.

More information on both courses can be found in the Financial Management School milSuite group, <https://www.milsuite.mil/book/groups/financial-management-school>.

Capt. Brandon S. Broadus is a proponent officer assigned to the Army Financial Management School at Fort. Jackson, South Carolina. He holds a bachelor's degree from Mississippi State University and is a recent graduate of the Business Analytics course.



Empty gas cylinders on pallets await pick up at the supply support activity of the 3rd Armored Brigade Combat Team, 3rd Infantry Division. Units that manage their own gas cylinder exchange program should have empty government-owned cylinders picked up and put back into the Army supply system. (Photo by Chief Warrant Officer 2 Nathaniel L. Meins)

Gas Cylinder Exchange Solutions

If your unit manages its own gas cylinder exchange program, you may need some guidance from the Defense Logistics Agency.

■ By Chief Warrant Officer 2 Nathaniel L. Meins

Whether it is nitrogen for cleaning weapons and night vision devices, oxygen and acetylene for welding and torch operations, or tetrafluoroethane to keep air conditioning systems blowing cold, industrial gases are essential to virtually every support unit in the Army today. Therefore, having an efficient and effective gas cylinder exchange program (GCEP) to manage your supply of industrial gases is also essential.

Two pivotal things that will affect your GCEP are customer-provided support and adherence to regulations. If your unit can fund a contract with a local vendor to resupply your gases, or if you have access to a post-wide cylinder exchange program, consider yourself fortunate.

However, if you are part of a stand-alone unit and manage the GCEP, you may want to familiarize yourself with the Defense Logistics Agency's (DLA's) industrial gas support program.

A Cylinder Backlog

Until recently, I was assigned to units that had GCEPs supported by post-wide cylinder exchange programs. But my current assignment at Fort Benning, Georgia, with the 3rd Armored Brigade Combat Team, 3rd Infantry Division, landed me on a consolidated installation where such a luxury was not available.

My new unit's GCEP had been neglected for quite some time—so much so that my company alone had more than 50 empty cylinders wast-

ing away in rusty, makeshift cages. With what little storage space we had being filled with empty cylinders, I knew my first priority was to get the “empties” removed.

For the record, a local contractor cannot exchange government-owned cylinders for contractor-owned cylinders; however, a contractor can send off government cylinders to be filled. During the initial transition period into my new job, my predecessor informed me that our GCEP had previously been supported by a local vendor contract but it had been defunded. Therefore, gas supplies were ordered through the Army supply system, and the empty cylinders just kept piling up.

I began the uphill battle to turn in these empty (but serviceable) cylinders. I contacted local supply personnel and was told that I needed to drill a hole in each of the cylinders so they could be turned into DLA Disposition Services (formerly known as the Defense Reutilization and Marketing Office). I found this practice not only appallingly wasteful but also extremely dangerous.

I figured there had to be another way, so I dug into the regulations, namely DLA Instruction 4145.25, Storage and Handling of Liquefied and Gaseous Compressed Gases and Their Full and Empty Cylinders, which is a joint publication that serves as the liquefied and compressed gas management manual for several Department of Defense service branches. It is also known as Army Regulation 700-68.

After reading Section 8, paragraph 8-3, I realized DLA Disposition Services will process the cylinders but simply will not “assume physical custody” of them. I felt like I had reached a dead end. I had to continue to house the cylinders, and I had to process them to be recycled even though they simply needed to be filled, not destroyed.

DLA's Program

Luckily, many years ago, a supervisor sent me a pamphlet entitled,

“DSCR Offers an Industrial Gas Support Program for the Continental United States.” The pamphlet was put out by the Defense Supply Center Richmond (now called DLA Aviation) and clearly lists step-by-step instructions of how serviceable, government-owned cylinders are to be put back into the Army supply system.

The pamphlet also lists national stock numbers (NSNs) for both full and empty cylinders, cylinder color schemes for identification purposes, points of contact to schedule pickups, phone numbers for hazardous materials hot lines, and training information.

Turning in empty cylinders includes five steps:

- Identify the empty, capped cylinders and secure them to a serviceable pallet.
- Contact Haas International with empty NSNs to receive a bill of lading (BOL) and sales order number.
- Fill out the BOL, print it, sign it, scan it, and send it back to the Haas representative.
- Schedule a pick-up.
- Have a forklift and two copies of the BOL ready when the freight contractor arrives for pickup.

Make sure you palletize the cylinders parallel to the pallet boards. Palletizing them perpendicularly will make the banding straps block the entry of the pallet jack forks.

Recommendations

If you are managing your GCEP at the company or battalion level, the first thing you should consider when ordering your initial stock is how many pieces of equipment in your unit are outfitted for gas cylinders. Pieces of equipment that are missing cylinders or have depleted cylinders should be the priority, and those cylinders should account for the majority of your first order.

Once you have a solid count for each of those gases, I recommend

adding six oxygen cylinders (247 cubic feet), four acetylene (225 cubic feet), four argon (246 cubic feet), and four oil-free nitrogen (226 cubic feet). These gases are the most commonly used gases in support activities.

Furthermore, when you create requisitions for these gases in the StandardArmyMaintenanceSystem-Enhanced, remember to split up the orders to create demands so that they will be added to the authorized stockage list and automatically reordered.

In my experience, we received full cylinders 30 to 60 days after submitting the requisition, so it is not crucial to have large quantities on hand. Just remember, cylinder NSNs beginning with “8120” are delivered empty; cylinder NSNs beginning with “6830” are delivered full.

If you are charged with revamping a severely neglected GCEP, remember that it probably took a long time to get that way, so it will probably take quite a while to correct it. You can find the DLA pamphlet at <http://www.aviation.dla.mil/userweb/aviationsupplier/commodities/pdf/Conus%20Industrial%20Gas%20book%20%2814%2003%2026%29.pdf>.

Also, coordinate with Haas International representatives, have the correct paperwork and cylinders strapped to a serviceable pallet, and have forklift support ready when the freight truck arrives. Your GCEP will turn around with just a little effort.

Chief Warrant Officer 2 Nathaniel L. Meins is an allied trades technician in the 203rd Brigade Support Battalion, 3rd Armored Brigade Combat Team, 3rd Infantry Division. He has an associate degree from Pikes Peak Community College and is a graduate of the Allied Trades Warrant Officer Advanced Course (honor graduate), the Six Sigma Green Belt certification program, the Defense Acquisition University's Acquisitions 101 Course, and the Maintenance Managers Course.



Spc. Tiffany Challies and Sgt. Terrlyah Jackson from the 470th Military Intelligence Brigade conduct preventive maintenance checks and services on an intelligence communication system called TROJAN SPIRIT in the new brigade motor pool.

Maintenance Management in a Military Intelligence Brigade

Enhancing maintenance management, aligning maintainers to the mission, and obtaining an adequate maintenance facility allowed the 470th Military Intelligence Brigade to conduct its mission with minimal contractor support and reduce pass-back maintenance.

■ By Maj. Joseph C. Zabaldano and Chief Warrant Officer 4 Louis Watkins

Enhancing the Army's intelligence, surveillance, and reconnaissance (ISR) capability has been a strategic priority for the past decade. However, the traditional acquisition model is not agile enough to field technologically relevant ISR equipment. This has led to the procurement of

nonstandard ISR equipment, much of which has been maintained with contractor support.

The 2014 Army Strategic Planning Guidance lists a modern, ready Army as a priority. Leaders at all levels must assist in validating nonstandard equipment as programs of record, providing sus-

tainment plans that are auditable and less risk averse in a fiscally constrained environment.

The 470th Military Intelligence (MI) Brigade followed this guidance by enhancing maintenance management, having mission-aligned unit maintainers, and procuring a maintenance fa-

cility that significantly improved unit readiness and reduced “pass-back” maintenance requirements.

Enhanced Maintenance Management

The first step in addressing the complex maintenance environment found in the MI community was to improve maintenance management. The fundamental tools at the brigade level to establish effective maintenance management were the Standard Army Maintenance System–Enhanced (SAMS–E) logistics information system (LIS) and a holistic command maintenance discipline program (CMDP).

The 470th MI Brigade reviewed its SAMS–E data files and loaded all modified table of organization and equipment (MTOE) items that had equipment readiness codes A or P and all special purpose commercial off-the-shelf equipment into SAMS–1E. This established visibility of all line item numbers of ISR equipment, including the Distributed Common Ground System–Army (DCGS–A), giving maintenance managers a single database for managing system maintenance as opposed to the contractor reports that were previously used.

To reinforce this effort, the 470th MI Brigade became the first unit in the Intelligence and Security Command to establish a SAMS–2E site, removing it from its previous LIS hierarchy within U.S. Army South. Managing a SAMS–2E site enabled the brigade maintenance officer to maintain quality control of SAMS–1E reporting throughout the brigade. [SAMS–2E transmits data from SAMS–1E systems to a central database at the Logistics Support Activity, from which the data can be viewed by any unit or command Armywide.]

Effects of Using SAMS–E for ISR

Loading ISR equipment data in SAMS–1E allowed the brigade

to shift the focus of their maintenance meetings from traditional ground equipment, which is underused in an MI brigade, to ISR equipment readiness.

The unit now could centrally record the total cost of ISR equipment ownership through man-hour reporting. Data collection allowed the unit to justify contractor support or force structure modification to reduce sustainment risk. This shift in maintenance focus invigorated the unit CMDP. It became about more than passing a semiannual inspection or winning an Army Award for Maintenance Excellence.

Entering all ISR systems into SAMS–1E had the added advantage of improving the 470th MI Brigade’s posture to conduct its GCSS–Army Wave II fielding. GCSS–Army Wave II fielding is scheduled between 2015 and 2017 for units across the Army and will consolidate the functions of SAMS–E and the Property Book Unit Supply Enhanced (PBUSE).

Logisticians have the challenge of consolidating nonstandard equipment into standardized national stock numbers and validating that all PBUSE data matches SAMS–E data files. Entering nonstandard ISR items into SAMS–1E positions the 470th MI Brigade to convert to GCSS–Army with minimal disruption and effort.

Mission-Aligned Unit Maintainers

After gaining control of all its maintenance data, the brigade identified a second problem. The unit maintainers were not structured to support maintenance requirements. To address this problem, the 470th MI Brigade aligned its military occupational specialty (MOS) 35T (military intelligence systems maintainer/integrator) Soldiers to support its ISR equipment in two phases.

In phase one, the brigade deputy commanding officer consolidated its MOS 35Ts by geographic

A Management Technique for a Help Desk Random Access Memory Update

A Distributed Common Ground System–Army (DCGS–A) operator requests diagnostic support from the 470th Military Intelligence Brigade help desk for an underperforming workstation. The person running the help desk generates a trouble ticket in Altiris.

In response, the MOS 35T determines if the system has hardware or software faults and provides an initial estimate of time or parts needed to restore the system to a fully mission capable condition. If the trouble ticket assessment indicates a need for a labor-intensive hardware repair, the 35T conducts full preventive maintenance checks and services and annotates equipment deficiencies on the posted 5988–E, Equipment Inspection and Maintenance Worksheet, at the workstation.

If the listed deficiencies note a need for RAM, the part is ordered through SAMS–1E to the Army Supply System or it is purchased locally. The help desk ensures that SAMS–1E captures the demand for both requisition methods. Once the RAM is procured and installed and the workstation is functioning properly, the trouble ticket in Altiris and the SAMS–1E work order are closed.

Thus, this new hybrid maintenance management process establishes accountability of the RAM in case the unit is audited, captures demand history for shop stock in SAMS–1E, and records total cost of ownership through man-hour reporting (direct and indirect labor).

location under the intelligence/electronic warfare equipment technician warrant officer (MOS 353T) to establish an intelligence systems support section (IS3). As officer-in-charge of the IS3, the 353T warrant officer counseled and encouraged all 35Ts to complete DCGS-A mobile field service engineer training and gain the information assurance technology level II certification. This certification enabled the 35Ts to perform network support, client support, and associated maintenance tasks.

Hybrid Maintenance Management

In phase two, the IS3 section identified the need to establish a DCGS-A help desk and imple-

ment a hybrid maintenance management technique to effectively execute its mission. SAMS-1E cannot effectively manage information technology (IT) trouble tickets, and Altiris integrated IT life cycle management solutions software does not have the data collection capabilities of SAMS-E. Therefore, the help desk must use SAMS-1E and Altiris software in tandem for tracking work orders in a new hybrid maintenance management concept.

Client support that does not require hardware repair or replacement, such as unlocking an account, updating software, or connecting peripherals, only generates an Altiris trouble ticket from the

help desk. Maintenance work orders are generated from SAMS-1E for equipment upgrades and fielding, equipment modification work orders, warranty work, quality deficiency reports, and reports of discrepancies.

DCGS-A is a primary ISR system. The 470th MI Brigade has one of the Army's five DCGS-A fixed sites, and the system is the center of gravity for the unit. Establishing the DCGS-A help desk and the IS3 shop reduced the unit's reliance on contractor support. Forecasting and conducting the required information assurance certification training to work on the DCGS-A system prevented mission disruption when the unit

Recommendations for Improving Maintenance Management in a Military Intelligence Brigade

The S-4 staff of the 470th Military Intelligence Brigade identified the following recommendations based on the lessons they learned when taking steps to improve the brigade's maintenance operations.

Logistics Contract Management

Consider adding these concepts to sustainment contracts:

- The effectiveness of contractors recording man-hours (direct and indirect) into LIS systems.
- The effectiveness of contractors using Army LIS systems for maintenance management.
- The effectiveness of contractors incorporating contractor-provided equipment into the Army supply system.

Program Managers

Program managers should avoid proprietary acquisitions that do not allow qualified sustainers to main-

tain Army equipment, especially if the equipment does not have a life cycle replacement before the warranty expiration.

Better management for ISR equipment sustainment contractors is needed in the field. Contractor support in today's fiscal environment has been greatly reduced, but mission requirements have not decreased.

Units must maintain certifications of their maintainers using program manager training requirements and information management funds.

Logistics and MI Branch Proponent

Not enough automated logistical specialists are available to support the GCSS-Army transition across the Army. The 470th MI Brigade elements at Fort Sam Houston, Texas, do not have a single automated logistical specialist authorization.

All 35T personnel should have information assurance technology level II certification qualifications before they graduate from advanced individual training.

Training for military intelligence systems maintenance/integration technician warrant officers should include more maintenance management. Unit maintenance warrant officers must ensure all Army-managed equipment requiring a preventive maintenance checks and services is captured during equipment readiness reporting.

GCSS-Army Developers

Incorporating the functions of Altiris and Remedy Software capability in GCSS-Army would integrate the hybrid maintenance management technique across the Army. This would lead to better life cycle management and a source for sustainment data for IT equipment across the Army.

lost support from field service engineer contractors during the fiscal year 2013 sequestration.

The hybrid maintenance management process enhanced supervisory control of the IS3 section. The SAMS-1E work order log could be used to manage priorities of work, and it provided a troop-to-task document for 35Ts.

From February 15, 2014, to May 1, 2014, the brigade recorded in SAMS-1E more than 120 work orders that previously would not have been available for sustainment data mining. Accounting for contractor and 35T repair times in SAMS-1E provided the unit with accountability and total ownership cost of the unit's key ISR systems.

Enhanced Maintenance Facilities

To reduce pass-back maintenance, better facilities were required for the 470th MI Brigade maintainers at Joint Base San Antonio, Texas. A \$30 million military construction project for a tactical equipment maintenance facility had been planned with the installation since 2009.

As of 2013, the unit had negotiated the paving of a gravel motor park and construction of warehouse space that could support most field-level maintenance tasks. Some of the warehouse space was dedicated to the IS3 section for intelligence and electronic warfare equipment maintenance; however, these facilities proved to be inadequate for the IS3 shop, primarily because of the lack of environmentally controlled work space.

The 470th MI Brigade coordinated with the 502nd Civil Engineering Squadron to obtain a tactical equipment maintenance facility to support all maintenance activities. Because of these efforts, the brigade now has the necessary work space to support the IS3 shop and ground maintainers.

The tactical equipment maintenance facility gave the unit the ability to complete all field main-

tenance tasks. With overhead lift capability, the unit completed a more than 100-day-old pass-back maintenance work order on its wrecker.

The environmentally controlled test measure diagnostic equipment work area in the tactical equip-

The hybrid maintenance management process enhanced supervisory control of the IS3 section. The SAMS-1E work order log could be used to manage priorities of work, and it provided a troop-to-task document for 35Ts.

ment maintenance facility gave the IS3 section proper workspace to maintain Trojan Special Purpose Integrated Remote Intelligence Terminals and other key ISR systems.

This new facility decreased repair and return times and increased operational readiness rates for the brigade. Adding a communications security vault and unit equipment bay space has also increased equipment storage, which was a problem that the Intelligence Security Command G-2 identified with the former warehouse space and motor park.

Enhanced maintenance management, mission-aligned maintainers, and an adequate maintenance facility better positioned the 470th MI Brigade to conduct its mission with minimal contractor support and reduced pass-back maintenance. Collecting maintenance data provides visibility of sustainment requirements, assesses risk in sustainment support with contractor reductions, and justifies MTOE force structure through man-hour reports.

The ability to collect LIS data provides program managers and the Logistics Support Activity with data mining material for ISR equipment, which leads to better allocation of sustainment dollars in the cradle-to-grave concept of ISR equipment.

Loading ISR equipment in SAMS-1E prepares the unit for Wave II of the GCSS-Army fielding. As long as proprietary equipment is fielded to support the Army's mission, contractor support will be necessary at certain levels. However, with proper

maintenance management, units can empower their maintainers to perform some of the maintenance tasks and reduce risk in case contractor support is removed.

These 470th MI Brigade initiatives are a proven way to empower commanders with mission readiness information to sustain the force, center mission essential equipment in CMDP, and share sustainment knowledge that can modernize our force.

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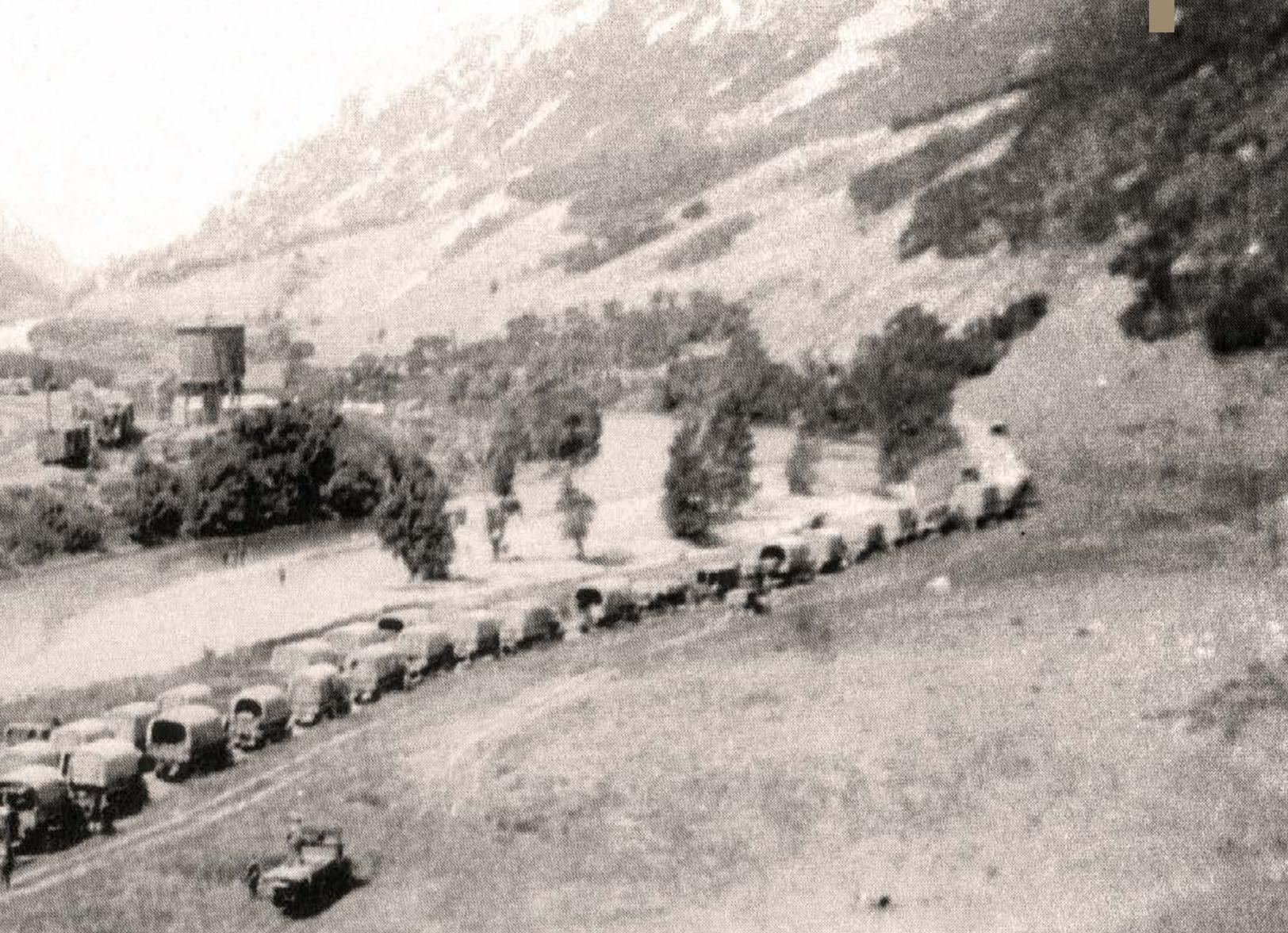
Chief Warrant Officer 4 Louis Watkins is the senior intelligence reconnaissance and surveillance systems maintainer-integrator for the 470th Military Intelligence Brigade. He holds a bachelor's degree in general studies with a focus on psychology from Excelsior University. He is a graduate of the Warrant Officer Senior Staff Course and several courses from the Defense Acquisition University.

The Army Goes Rolling Along

■ By James A. Harvey III



The Motor Transport Corps transcontinental convoy proceeds through Utah in 1919. (Photo courtesy of the Eisenhower Library)



In 1919, then-Lt. Col. Dwight D. Eisenhower was part of a convoy of military vehicles to test the Army's mobility on U.S. soil. That convoy helped lead to the creation of the U.S. interstate highway system.

Operations in Afghanistan have often presented U.S. military vehicles with off-road challenges. Many Afghan roads are not what most people in the industrialized West would consider a real road. It is hard to imagine that less than 100 years ago, the United States was much like parts of Afghanistan. Travel was long and roads—if they could even be called roads—were virtually impassable.

The military after World War I saw this as a national security issue and decided to test the Army's mobility in case of war. The Army's Motor Transport Corps was given the mission of conducting a transcontinental convoy from Washington, D.C., to San Francisco

following the Lincoln Highway. The Department of War also sent observers, including the young Lt. Col. Dwight D. Eisenhower, to record their observations.

The convoy traveled 3,251 miles in 62 days at an average of six miles per hour. Although it was a success, the mission was anything but easy.

The Need for Mobility

By 1919, the United States was beginning to worry about the growth of the Japanese military, which had seized numerous German Pacific islands during World War I. The Japanese were later awarded the islands in 1920 by a League of Nations mandate, moving the Japa-



A dispatch rider sits on a motorcycle at Camp Meigs, Washington, D.C., during the transcontinental convoy. (Photo courtesy of the Army Transportation Museum)

nese Empire's military influence closer to the United States and its territories.

War Plan Orange was the secret plan for war with Japan and would require moving equipment and troops quickly to the West Coast by land. The plan assumed that the Japanese would sabotage major railroads and tunnels.

The Army also had other reasons for embarking on a transcontinental motor convoy. The final ordnance report dated October 31, 1919, from observer 1st Lt. E.R. Jackson noted that there were four objectives to the convoy mission:

- To show the War Department's support of the "Good Roads Movement," which encouraged high-quality transcontinental roads for economic and military purposes.
- To assist Army recruitment efforts with a focus on the Motor Transport Corps.
- To encourage public celebration and pride over the U.S. victory in the Great War, later known as World War I.
- To extensively study and observe U.S. terrain and equipment in a real environment.

Heading Out

The convoy departed Camp Meigs, Washington, D.C., on July 7, 1919, and began the mission.

In the 81-vehicle convoy, cargo trucks made up the largest number of a certain type of vehicle. For maintenance, two trucks carried spare parts while two were complete machine shops. Two tankers carried fuel, and a third carried water. Other vehicles included 11 passenger cars, five ambulances, and four kitchen trailers.

The convoy had a pontoon trailer for river crossing, a Militor wrecker winch for the recovery and towing of broken or mired vehicles, and a Maxwell tractor for towing purposes. The convoy also had nine Indian Head and Harley Davidson motorcycles, two of which served to scout the road ahead each morning.

The convoy personnel consisted of 39 officers, 258 enlisted men, and one Ordnance Department civilian employee.

The first leg of the journey, from Washington, D.C., to Frederick, Maryland, would take a modern motorist only one hour or less. In 1919, Eisenhower wrote in his journal that it took the convoy more than 7 hours to complete the 46-mile trip. Interestingly, Eisenhower said that on this part of the trip, with a few exceptions, they were driving on excellent roads.

Eisenhower also noted immediate maintenance problems, including a broken coupling on a kitchen trailer and a fan belt broken on a passenger car. The Militor had to tow a cargo truck that had a broken magnetic coupling into the Army camp at the Frederick fairgrounds.

Difficult Terrain

Once the convoy reached the Midwestern states, the difficulties worsened. In his entries for Aug. 2, 1919, Eisenhower noted that rain in Nebraska made the dirt roads slippery.

He mentions that 25 trucks slipped into a ditch during the driving for that day and that it was "very apparent all trucks should be equipped with chains for front wheels as well

as rear.” Eisenhower called the roads “gumbo mud” and noted that Soldiers had to reinforce two weak bridges before the convoy could cross over them.

Aug. 3 appeared to be not any better because the roads were described as “sandy, some quicksand.” The convoy drove 34 miles in more than 9 hours, and at one time the tractor towed 12 engineer trucks at the same time after they became mired.

Some maintenance problems that day included a Dodge passenger car with a carburetor clogged with sand, a tanker with a blown front cylinder head gasket, and several broken fan belts on a Dodge four-wheel-drive light delivery truck.

During the journey through Utah, the situation actually became desperate while the convoy crossed the Great Salt Lake Desert. The “salt marsh with [a] thin, hard crust of sand and crystallized alkali” ground mired vehicles so much that at one point Eisenhower wrote that “prac-

tically every vehicle was mired and rescue work required almost superhuman efforts of entire personnel from 2 p.m. until after mid-night.”

Eisenhower also wrote that the desert delays caused a shortage of fuel and water. Water had to be placed under guard and rationed to one cup per man for supper and the night.

Eisenhower wrote that the stalling of a fuel truck also prevented a hot meal and that supper itself was just cold beans and hard bread. A team of civilians eventually arrived by horse and provided the needed water.

The convoy finally arrived in San Francisco on Sept. 6, 1919. The journey created an awareness of the importance of a national road system for national defense.

Lessons From the Convoy

The convoy of 1919 demonstrated that 62 days was the fastest that troops and equipment could reach the West Coast. However, after such

a journey, most of the equipment could not be considered combat ready. Some equipment never even made it to San Francisco before being retired from service.

Capt. William C. Greany reported that the convoy itself caused obvious damage. He noted that the convoy destroyed or damaged 88 bridges and culverts that troops had to repair before continuing. The convoy demonstrated that a national road system was important to national defense, just as the Panama Canal had been for the moving of naval vessels after the Spanish-American War.

Convoy reports give a vivid picture of life on the convoy. While the public treated the convoy members well and often showered them with food, drinks, parties, entertainment, and hygiene opportunities, much of the journey was in rugged field conditions.

Capt. Greany’s report noted an “almost continuous and excessive amount of strenuous work” with lit-



The transcontinental convoy of 1919 treks through mud in Nebraska. (Photo courtesy of the Eisenhower Library)



A standard B "Liberty" truck sits mired in sand 13 miles west of Grand Island, Nebraska. (Photo courtesy of the Army Transportation Museum)

tle sleep and rest. The convoy also lacked shelter and had ration difficulties, few bathing facilities, and at times little water. Sleep averaged about five and a half hours a night. These conditions were exacerbated by extreme temperatures, rain, high winds, excessive dust, and sandstorms.

In his final ordnance report, 1st Lt. Jackson concluded that the convoy had met all of its objectives. First, interest in the Good Roads Movement was aroused by the convoy's passage. Second, some enlistments were directly connected to the convoy, although the total number was not as high as expected.

Third, the general public's hospitality everywhere demonstrated the excitement of a nation that had been on the winning side of the Great War. Fourth, the convoy resulted in many observations and lessons

learned about equipment, operations, and terrain.

As president of the United States, Eisenhower signed legislation in 1956 to start the construction of the nation's interstate highway system. Often people believe that Eisenhower was simply inspired by German highways; however, he was also influenced by his early experiences in the transcontinental motor convoy.

Before the convoy, Eisenhower was considering leaving the Army in the post-World War I drawdown. The convoy offered an exciting opportunity that kept him in the Army, which he would later lead to victory in Europe during World War II.

For more details of the hardships of the transcontinental convoy, including Eisenhower's official daily log, visit the Eisenhower Presidential Library website at [\[hower.archives.gov/\]\(http://www.eisenhower.archives.gov/\). You may also enjoy the book *American Road* by Peter Davies, which is an account of the convoy that includes a history of U.S. military and social life after World War I.](http://www.eisen-</p></div><div data-bbox=)

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Army Sustainment Departments

Your submission should be geared toward one of *Army Sustainment's* departments, which are described in detail below. If you have an article that does not fit into one of our departments but you think it is appropriate for our audience, feel free to contact us.

Commentary articles contain opinions and informed criticisms. Commentaries are intended to promote independent thoughts and new ideas. Commentary articles typically are 800 to 1,600 words.

Features includes articles that offer broader perspectives on topics that affect a large portion of our readers. These can focus on current hot topics, or the future of the force. These articles can be referenced, but it is not required if the content is within the purview of the author. While these articles can be analytic in nature and can draw conclusions, they should not be opinion pieces. Features typically are 1,600 to 5,000 words.

Spectrum is a department of *Army*

Sustainment intended to present well-researched, referenced articles typical of a scholarly journal. Spectrum articles most often contain footnotes that include bibliographical information or tangential thoughts.

In cooperation with the Army Logistics University, *Army Sustainment* has implemented a double-blind peer review for all articles appearing in its Spectrum section. Peer review is an objective process at the heart of good scholarly publishing and is carried out by most reputable academic journals. Spectrum articles typically are 2,500 to 5,000 words.

Operations includes articles that describe units' recent deployments or operations. These articles should include lessons learned and offer suggestions for other units that will be taking on similar missions. These articles require an official clearance for open publication from the author's unit. Photo submissions are highly encouraged in this section. Please try to include five to 10 high-resolution

photos of varying subject matter. Operations articles typically are 1,200 to 2,400 words.

Training and Education is dedicated to sharing new ideas and lessons learned about how Army sustainers are being taught, both on the field and in the classroom. Training and Education articles typically are 600 to 1,100 words.

Tools articles contain information that other units can apply directly or modify to use in their current operations. These articles typically contain charts and graphs and include detailed information regarding unit formations, systems applications, and current regulations. Tools articles typically are 600 to 1,800 words.

History includes articles that discuss sustainment aspects of past wars, battles, and operations. History articles should include graphics such as maps, charts, old photographs, etc., that support the content of the article. History articles typically are 1,200 to 3,000 words.

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Army Sustainment is the Department of the Army's official professional bulletin on sustainment. Its mission is to publish timely, authoritative information on Army and defense sustainment plans, programs, policies, operations, procedures, and doctrine for the benefit of all sustainment per-

sonnel. Its purpose is to provide a forum for the exchange of information and expression of original, creative, innovative thoughts on sustainment functions.

Our "Lines of Communication" department provides readers with a forum to have their opinions published. To submit a letter, send an email to usarmy.lee.tradoc.mbx.leeasm@mail.mil with the subject line, "Letter to the Editor." Please include your name, title, and location (for example, Fort Wainwright, Alaska) with the submission. Letters will be edited to meet the magazine's length and style requirements.

ISSN 2153-5973
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Sustainer Spotlight

More than 100 troops from the 45th Sustainment Brigade's headquarters were greeted by cheers, waving signs, and anxious families and friends as they marched into a hangar on Wheeler Army Airfield, Hawaii, Dec. 3, 2014, marking the end of the Soldiers' eight-month mission in Afghanistan. While deployed, the Schofield Barracks-based unit was the final brigade to headquarter the U.S. Central Command Materiel Recovery Element (CMRE) charged with sorting, tracking, and recovering all U.S. military equipment from an operational area roughly the size of the state of Texas. (Photo by Sgt. Jon R. Heinrich)