

MARCH-APRIL 2016

ARMY SUSTAINMENT

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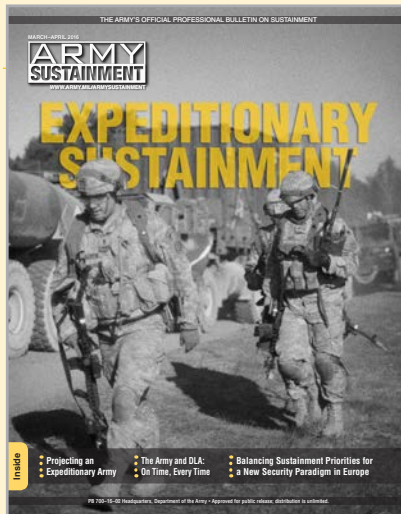
EXPEDITIONARY SUSTAINMENT



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A 2nd Cavalry Regiment lieutenant inspects defensive positions with his noncommissioned officers as a 16th Sustainment Brigade logistics supply column passes by on May 15, 2015, at exercise Saber Junction 15 in Hohenfels, Germany. (Photo by Capt. Henry Chan)

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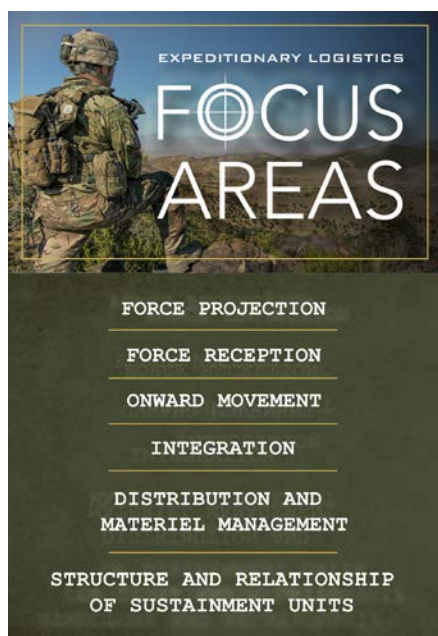
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Projecting an Expeditionary Army

■ By Lt. Gen. Gustave “Gus” Perna



“Our entire sustainment structure must stand up to the test when called.”



Army logisticians must be ready to both project and support an expeditionary Army. We must be ready to execute expeditionary logistics from fort to port, port to port, port to foxhole, and beyond. We must focus our efforts on executing core missions to standard—missions that provide the base for everything else we do to support the warfighter. We must also be innovative and open to new ideas and new ways of doing things. And we must do all of this as part of a joint team.

While much work remains, we are making progress in our transition to an expeditionary force. What encourages me most is that the expeditionary improvements are leader led. I asked several notable leaders to share their insights about projecting an expeditionary force, and this issue of *Army Sustainment* is packed with beneficial information from leaders across the Army and the Defense Logistics Agency. They share thoughts on preparing to support combat operations that may be required at any time—tonight or 10 years from now.

My own recollection of an expeditionary Army dates back to 2001, before the wars in Iraq and Afghanistan, when the entire Army was geared toward being expeditionary. In the Army G-4 office, we are using the same mental framework that we used then (“from fort to foxhole”) to analyze logisticians’ ability to support an expeditionary Army.

To give further structure to our analysis, we are focusing on these critical areas: force projection, force reception, onward movement, integration, distribution and materiel management, and the structure and relationship of sustainment units.

Force Projection

From a strategic perspective, force projection is about the entire deployment enterprise (the “pipeline”). Units must be prepared to deploy, and instal-

lations must be ready to deploy them. Force projection is also about our ability to partner with the U.S. Transportation Command to ensure it is postured to provide enough strategic lift to get Army forces where they need to go in time to meet the combatant commander’s requirements.

From an operational perspective, force projection is about understanding how to leverage appropriate units to conduct critical reception missions and to prepare seaports and airports to receive Army forces. Tactically, it is about units having all assigned equipment at 10/20 standard and being able to pack their own equipment and load it for movement by road, air, rail, or sea.

Since most of our Army is now based within the United States, the Army’s ability to project the force relies heavily on its ability to move rapidly across great distances as opposed to maneuvering from nearby garrisons. One way these distances are mitigated is through Army pre-positioned stocks sets.

From a strategic perspective, the Army G-3 is ensuring we have the right equipment sets positioned in the right places. Operationally, the G-4 and the Army Materiel Command (AMC) are working to ensure our Army pre-positioned stocks sets mirror the equipment of the units that are likely to draw it.

The sets should mirror not only the units’ modified tables of organization and equipment but also their nonstandard enabling equipment whenever possible. From a tactical perspective, AMC is enabling rapid employment by ensuring the equipment is maintained and ready to use.

Force Reception

We know that the Army is tactically proficient at running large, well-established intermediate staging bases to support force rotations. Where we need more work is in our ability to work within a small, quick-



ly established footprint. Operationally and tactically, we also need to work on our ability to overcome enemy anti-access and area-denial efforts by quickly opening ports in a contested environment long enough to deliver an effective combat force.

With nearly 80 percent of the Army's early-entry enablers in the National Guard and Army Reserve, we also need to ensure reserve units are trained and ready to join active units deploying with little notice.

Onward Movement

At the strategic level, freedom of movement across sovereign nations requires close coordination with our allies, partners, and local authorities, an understanding of local laws, and cooperation with the State Department.

The Army never does it alone; the next time we go somewhere, we will be operating in a joint, interagency, intergovernmental, and multinational environment. Consequently, we must understand and be prepared to leverage the capabilities of our sister services, other government agencies, allies, and partners.

We need to be able to quickly assess the operational environment to understand the capabilities of road networks, bridges, rail lines, and littorals. We need to understand the availability of commercial options for supporting logistics operations, and we need to determine the sustainment force structure required for planning, contracting, managing, and overseeing operational contract support.

Tactically, to limit external transportation requirements, our units must be able to move their own equipment to the greatest extent possible, and they must maintain proficiency in convoy operations. Our units must continue to work to ensure they can execute key battlefield logistics tasks, like refuel on the move.

Onward movement relies heavily on the transportation infrastructure, modes available, routes, host-nation support, and transportation support. Movement control capabilities play a critical role, providing commanders

a mechanism to synchronize movements for deployment, redeployment, and distribution operations.

Integration

After the logistics processes discussed above have been completed, the operations process of integration occurs. As described in Army Techniques Publication 3-35, Army Deployment and Redeployment, this is the synchronized transfer of capabilities into an operational commander's force prior to mission execution.

While integration is G-3 centric, logisticians are nevertheless responsible for several tasks that are essential for making units ready to fight. Those tasks include ensuring ammunition is uploaded, enabling technologies are installed, and units and equipment are configured for combat.

Distribution and Materiel

The Joint Logistics Enterprise provides outstanding strategic distribution of materiel, which is essential in linking our nation's industrial might to the tactical level. However, for expeditionary deployments to logistically immature theaters, we have to be at the top of our game with centralized management and decentralized execution of materiel management and distribution.

Our theater sustainment commands (TSCs) play an essential role in this. Properly employed, a TSC serves as the centralized manager for all classes of supply except medical materiel. The TSC is also the distribution manager for the intratheater portion of our global distribution system. Through those two roles (among many others), TSCs can greatly increase our effectiveness and efficiency at sustaining combat forces in a theater of operations.

At the tactical level, I can already see some progress in reinvigorating materiel management. Since the assignment of sustainment brigades to their habitually supported divisions, I am seeing more sustainment brigades assisting brigade combat teams in materiel management areas like authorized

stockage list management and turn-in of excess equipment.

This summer we will also begin providing every sustainment brigade with a class VII (major end items) materiel management capability. Every sustainment brigade support operations section will gain a 10-Soldier class VII materiel management section on their modified tables of organization and equipment by 2019. We will do a pilot test of this effort this summer. It is one small example of how we can decentralize materiel management execution and increase senior mission commander influence over their combat power generating capabilities.

Sustainment Unit Structure

The Army's establishment of regionally aligned forces has helped set the framework for expeditionary sustainment operations. Nevertheless, the complexity of setting multiple routes, modes, and nodes and then receiving and sustaining large formations on short notice will still require teamwork from organizations at all levels. Our entire sustainment structure must stand up to the test when called.

Close partnerships at the strategic level among AMC, the Defense Logistics Agency, the Transportation Command, other services, and coalition partners will lead to shared priorities and a common situational awareness that will pay off when immediate action is required. Maintaining strong relationships through continual training and planning for operations, including early-entry support, will go a long way.

As you read the following pages, you will see why I am confident we have the determination and the right focus. With your help, logisticians can quickly deliver an Army ready for expeditionary missions.

Lt. Gen. Gustave "Gus" Perna is the Army deputy chief of staff, G-4. He oversees policies and procedures used by 270,000 Army logisticians throughout the world.



The CASCOM Commanding General's Priorities

■ By Maj. Gen. Darrell K. Williams



The Combined Arms Support Command (CASCOM) is a subordinate command of the Training and Doctrine Command (TRADOC). CASCOM is complex and diverse, and its missions affect Army sustainment training readiness and future force sustainment capabilities.

Sustainment Soldiers and capabilities reside in over 93 percent of all Army formations, and 80 percent of sustainment formations belong to the Reserve component. In concert with multiple stakeholders, both within TRADOC and across the Army, CASCOM and its schools train world-class professionals and develop critical capabilities for today and tomorrow.

CASCOM is also nested within the operational Army and provides reach-back training resources for the total sustainment force. In this edition of *Army Sustainment*, I want to share with you CASCOM's priorities.

The Army chief of staff Gen. Mark A. Milley identified these areas as his top priorities: readiness, future Army, and take care of troops. The priorities of Gen. David G. Perkins, the TRADOC commanding general, are design the future Army, develop Army leadership, and accession and build the Army. In support of these priorities, and those of the deputy chief of staff of the Army, G-4, CASCOM has identified these 10 focus areas:

- Total sustainment force integration (all components and branches).
- Sustained excellence in initial military training, professional military education, and functional training.
- Support for Army and joint partners in capabilities, doctrine, training, and leader development.

- Future sustainment force capability development.
- Proponent for transportation, quartermaster, ordnance, adjutant general, and financial management talent management (in partnership with the Human Resources Command) and logistics, sustainment force modernization, and operational contract support.
- Development and integration of sustainment mission command enablers (the Global Combat Support System-Army, General Fund Enterprise Business System, Integrated Personnel and Pay System-Army, and Sustainment Readiness Tool).
- Support training readiness across the joint force.
- Community engagement and strategic communication.
- Ensuring that resources are aligned with priorities and that decisions are resource-informed.
- Team Fort Lee: troops, civilians, and families.

As we look to the future, CASCOM will continue to execute its core mission of preparing sustainment professionals to successfully accomplish current and future operational missions. With your feedback and partnership, we will assist in developing the future sustainment force while simultaneously providing the Army with resilient sustainment leaders and Soldiers of impeccable moral character. Support starts here!

Maj. Gen. Darrell K. Williams is the commanding general of the Combined Arms Support Command and Sustainment Center of Excellence at Fort Lee, Virginia.

The commanding general of the Combined Arms Support Command shares his priorities for preparing sustainment professionals to accomplish current and future missions.

Logistics Effectiveness: Where You Stand Depends on Where You Sit

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

One definition of efficiency found in the *Merriam-Webster* online dictionary is, “effective operation as measured by a comparison of production with cost (as in energy, time, and money).” Note that the word “effective” is included in the definition. This is certainly confusing if one accepts the common belief that there is a dichotomy between being effective and being efficient.

What makes logistics effective is a question of context and cultural perspective. We believe logistics leaders need to understand the cultural challenges associated with mixed views of effectiveness, particularly in the Joint Logistics Enterprise (JLEnt) milieu of organizations and values.

Even within the military there are different views of efficiency. For example, national-level providers see effective logistics as purchasing and delivering logistics efficiently at the lowest possible cost. Operational commanders see effective logistics as successfully sustaining the force on time, often regardless of cost.

A 1981 hallmark study, “A Competing Values Approach to Organizational Effectiveness,” by Robert Quinn and John Rohrbaugh concludes that effectiveness is a complex concept that is driven by organizational cultural propensities toward certain values.

These researchers postulate that organizations have distinct value patterns that differ among four views of effectiveness:

- Clear objectives and comprehensive planning (rational goal values).
- Bureaucratic procedures (internal process values).

- Team building and leader development (human relations values).
- Adaptation and organizational learning (open systems values).

Competition among these values govern different patterns in and among organizations. Because the JLEnt involves many organizations, multiple value patterns coexist and typify the adage, “Where you stand depends on where you sit.” (See figure 1.)

Logistics effectiveness in the operational force is characterized primarily by rational goal values. Effective logistics mainly includes the traditional goals of providing the supported commander the geographical reach, pace, and duration needed. This is not to say that the operational force acts solely on rational goal values, but the other three value groups are not as greatly emphasized.

At the national level, where Department of Defense budgets are planned, programmed, and expended through well-defined processes, what constitutes effectiveness is driven mainly by criteria embedded in the internal process values.

Both human-relations and open-systems values dominate professional military education (PME) assessment and achievement. Logistics PME is dedicated largely to developing influential leaders who can create and sustain effective teams and operate well when faced with the diversity present in the human dimension.

Trainers prepare Soldiers to execute complex missions, and when “the plan doesn’t survive first contact,” human relations may be complemented with an equal emphasis on the initiative, adaptation, innovation, and improv-

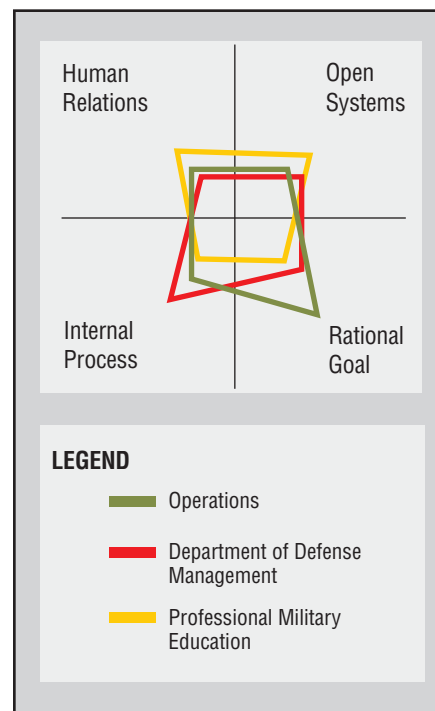


Figure 1. Relative Patterns of Logistics Effectiveness in Organizations.

sation associated with open systems.

Acknowledging that all four value groups compete both within and across organizational cultures is key to understanding operations in the JLEnt; it is a matter of relative context and perspective. This recognition is important in an enterprise made up of diverse organizations because each will likely emphasize different criteria for effectiveness.

Christopher R. Paparone, Ph.D., is a dean at the Army Logistics University at Fort Lee, Virginia.

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



Troops lay out basic issue items for an inventory, one of the many steps in managing Army property. (Photo by Rex Temple)

Leadership Training Gaps in Property Accountability

Officers are told, “You will learn that when you get to your unit,” but what happens when no one at the unit can teach needed property accountability skills?

■ By 1st Lt. Adam C. Crawford

With the Army’s constrained budget and constant fielding of new equipment, property accountability has become an increasingly hot topic. Brigade commanders want to know why basic issue items are on a shortage annex. They also are requiring more detailed reports on how company commanders are spending

their allocated budgets.

When I placed a cadet dot on my uniform and showed up for my first drill weekend with the Kentucky Army National Guard, I was given the following advice: As an officer, you can go to jail because of missing property. It was both a warning and a teaching tool—property is important.

As a quartermaster officer on active duty, I took comfort in knowing that I would be one of the Army’s subject matter experts on property accountability. But during the Basic Officer Leader Course (BOLC), I received little more than three days of training on property accountability and a giant binder of notes and handouts.

The Army property system is complicated; it has to be in order to handle all of the equipment in our arsenal. Supply sergeants get extensive training on Property Book Unit Supply Enhanced in order to conduct supply transactions, such as ordering, transferring, and assigning equipment and to manage company commanders' extensive hand receipts (some valued at well over \$20 million).

But difficulties arise when junior officers are expected to manage sub-hand receipts with little to no training or understanding of property management and accountability.

Little Training, Less Mentorship

I spoke with officers from three Army branches (infantry, military intelligence, and logistics), and only the officer who graduated from the Ordnance BOLC (the logistics officer) had been given any formal training on property accountability.

All three captains claimed that they had received the same guidance concerning Army property accountability: You will learn that when you get to your unit.

This is a common statement heard during Army training, and it is true in many cases. However, when junior officers get to their units, they are sometimes trained by officers who were also given only on-the-job training for property accountability. Without formal training, junior leaders are being set up for difficulty in the early stages of their careers.

Do Not Pass Go

It has long been thought that the "you can go to jail because of property" statement was little more than a scare tactic. But Article 108 of the Uniform Code of Military Justice, Military Property of United States—Loss, Damage, Destruction, or Wrongful Disposition, states that anyone who sells, destroys, loses, or otherwise disposes of military property, either willfully or through neglect, without proper

authority is subject to punishment "as a court-martial may direct."

Army property accountability is a major undertaking, and it is an injustice for leaders not to receive proper training. Not understanding how the Army supply system works puts increased and unnecessary pressure on platoon leaders, compa-

bers and serial numbers. In this way, the junior officers would gain an understanding of how the information appears within line item and sub-line item numbers.

This training would be valuable for new officers during BOLC because it would make the process less foreign to them when they arrive at

Not understanding how the Army supply system works puts increased and unnecessary pressure on platoon leaders, company executive officers, and company commanders. It is often not until a mistake is made that the lesson is learned.

ny executive officers, and company commanders. It is often not until a mistake is made that the lesson is learned. Generally, this model is acceptable, but when it comes to the sensitivity of property, I think there is a better way.

The Way Forward

Each BOLC, no matter what branch, should have a minimum of five days of platoon-level property accountability training. Officers need to understand how and why they should sub-hand receipt all equipment, basic issue items, components of end items, and technical manuals down to the squad- and team-leader levels.

Lieutenants need to understand required maintenance documentation, what it means to have a vehicle at 10/20 standard, and what documents and processes are required to conduct a lateral transfer from one unit identification code to another.

In a training environment, it would be highly beneficial for the schoolhouse to develop a mock supply room with a hand receipt. This would provide junior officers with practice going through an inventory and looking up national stock num-

their first units.

Additionally, at each new duty station, junior officers should receive an in-processing presentation to learn what resources are available on the post for property accountability. During this presentation they could ask technical questions about Property Book Unit Supply Enhanced and other Army property management tools.

Company commanders need to be better trained on how to teach their platoon leaders and executive officers about property accountability. The end result will be less pressure on leaders because they will be trained and have more time available to train their Soldiers to be better stewards of Army property.

1st Lt. Adam C. Crawford is a quartermaster officer and a distribution company executive officer in the 526th Brigade Support Battalion, 2nd Brigade Combat Team, 101st Airborne Division (Air Assault). He holds a bachelor's degree in psychology and is completing his master's degree in supply chain management. He is a graduate of the Quartermaster Basic Officer Leader Course.



Litter bearers prepare to carry patients to a medevac helicopter at the National Training Center at Fort Irwin, California. Mission authority and launch authority for air medevac assets are critical components of medical mission command. (Photo by Capt. David Draper)

Medical Mission Command: A Gap in Doctrine

■ By Capt. David W. Draper

While mission command is well-defined in the Army's dedicated doctrinal publications, the term medical mission command is poorly articulated. This is particularly true concerning how medical mission command relates to the Army's core competencies and warfighting functions.

Field Manual (FM) 4-02, Army Health System, is the Army Medical

Department's (AMEDD's) capstone doctrine. This doctrine puts medical mission command at the center of the 10 medical functional areas, just as Army Doctrine Reference Publication 3-0, Unified Land Operations, makes mission command the center of the seven warfighting functions. (See figure 1 on page 10.)

The problem is that FM 4-02 reserves medical mission command

for medical commands, medical brigades, and multifunctional medical battalions. So how does it pertain to the modular force? What does medical mission command mean in a brigade combat team (BCT), and who exercises it?

In this article, I will use doctrine analysis and lessons learned from an armored BCT's decisive action rotation at the National Training Center

(NTC) at Fort Irwin, California, to address these issues.

Medical Doctrine 101

Any Medical Service Corps (MSC) officer worth his or her salt can quickly recite the 10 medical functions: medical mission command, medical treatment, hospitalization, medical evacuation, dental services, preventive medicine services, combat and operational stress control, veterinary services, medical logistics, and medical laboratory services. The 10 areas are essential to the health service support (HSS) and force health protection (FHP) plans.

If you asked that same MSC officer who recited the 10 medical functions where medical mission command belonged in an operation order, he or she would likely say Paragraph 4 (Sustainment) and Appendix 3 (Army Health System Support) to Annex F (Sustainment).

Although correct in the school house, I argue that it is fundamentally wrong. Just as mission command should not simply be pigeonholed into Paragraph 5 (Command and Signal) of an operation order, medical mission command should not be pigeonholed into Paragraph 4, or worse yet, relegated to an obscure annex.

Some would argue that medical mission command is not pigeonholed at all and declare that it is derived from the higher headquarters' mission and commander's intent. While this is a step in the right direction, it is still fundamentally flawed based on the definition of mission command.

Mission Command

Mission command is "the exercise of authority and direction by the commander using mission orders to enable disciplined initiative within the commander's intent to empower agile and adaptive leaders in the conduct of unified land operations."

Simply putting "medical" in front of "mission command" and keeping the definition is easy, but it is not

realistic. Mission command belongs to commanders. The HSS and FHP plans belong to staff officers and support the mission and commander's intent.

The term "medical mission command" implies that someone (for example, a brigade surgeon or medical planner) has authority and direction over all things medical in the brigade or battalion. Such an implication is not likely to be received well by the commander of a BCT.

Medical Mission Command

FM 4-02 describes, but does not define, medical mission command. The best understanding of the doctrinal definition of medical mission command comes from the opening paragraph of Chapter 2, which says, "The complexities of the range of military operations, the myriad of medical functions and assets, and the requirement to provide health care across unified land operations to diverse populations ... necessitate a medical mission command authority that is regionally focused and capable of utilizing the scarce medical resources available to their full potential and capacity."

FM 4-02 goes on to say that each medical mission command organization "plans, directs, executes and synchronizes Army Health System support across the range of military operations."

This description sounds like a reurgitation of the operations process (plan, prepare, execute, and assess) with a hint of medical flavor. It differs significantly from the Army's definition of mission command. And nothing is mentioned concerning disciplined initiative, commander's intent, or mission orders.

The Doctrine Gap

In AMEDD's defense, FM 4-02 was written from the point of view of echelons-above-brigade (EAB) medical units. Here is the problem: This is the only doctrine AMEDD has that defines medical mission command, and it limits the function to a handful

of medical organizations.

Brand new MSC officers are learning that medical mission command is the center of the 10 medical functions just as mission command is the center of the warfighting functions, but medical mission command is limited to EAB medical units. Medical mission command in a BCT is not mentioned. This is a gap in doctrine.

The limited description leaves an unclear understanding of medical mission command in BCTs. Who exercises it? Who is responsible for it? Does medical mission command belong to the brigade surgeon, brigade medical planner, support operations (SPO) medical planner, or the brigade support medical company (BSMC) commander?

If you asked 10 MSC officers in the same BCT this very question, you would likely get many different answers. This is certainly contrary to the concept of mission command.

Medical Roles in a BCT

Over the course of three years in the same BCT, I served first as the SPO medical planner, then as the brigade medical planner, and finally as the BSMC commander. During my first NTC rotation, I was the SPO medical planner, and during the second, I was the BSMC commander. Those rotations taught me just how important medical mission command really is. Here are some of my observations from working in these positions.

SPO medical planner. Similar to the brigade medical planner, the SPO medical planner is a staff officer. The one critical difference is that the SPO medical planner is co-located with the BSMC in the brigade support battalion (BSB). In other words, the SPO medical planner can simply pick up a radio or even talk face-to-face with the BSMC commander for situational awareness.

Distance and terrain at the NTC always impairs radio capability between the BSB and the brigade headquarters. As a result, the SPO medical planner becomes an intermediary between the BSMC,

medical platoons, and the brigade surgeon cell.

Brigade medical planner. The brigade surgeon and the brigade medical planner are the staff officers who plan, prepare, execute, and assess the brigade's Army Health System plan.

I used to think the ultimate responsibility for medical mission command in the BCT rested on the shoulders of the brigade surgeon—the special staff officer of the brigade commander. But in serving as the brigade medical planner, I quickly realized that the brigade surgeon section is inadequately manned and equipped to provide medical mission command for an entire BCT.

The brigade surgeon cell consists of only three Soldiers (the brigade surgeon, a medical planner, and a combat medic in the rank of sergeant first class). It has no equipment for battle tracking, such as Blue Force Tracking (BFT), Command Post of the Future (CPOF), or even FM radios. Everything the brigade surgeon section uses for situational awareness on the battlefield is provided through the brigade S-4 section, where it inevitably shares a CPOF.

How can the brigade surgeon have

medical mission command if direct communication with battalion medical platoons or the BSMC is not possible? It can be done with thorough coordination and synchronization, but the surgeon section relies on borrowing infrastructure through the S-4 to communicate.

BSMC commander. Because the BSMC has at least a dozen medevac vehicles with BFT and FM radio communications, the BSMC commander, who is located in the BSB, has a keen understanding of the medical situation at all times.

As I witnessed at my last NTC rotation, co-locating medevac vehicles with BFT at the back of each battalion's main aid station provides instant communication capability and situational awareness. The brigade surgeon cell simply does not have this capability and must instead relay messages down to the BSMC commander or SPO section in order to get medical situation reports. This is time-consuming and therefore impractical in a decisive action environment.

Interactions at the NTC

During NTC rotation 15-06, the primary plan for medical reporting

for the 2nd Armored Brigade Combat Team, 1st Infantry Division, was to submit medical situation reports via BFT messaging. Because the brigade surgeon had CPOF and not BFT, the SPO medical planner consolidated BFT medical situation reports and converted them to CPOF before submitting them to the brigade. This was an effective way to create and maintain a medical common operational picture (COP).

Information flowed in this way during the entire decisive action fight. Medical platoons and the BSMC used BFT to report to the SPO section, which consolidated these reports and converted them to CPOF to submit to the brigade surgeon.

The brigade surgeon was then responsible for creating the COP in CPOF and disseminating it throughout the brigade. Finally, the reporting loop was closed when the SPO medical planner converted the medical COP from CPOF to BFT and disseminated it to the BSMC and the medical platoons.

How does this NTC example relate to medical mission command in an armored BCT? None of the three key medical players in a BCT (the

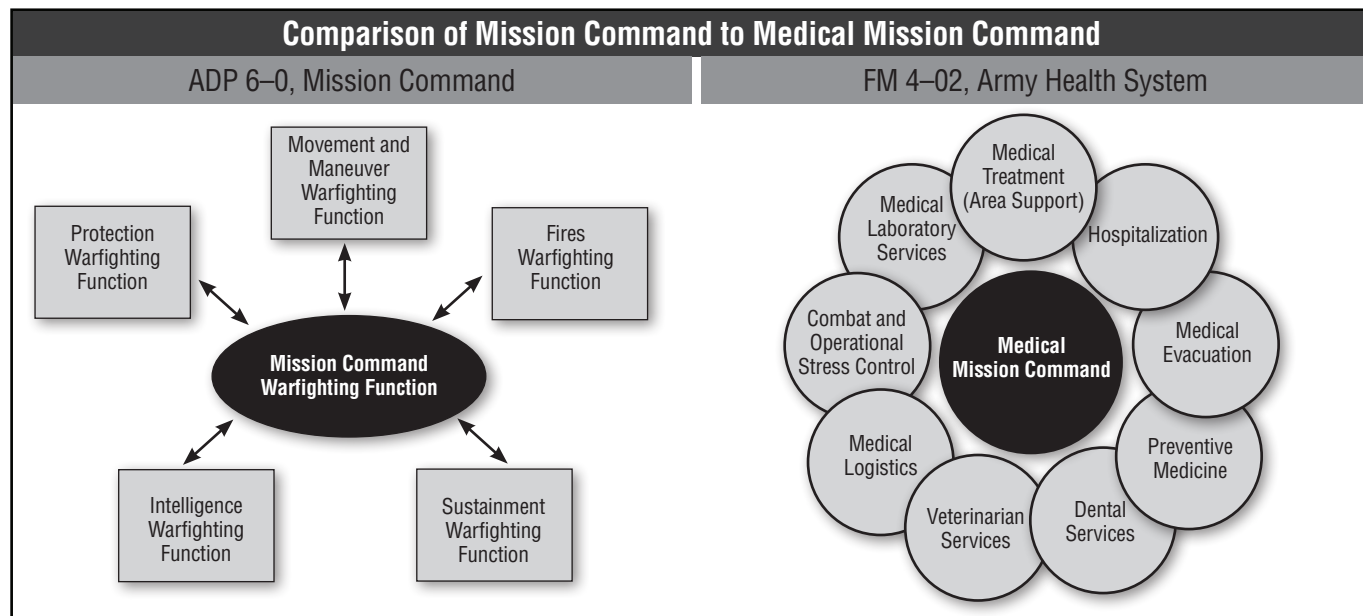


Figure 1. This figure compares the roles of mission command and medical mission command in doctrine. The chart on the left is from Army Doctrine Publication 6-0, Mission Command, and the chart on the right is from Field Manual 4-02, Army Health System.

brigade surgeon, the SPO medical planner, and the BSMC commander) truly had medical mission command. The brigade surgeon and SPO medical planner did not attempt to direct the BSMC commander to launch ground medevac missions. Likewise the BSMC commander did not open or close ambulance exchange points without notifying higher echelons.

The concept of medical support was mutually understood and then combined with mission requirements. This is more in line with the definition of control rather than command. As defined in the principles of mission command, “Control is the regulation of forces and warfighting functions to accomplish the mission in accordance with the commander’s intent.”

Medical Mission Control

So what is the alternative, and how do we bridge the gap? It has taken me seven years as an active duty MSC officer and two rotations at the NTC to come to the conclusion that the best solution is to create a new term with a new definition to properly define authorities and responsibilities.

This may seem like semantics, but what if medical mission command became medical mission control? This would alleviate the seemingly forced correlation between mission command and medical mission command. Additionally, the term “medical mission control” better reflects the purpose of medical support in a BCT. We control the medical functions in a BCT in order to support the commander’s intent—as opposed to pretending to conduct mission command.

Changing the term provides the opportunity to change the definition. I propose defining medical mission control as, “The regulation of a modular force’s medical assets and medical functional areas by the unit’s senior medical planner to accomplish the commander’s intent.”

This definition applies specifically



A combat medic and combat lifesaver from the 2nd Armored Brigade Combat Team, 1st Infantry Division, treat a patient as their first sergeant monitors the radio at an ambulance exchange point during rotation 15-06 at the National Training Center at Fort Irwin, California, in March 2015. (Photo by Sgt. Enriqueta Fuentes)

to modular forces, including BCTs and their subordinate battalions. It specifies control, not command, of medical assets by the medical planner, who is a special staff officer of the BCT commander.

The term “medical mission control” alleviates the confusion of who is in charge of the Army Health System plan in the BCT—the BSMC commander, SPO medical planner, or the brigade medical planner. The BSMC commander is out of the running by nature of the definition; he or she is an executor, not a planner. The seniority aspect is the final consideration, which is black and white.

This is just one humble opinion about a term. Perhaps I should refrain from attempting to redefine doctrine, but I can’t help but notice the disparity in the doctrinal understanding of medical mission command in a BCT.

Medical mission command makes perfect sense in an EAB medical

unit. However, in today’s modular forces, all too often the brigade surgeon section, SPO medical planner, and BSMC commander are disenfranchised from each other because of a lack of understanding of roles and responsibilities. Changing “command” to “control” and emphasizing this paradigm shift in the AMEDD Center and School may fix the disparity and bridge the gap in doctrine.

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A forklift operator transports a pallet of ammunition at Crane Army Ammunition Activity (CAAA), Indiana. The CAAA's mission is to receive, store, and ship conventional ammunition and munitions in support of worldwide military operations. (Photo courtesy of CAAA Public Affairs)

Transforming Military Support Processes From Logistics to Supply Chain Management

■ By Col. (Ret.) Scott S. Haraburda

For more than two millennia, the philosophical words of legendary Chinese general Sun Tzu have influenced successful strategic military plans. Many prominent leaders have heeded his warning that “the line between disorder and order lies in logistics.”

Ammunition is one of the Department of Defense's (DOD's) top three largest logistics burdens along with water and fuel.¹ Crane Army Ammunition Activity (CAAA), located in central Indiana, has for more than a decade produced conventional munitions and provided them to war-

fighters. For as long as combat leaders have fought and won battles in Iraq and Afghanistan, they have appreciated the activity's support.

As an Army Working Capital Fund organization, the CAAA operates under a revolving fund concept, relying on revenue from sales to finance operations rather than on budget proposals for direct appropriations from Congress. The activity operates as a business-like enterprise, managing cash and expenses in real time.

Recently, CAAA leaders saw that the ongoing fiscal crises were chal-

lenging future organizational readiness and prompting changes in their strategic planning. As a result of the rapidly changing fiscal environment, the CAAA began a dramatic transformation in its business practices by replacing its logistics-based operational processes with the more robust and flexible approaches of supply chain management (SCM).

SCM Beginnings

Before the 1950s, business leaders thought of logistics as a military function, which involved procurement, maintenance, and transportation of

facilities, materiel, and personnel.²

Since then, the Council of Supply Chain Management Professionals (CSCMP) has defined logistics management as the activities that plan and control the flow and “storage of goods, services, and related information between the point of origin and the point of consumption” to satisfy customers’ requirements.³

Originally introduced by consultants in the early 1980s, SCM became viewed as extending logistics management outside the company to include suppliers and customers. However, SCM is more than that. According to the CSCMP, SCM encompasses all activities involved with procurement and manufacturing, including collaboration with suppliers, service providers, and customers. It also includes supply and demand management.

Even if companies don’t acknowledge it, they participate in a supply chain. But the level of participation depends on the complexity of the product, the number of available suppliers, and the availability of raw materials.

Different Supply Chain Goals

According to the DOD’s 2010 Logistics Strategic Plan, the military logistics mission is “to provide globally responsive, operationally precise, and cost effective joint logistics support for the projection and sustainment of America’s warfighters.”

Although there are many similarities, commercial chains are much different from military supply chains. The main difference is a very different ultimate goal. The commercial sector seeks maximum profit, while the military sector seeks maximum supply support to military units.⁴

In essence, the military goal is to meet readiness goals while minimizing overall costs to the taxpayers.⁵ Furthermore, the military must have a supply system that effectively responds to battlefield needs under the constraints of force capabilities, the combat environment, enemy capabilities, threats, and doctrine.

Today most military logistics units use predictive, linear supply chains that operate in traditional, hierarchical military structures. For instance, logistics managers tend to ignore parts of the supply chain they cannot see or control.

As a result, they create excess buffer stock locally to adapt to a volatile, uncertain, complex, and ambiguous environment.⁶ This lack of coordination creates a “bullwhip effect” in which customers increase demand variability in the supply chain from downstream customers to upstream suppliers.⁷

DOD Supply System

The DOD’s colossal supply system has over 100,000 suppliers and uses over 2,000 existing systems to manage its inventory, valued at \$92.6 billion in fiscal year 2015.⁸ The inventory comprises four stock categories: approved acquisition objective, economic retention, contingency retention, and potential reutilization.⁹

The DOD manages two types of unique items, which are typically not managed in the commercial sector: controlled items and sensitive items. Controlled items include money, narcotics, registered mail, and precious metal alloys. Sensitive items can present a threat to public safety and include weapons, ammunition, and explosives.

To help the DOD administer most of its logistics, the Defense Logistics Agency (DLA) manages nearly 5 million items through eight unique supply chains, while processing nearly 30 million receipts and issues annually.¹⁰

In 2011, the DOD had 19 maintenance depots, 25 distribution depots, and over 30,000 customer sites.¹¹ The depots provide internal wholesale activities operating with stock inventory, distribution processes, and warehouse infrastructures. Their processes include workload projection, receipt processing, wholesale returns, stock location, materiel denials, space utilization, and transportation.¹²

Furthermore, the sites must com-

ply with statutory requirements. For example, the DOD must maintain the technical competence and resources necessary to ensure effective and timely response to mobilizations, national defense contingency situations, and other emergency requirements.¹³ No more than half of appropriated funds for depot-level maintenance and repair can be contracted to commercial firms.¹⁴

Inventory Management

The DOD’s inventory systems depend on four factors: policies regulating how much and when to order, holding costs, supply and demand, and procurement lead times. Excess inventory levels, inadequate controls, and cost overruns are problems affecting DOD inventory management.¹⁵ By resolving these problems, the DOD has the potential to save millions of dollars.

Deciding when and how much to order directly affects the operating costs of the other logistics functions. One of the major problems with volatile schedule changes is the previously mentioned bullwhip effect.

The effect usually originates at the point of external customer demand and increases upstream toward the suppliers of raw materials, resulting in insufficient or excessive inventories, capacities, and costs at various stages throughout the supply chain. Reducing lead times, reducing variability, and developing alliances with vendors are a few ways to cope with this problem.

Not having the goods needed by one’s customer, known as a stockout, affects the long-term workload and has short-term impacts on the customer. Customers who experience frequent stockouts become less likely to place subsequent orders with the company.¹⁶

To prevent this, companies maintain safety stocks, basing them on demand variability, lead-time variability, and service level.¹⁷ Some managers use “gut feelings” or hunches to establish safety stock levels, while others base them on a

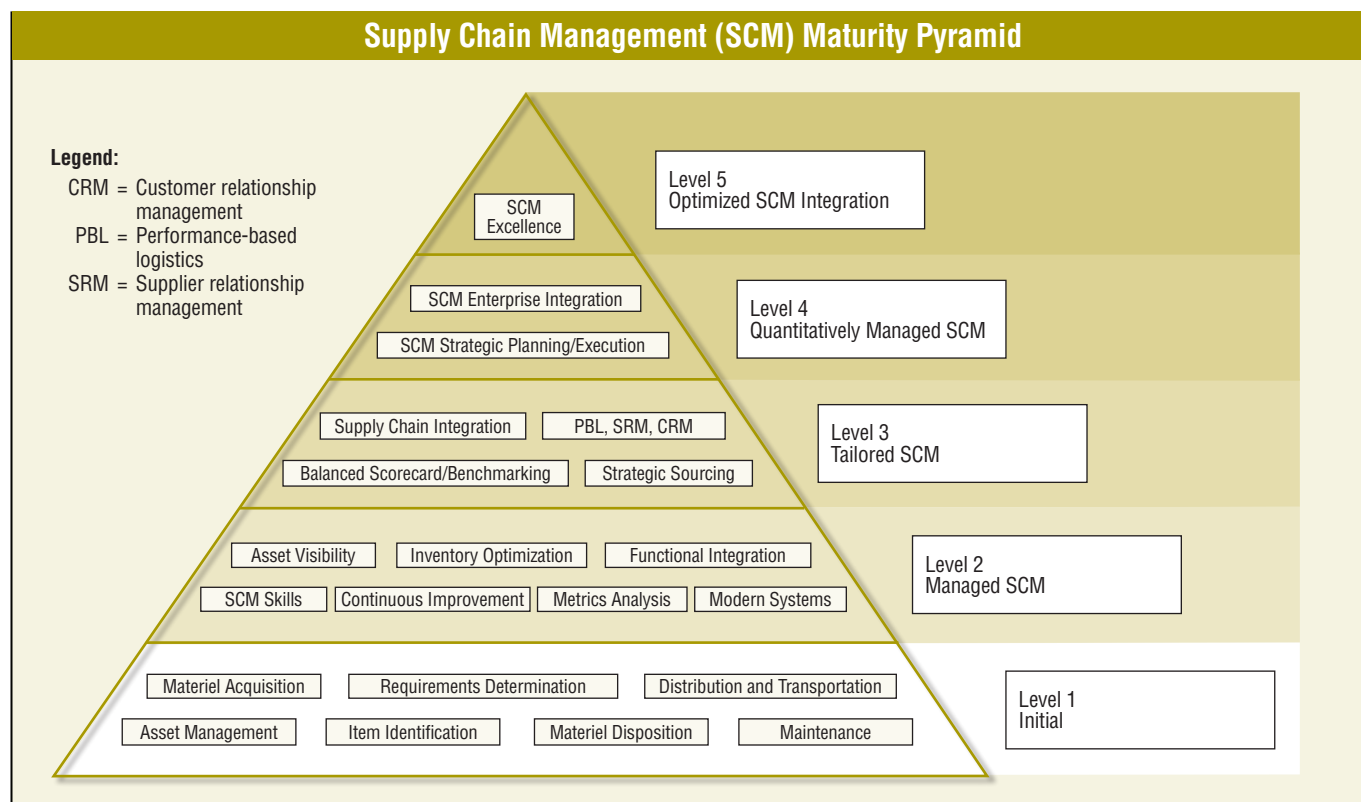


Figure 1. Supply Chain Management Maturity Pyramid.²¹

portion of cycle stock level.

While easy to execute, these techniques generally result in poor performance. Instead, managers should consider inventory costs and customer service. Still, without an understanding of stockout costs, one cannot assess the costs and risks of holding inventory.

Optimizing Supply Chains

In 2001, the DOD began applying SCM to increase reliability and reduce its logistics footprint. This included synchronizing each element of the supply chain with enterprise-wide management of inventories, effective demand planning, and essential asset visibility. To link these improvements together and standardize SCM, the DOD selected the Supply Chain Operations Reference (SCOR) model as its framework.

Now, DOD regulations require its supply systems to provide responsive, consistent, and reliable support to the warfighter during peacetime and war by using the SCOR processes of

plan, source, make and repair, deliver, return, and enable as its supply framework.¹⁸

The Government Accountability Office has recommended that the DOD reduce duplicative inventory requirements, establish electronic ordering capabilities, and use prime vendors to deliver supplies.¹⁹ In response, DLA has implemented new methods for setting inventory levels and reducing procurement time.

Yet, the data indicates that DLA's collaborative forecasting effort with its customers has not improved forecast accuracy because it lacks key performance metrics and fails to monitor performance.²⁰

CAAA Organizational Changes

Motivated by a declining ammunition workload from the conclusion of two major combat operations, the CAAA assessed all aspects of its ammunition supply chain and identified steps to sustain effective support provided to military units.

The CAAA then assessed its lo-

gistics processes, prioritized resource application, and identified its future direction using a five-level SCM maturity model modified from the one developed by LMI Research Institute. (See figure 1.)²¹

The initial self-assessment indicated the logistics processes were at Level 1, with some elements making it into Level 2. The assessment helped to identify areas for improvement, such as SCM skills and functional integration.

The CAAA updated its practices to include monitoring for emerging business practices, applying modern technologies, and integrating its materiel management systems. It also improved demand and supply planning, customer relationship management (CRM), and strategic materiel sourcing.

Key elements of SCM were embedded into the CAAA fiscal year 2015 strategic plan and were linked to the national strategy requirements for efficient and secure movement of goods along a resilient supply chain.

The strategic plan included capital improvements for its facilities, equipment, transportation, communications, and information systems.

Fortunately, as part of its recent reorganization effort, the CAAA determined that it had sufficient supply management employees when compared to the defense industry norm.²² Yet, these employees lacked key SCM skills, which have since been added to employee training plans.

Using the 2014 DOD Supply Chain Materiel Management Procedures, the CAAA developed policies around the SCOR model with standard process definitions, terminology, and metrics for its supply chain processes in relation to the best-in-class performances of similar companies. Further, steps were taken to collaborate with suppliers and customers to provide asset visibility for in-transit and in-process stocks.

To enable asset visibility throughout its logistics enterprise, the CAAA searched for ways to leverage the Logistics Modernization Program, its new enterprise resource planning system. The CAAA also developed plans to assess potential CRM and

SRM software to improve its customer and supplier relationships.

Next, the CAAA improved its purchasing system. In 2014, about 7 percent of its purchases were made with purchase cards, which was clearly more than the defense industry average of 0.5 percent.²³ To reduce its dependence on these cards, the CAAA consolidated its cards into a small purchasing group and worked with contracting officials to develop better contracting strategies.

Purchase decisions, including when to order, were changed to consider total cost of ownership, which includes all costs for storing and shipping items. Finally, new metrics were developed to assess not only SCM performance, such as inventory turns and supplier delivery performance, but also SCM transformation progress.

The CAAA is in the early stages of its SCM transformation, and much remains to be done, such as developing effective contracting strategies to address risks, implementing CRM and SRM processes, and developing performance metrics generated

through Logistics Modernization Program systems.

SCM concepts are evolving that can help the DOD improve its processes, such as the new ontology of mathematics calculus to manage the supply chain domain.²⁴ Also, similar to the use of the hypertext markup language on the Internet, supply chain markup language is being developed to support SCM systems that are independent of software selection, such as Systems, Applications, and Products software and Oracle's SCM software packages.²⁵ To remain relevant with supplying its military units, perhaps the DOD should explore using these evolutionary concepts.

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The Army and DLA: On Time, Every Time

■ By Lt. Gen. Andrew E. Busch, USAF





National Guardsmen from the 42nd Infantry Division help deliver supplies to Hurricane Sandy victims in Far Rockaway, New York. Soldiers and volunteers delivered over 10,000 meals ready-to-eat and more than 10,000 comfort kits to families in the community. (Photo by Mass Communication Specialist 1st Class Julian T. Olivari)

FEATURES

The Defense Logistics Agency provides the Army with the full spectrum of logistics, acquisition, and technical services during contingencies, exercises, and disasters.

Just over 25 years ago, the U.S. military was a Cold War force based in Europe. In the blink of an eye, it was deploying forces from there to Operation Desert Shield and then Desert Storm. Since then, the next generation of warfighters, especially those deploying to Operations Enduring Freedom and Iraqi Freedom, have regularly been sent to the theater from bases around the world.

In the future, military forces will likely deploy to theaters that are not as mature as Iraq and Afghanistan. As the Army realigns its footprint outside the United States and refocuses its mission sets to regional contingencies, setting the theater will require a more deliberate focus on regional support. The Army will continue to be the major force provider for the geographic combatant commander and will require responsive, integrated logistics partners to quickly set up the operational theater.

Our nation's response to the Ebola virus disease epidemic during Operation United Assistance (OUA) required that many organizations work together. The Defense Logistics Agency (DLA) was a key part of OUA and is a major theater enabler for future contingencies.

Supporting the Army

DLA is proud to be the combat logistics support agency of the United States. It is equally proud of its long-standing relationship with the Army. Although most of DLA's workforce is composed of civilian personnel (including a significant number of Army veterans), it also has 197 active duty Soldiers and 167 Army Reservists providing joint and combined forces with the full spectrum of logistics, acquisition, and technical services.

DLA's six primary-level field activities provide food, fuel, uniforms, medical supplies, and construction equipment worldwide. These activities supply, distribute, and reutilize more than 88 percent of the military's spare parts.

Working side by side with Army operators allows DLA staff to quick-

ly respond to immediate needs. They also work closely with industrial partners to get the right support to the right place at the right time.

DLA brings experience working on whole-of-government projects and emergencies. It has partnered many times with agencies such as the Federal Emergency Management Agency (FEMA), the U.S. Agency for International Development, and the Army Corps of Engineers to provide a total government solution to humanitarian assistance and disaster relief at home and abroad.

Supporting OUA

Beginning Sept. 16, 2014, DLA teamed with the Army to support the U.S. Agency for International Development and U.S. Africa Command (AFRICOM) in OUA, a showcase of joint expeditionary operations. DLA demonstrated its ability to support a contingency operation. It successfully managed nine supply chains and nearly 5.3 million items daily.

The success in supporting OUA came from having teams in place with partners such as the U.S. Transportation Command (TRANSCOM) and logistics providers in the military services and combatant commands. These partnerships let DLA plan and then establish favorable conditions to support the contingency.

DLA swung into action the day President Barack Obama announced that the United States would provide support to Liberia in its time of need. DLA worked with AFRICOM and TRANSCOM to establish a three-country, multimodal distribution network in West Africa.

By Sept. 24, three warehouses were secured and all classes of supply, less ammunition, were delivered shortly after. DLA deployed expeditionary teams from the United States and Europe along with the task force to pre-position critical materials so troops could quickly begin building 17 Ebola treatment units.

Executing contingency contracts during the first few days of the operation was a primary part of suc-



Sgt. Patty Eddy and Sgt. Giovanni Alfaro of the National Guard's 42nd Infantry Division team up with New York City's Office of Emergency Management and the Red Cross to provide food, water, and cleaning supplies to Hurricane Sandy victims in Far Rockaway, New York, on Nov. 19, 2012. (Photo by Mass Communication Specialist 1st Class Julian T. Olivari)

cessfully supporting the mission. DLA's Joint Contingency Acquisition Support Office (JCASO) is the on-call enabling capability that provides operational contract support coordination and integration during contingencies.

JCASO used its expeditionary contracting capability and the flexibility of the DLA's defense working capital fund to fill immediate contract needs until humanitarian assistance funds were made available to the Army contracting organization on the ground. JCASO and DLA expedited contingency contracts for medical equipment, construction supplies, and more to ensure the task force had what it needed to complete its mission.

DLA Troop Support coordinat-

ed the supply of equipment, which Army engineers used to build the treatment units, and coordinated the logistics to ensure materials brought from multiple countries and areas were compatible. When additional parts were needed, DLA Troop Support contractors tracked them down and expedited shipments to the area of responsibility.

DLA Energy personnel quickly established contracts to bring fuel into Liberia and the region. It hired trucking companies to deliver fuel and provided storage containers to ensure generators kept running at the camps where Soldiers lived and worked.

Members of the DLA Distribution expeditionary team rapidly deployed to manage, track, and inventory ev-

everything from food to medical equipment and personal protective gear. Working with agency partners, DLA processed more than 1.2 million liters of water and 16,000 prepackaged meals.

When elements of the 101st Airborne Division needed to dispose of 200 cots, a DLA Disposition Services team helped transfer them to another Army unit. The team also removed hazardous materials and created contracts with local companies that could reuse or dispose of unwanted materials.

DLA Aviation expedited support for critical rotary-wing aircraft spares, working tirelessly to replenish repair parts in a country with few primary roads. The entire agency, along with its network of partners, worked



National Guardsmen of the 42nd Infantry Division help deliver supplies to Hurricane Sandy victims at distribution sites in Far Rockaway, New York, on Nov. 19, 2012. Hurricane Sandy was the largest Atlantic hurricane on record and caused the most damage in New York and New Jersey. (Photo by Mass Communication Specialist 1st Class Julian T. Olivari)

closely with the Army to make this very complex, time-critical expeditionary mission a success.

Global Responsiveness

The primary way DLA responds to the Army's worldwide requirements is through the DLA Land and Maritime and DLA Aviation weapons system supply chains. To support units engaged in international operations, DLA has dedicated readiness teams focused on expediting high-priority requisitions and executing emergency purchases of items that are difficult to procure or that require long lead times.

DLA Land and Maritime also has a team in its Land Operating Forces Support Division that is dedicated to closely monitoring requirements

and quickly fulfilling orders for the Army's European activity sets. This continuous collaboration with the Army at several levels allows DLA to more accurately update forecasts to reflect rapidly evolving operational requirements.

DLA Land and Maritime and DLA Aviation, in coordination with other hardware chains, proactively support Army forward stocking initiatives ahead of demand in Europe, the Pacific, and Southwest Asia. This allows them to take less time to ship materiel, decreasing wait times for units participating in global multinational exercises and operations. In short, forward stocking the right parts increases combat readiness.

DLA field activities continually search for urgent emerging needs,

partnering with organizations like the Army Materiel Command to anticipate and stock DLA items to support Army authorized stockage lists for repair parts.

One major DLA contribution to the Army's global expeditionary capability is its support to Army pre-positioned stock (APS) locations. The Leghorn Army Depot in northwest Italy provides a strategic port for European and African regional missions. It is one of two APS locations in Europe and one of five worldwide used for the storage, maintenance, and shipment of APS for units in the U.S. European Command, U.S. Central Command, and AFRICOM.

Over the next two years, the depot will reset roughly 1,000 mine-

resistant ambush-protected vehicles by ensuring they are shipped from combat theaters and returned to APS. This is one example of DLA's continuous work with the Army to increase readiness—whether it is for combat, training, or a future mission in a pre-positioned location.

DLA's forward-positioned customer support representatives (CSRs) are the eyes and ears out front; some might call them the readiness trip wires. CSRs are located with key stateside Army combat divisions.

By keeping abreast of the units' operating tempo for training and deployments, a CSR detects and resolves problems, filling critical repair parts requirements before they affect readiness. These CSRs ensure rapid support for expeditionary continental United States-based units.

By serving as the on-site points of contact, CSRs provide urgent response, quietly taking care of problems before most people realize a problem existed. They are critical to the operational readiness of the Army's expeditionary combat units.

DLA Distribution continues to support U.S. efforts to bolster the security and capacity of Eastern European allies and partners by helping train land forces in Poland and the Baltics during Operation Atlantic Resolve. This operation is critical to demonstrating the U.S. commitment to the security of NATO and to regional stability.

DLA Distribution in Europe has shipped truckloads of sustainment cargo in support of Operation Atlantic Resolve since April 2014. It provided the first sustainment cargo push to elements of the Army's 2nd Cavalry Regiment. To sustain the participating units, DLA Distribution set up a dedicated truck route with weekly service to Poland and the Baltics.

Domestic Disaster Response

The wide range of DLA's expeditionary logistics support can be seen in its partnership with FEMA. After Hurricane Sandy damaged parts

of the Mid-Atlantic and Northeast, DLA quickly leveraged its logistics experience and industry partnerships to meet the needs of FEMA, the Department of Defense, and the states affected by the storm.

Working closely with TRANSCOM, Active component forces, and the National Guard, DLA provided more than 6 million meals, 4,000 cots, and 9 million gallons of fuel for first responders and enough blankets to cover Yankee Stadium six times over.

DLA's advantage in a natural disaster is its ability to leverage relationships with commercial partners to provide rapid support and humanitarian assistance. For Hurricane Sandy, DLA placed liaisons with FEMA, Joint Task Force Civil Support, and the governors of New York and New Jersey.

This created a seamless route for its 45 embedded professionals to use in delivering 500 sets of cold-weather clothing, 44,000 feet of power cables, and contracting services for trash and hazardous materials removal, power generation, dewatering operations, and port restoration.

Hurricane Sandy's devastation was the ultimate test of the Northeast Home Heating Oil Reserve; it was the first time emergency withdrawals were made.

Immediately after the president ordered the transfer of the emergency fuel, DLA Energy personnel began loading fuel from the reserve stocks in Connecticut onto trucks and barges to bring the fuel to state, local, and federal first responders in New York and New Jersey. They moved about 4 million gallons of heating oil to prevent fellow Americans from freezing.

At most fuel terminals in New York Harbor, the storm caused heavy water damage and power loss, causing the fuel terminals to close. As a result of the fuel shortage, the Department of Energy created the Northeast Gasoline Supply Reserve. Once again, DLA Energy provided support with the rapid acquisition of storage service contracts in the Northeast so

gasoline could be delivered.

Working with the Army Materiel Command, DLA is planning a series of rapid deployment training events to prepare for future domestic disasters. DLA will provide two teams on 60-day on-call rotations to coordinate humanitarian assistance with local law enforcement. These scenarios will focus on the Cascadia subduction zone and the impact of a possible tsunami in the Pacific Northwest resulting from a major earthquake.

DLA's main mission is to provide effective and efficient global solutions for warfighters and other valued customers. As new missions arise around the world, remember DLA during the planning stages. It provides a broad range of logistics and supply-chain capabilities by applying industry best practices to ensure customers receive what they need, when they need it.

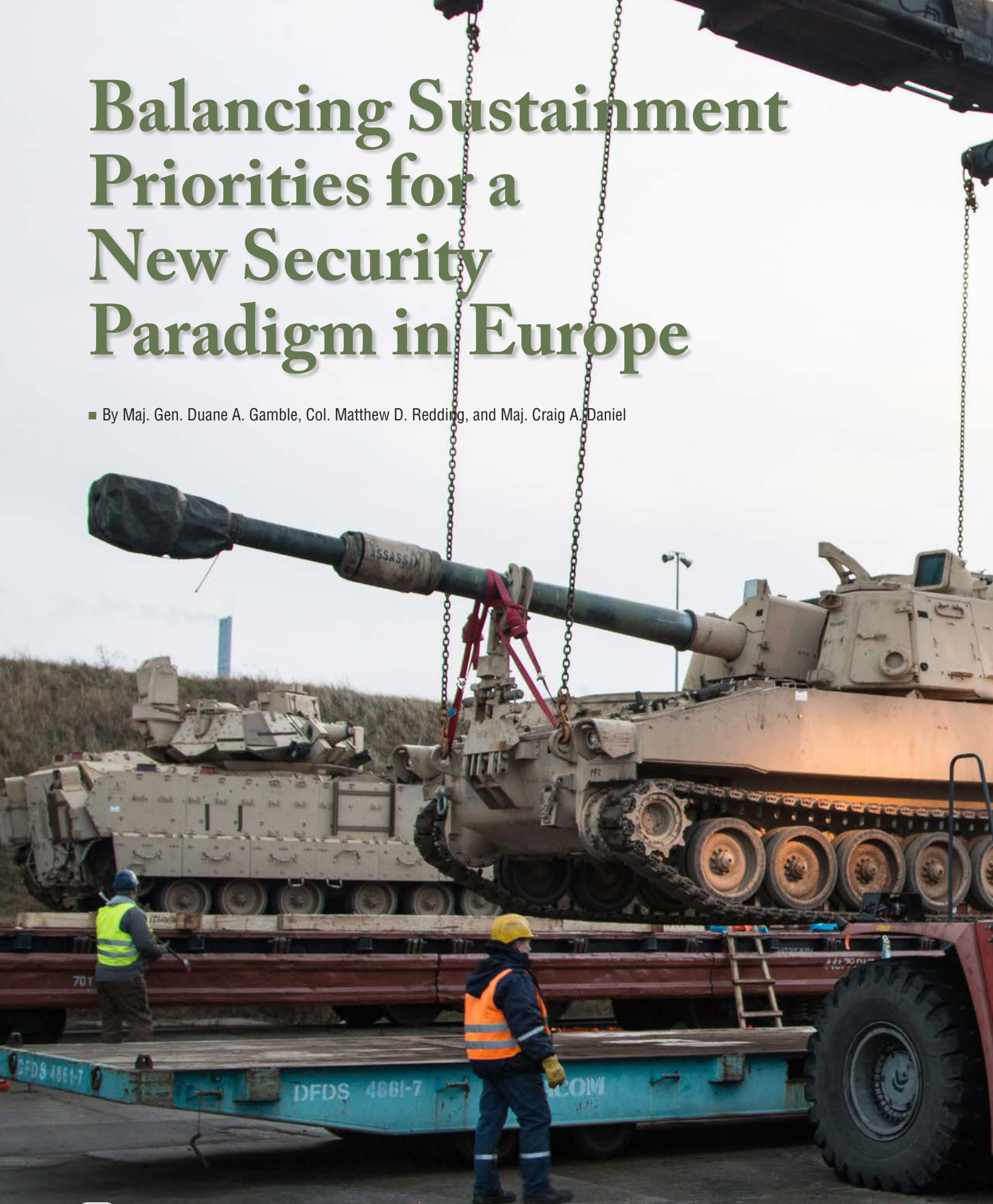
Through early and meaningful engagement with the Army, DLA can balance the requirements and trade-offs needed to develop the right solutions. It has supported deployed troops in every major conflict and contingency operation over the past five decades and looks forward to continuing to support in the future.

Lt. Gen. Andrew E. Busch, USAF, is the director of the Defense Logistics Agency. He earned his commission in 1979 as a graduate of the U.S. Air Force Academy. He is a logistician with a core background in fighter aircraft maintenance and has experience in supply, transportation, and acquisition issues at the wholesale logistics level.

The Defense Logistics Agency is America's combat support agency. It provides the Army with the full spectrum of logistics, acquisition, and technical services. For information about another Defense Logistics Agency Activity, please read "DLA Troop Support Supplies Army Expeditionary Logistics" by Brig. Gen. Charles Hamilton on page 42.

Balancing Sustainment Priorities for a New Security Paradigm in Europe

■ By Maj. Gen. Duane A. Gamble, Col. Matthew D. Redding, and Maj. Craig A. Daniel





Workers load an M109A6 Paladin onto a trailer at the Port of Klaipeda on Dec. 4, 2015, in Klaipeda, Lithuania. The 624th Movement Control Team, 39th Transportation Battalion (Movement Control), 16th Sustainment Brigade, ensured the Paladin and other pieces of European Activity Set equipment were loaded into vessels bound for Coleman Barracks in Mannheim, Germany, where they will be serviced and stored for use by the next rotational force. (Photo by Staff Sgt. Michael Behlin)

FEATURES

In the future European theater of operations, sustainment formations will need to operate in a secure network, under a missile defense shield and have sufficient and dispersed stocks of ammunition, fuel, and water to execute a campaign across time and distance.

On the evening of Feb. 23, 2014, the world sat mesmerized by a 2 ½-hour ceremony that marked the conclusion of the 2014 Olympic Winter Games in Sochi, Russia. What occurred in the days that followed caught the international community off guard.

Less than a week after the ceremonies in Sochi drew to a close, Russian soldiers in unmarked uniforms entered the Crimean Peninsula. Over the next several weeks, nations across Europe watched as Russian soldiers seized key infrastructure across the peninsula, taking control of one of the region's key pieces of geography.

Paradigm Shift

The global security paradigm has shifted dramatically over the past year. European security hangs in a delicate balance and is under pressure on many levels of diplomatic, informational, economic, and military influence. Today, the U.S. Army in Europe is meeting the current security realities with a force structure that was deliberately shaped several years ago when Russia was anticipated to become an active partner within the theater alongside the United States and NATO—a forecast future that simply did not materialize.

The European environment now requires U.S. forces to use all available assets to meet the demands of an ever-shifting security reality. We have been forced to apply overseas contingency operations funding to support a new generation of partnerships and exercises.

Regionally aligned forces (RAF) have transformed from a doctrinal concept into an operational reality. We have reorganized our formations and our mission command structures to effectively control units operating in regions that were not familiar to U.S. troops just 24 months ago.

We have changed the way we think. We have changed the manner in which we operate. We have changed in order to balance the immediate needs of assurance and

deterrence with a sustainable force posture that achieves operational security objectives.

The sustainment contributions to this new security end state include building a theater support architecture for Operation Atlantic Resolve—the series of exercises and operations under which we employ forces to assure allies and deter aggression—to stand alone as an independent area of operations (AO) within the theater.

This AO must be supported by RAF units and enabled by an enduring Reserve component (RC) sustainment footprint. This will allow our assigned theater sustainment command (TSC) forces to return to their theater-level missions of providing support for reception, staging, onward movement, and integration (RSOI), theater distribution management, and theater sustainment.

The TSC must also exercise and employ its expeditionary command post and be prepared to open a second AO inside the theater in support of U.S. Africa Command (AFRICOM) or other contingency requirements. In short, the 21st TSC is focused on simultaneously maturing support for Atlantic Resolve operations while remaining prepared to open and sustain operations within a second AO or joint operations area.

U.S. forces have had to adapt to an operational environment in Europe that was not forecast. We are expanding our capacity and capabilities with RAF units in the near term, and the Planning, Programming, Budgeting, and Execution System dictates that we program and plan to include RC forces in longer-term solutions.

Programmed training exercises offer near-term opportunities to integrate RC forces into our formations using overseas deployment training. But in order to create the endurance and depth required in this new security paradigm, we must deploy Active and Reserve units from the continental United States (CONUS) for longer rotations to Europe.



Sgt. Scott Bird, a medic with the 421st Multifunctional Medical Battalion, 30th Medical Brigade, hustles toward 82nd Airborne Division Soldiers during an airborne jump at Trident Juncture 2015 in San Gregorio, Spain. The brigade provided medical coverage at the drop zone with medical partners from Belgium, Spain, Germany, and the United States. (Photo by Capt. Jeku Arce)

Balancing Sustainment Priorities

A rapidly changing security environment has immediate implications for Army sustainment formations. Many of these implications will persist for the foreseeable future. The ability of the United States to assure allies and deter aggression is largely linked to the Army's ability to deploy and sustain expeditionary forces that will face near-peer military adversaries in a very complex environment.

We know access to seaports and airports will be contested, if not initially denied. We know our data systems will be attacked or degraded. We know we will face saturated commercial infrastructure, competing de-

mands of allied nations, and requests for support to sustain our allies and partners. As daunting as these challenges may be, they are realities we must be prepared to overcome.

The strategic context of European security requires clear operational and tactical sustainment priorities for both assigned and rotational forces. Today's new security paradigm and its associated challenges require a simple, prioritized approach to create warfighting sustainment capabilities and competencies in both leaders and organizations.

The sustainment capabilities and competencies required in Europe are being built to support the following

operational and tactical sustainment priorities: readiness, anticipation, setting the theater, and leader and force development.

In an increasingly globalized world, the rapid spread of conflict, instability, and a requirement to balance presence with response present strategic and operational planners with complex problem sets. Solving these ever-shifting problem sets requires logisticians to reassess sustainment capabilities and competencies in order to intelligently formulate plans and policies.

Readiness: Ready for What?

For the past 14 years, the Army's



Army Reserve Soldiers from the 7th Civil Support Command, Kaiserslautern, Germany, join a Navy-led task force as part of Exercise Daimiel 15 in Spain. The Soldiers provided chemical, biological, radiological, and nuclear response, civil affairs, medical, and mission command capabilities as part of Combined Task Force 68. (Photo by Sgt. 1st Class Matthew Chlosta)

focus has been on sustaining forces in combat, counterinsurgency, stability, and security operations. In the emergent European security paradigm, Army leaders are tasked with training and developing our force for ground combat.

In line with the chief of staff of the Army and the U.S. Army Europe (USAREUR) commander's priorities, the 21st TSC has refined its sustainment focus to provide a warfighting level of readiness that highlights tactical and operational sustainment functions. Achieving warfighting readiness while providing sustainment to assigned and RAF units operating across Europe is currently stretching USAREUR's assigned sustainment force structure.

High operating tempo and extended lines of communication are the realities of Operation Atlantic Resolve.

RAF rotations in support of Operation Atlantic Resolve have logged nearly twice the number of miles and range time experienced during rotations at CONUS combat training centers.

Recapturing Readiness

The European theater was optimized for efficient operations in western Germany and designed to support training rotations to Grafenwoehr and Hohenfels. Years ago, when Russia was viewed as a partner in the global security environment, entire echelons of support and enabling structures were reinvested into CONUS-based force structure and the remaining structure and capabilities were optimized for theater security cooperation based on a stable regional security framework.

Now U.S. forces operating in Eu-

rope must come ready to execute doctrinal missions under arduous field conditions; there simply is no safety net of echeloned support left in Europe to reinforce tactical commanders who are simultaneously performing theater-level sustainment and theater-setting tasks.

Expeditionary formations deploying to Europe must rely on their organic, tactical sustainment. Forces must be able to deploy, move tactically, and operate under constant pressure from conventional and hybrid threats. When asked, sustainment forces must be ready for the most extreme test of capability against a potential state-level aggressor.

Units deploying to Europe will have to be ready to fight their way into their AO. Sustainment plans and functions must use tactics and

techniques that are resistant to enemy fires, observation, and cyber capabilities. Sustainers' field craft and organic logistics skills have atrophied in an era of contracted sustainment, forward operating bases, and Army Force Generation cycle force pools.

Generating true warfighter readiness with assigned forces has been taxed by a requirement to sustain operations across vast distances for extended periods of time. The readiness of each unit must account for its training tasks, modified table of organization and equipment, and common table of allowance equipment that enable tactical operations against the most sophisticated potential adversaries.

Future security plans incorporating rotational forces must account for sustainment. Formations must train and deploy with their full range of capabilities, and they must be resourced to endure long-term field conditions that test their ability to operate in a contested battlespace.

Sustainment Mission Command

The ability of units and leaders to provide sustainment mission command over large areas has become a focal point of the 21st TSC. Operating and synchronizing sustainment across multiple AOs is an emergent necessity. No longer can we view the European area of responsibility as a single AO.

Planning for and rapidly incorporating rotational sustainment capability is critical to USAREUR operations at the strategic and operational levels. Posturing forces with adequate organic sustainment and then augmenting that support with contracted or echeloned support from the theater base or allied nations are complex tasks.

The 21st TSC currently employs the 16th Sustainment Brigade, which has a single movement control battalion (MCB) and a single combat service support battalion (CSSB), in an AO that arguably should be supported by two sustainment brigades, two MCBs, and multiple CSSBs.

The robust organic sustainment capacity of RAF and assigned brigade combat teams are challenged by the wide dispersion of units and operations, the lack of pass-back combat vehicle capability, and the thinly stretched echelons-above-brigade (EAB) sustainment assigned to the 21st TSC and USAREUR.

Additionally, mission command over several theater enablers, such as military police, engineer, and medical units, and the integration of national-level logistics, create additional planning and readiness challenges. Supporting small formations across a widely dispersed AO places a premium on distribution, traffic management, and materiel management functions.

Allied Operations

Today, the balance of power in Europe is fragile and NATO is focused on supporting and deterring aggression from locations in Western Europe. With recent expansions of NATO, allied nations have expanded the frontier of freedom and prosperity. That expansion has also led to a larger sustainment AO. Assigned and rotational forces must be prepared to operate with allied forces.

NATO executed over 40 battalion-level training exercises with U.S. forces in 2015 and will increase that number in the future. Tactical sustainment functions and interoperability will remain major points of emphasis for assigned and rotational forces.

Speed Matters

Speed matters when it comes to movement because operational forces are located away from existing supply sources. But speed and proficiency also matter in diagnosing maintenance faults, detecting changes in the AO, reporting, and developing a sustainment common operational picture. Deploying and reinforcing our allies depends on unit deployment and march discipline within every echelon; we all compete for the same resources.

European supply and distribution

lines of communication are largely "exterior" lines, spanning multiple international border crossings and requiring detailed and efficient coordination to ensure the seamless transit of supplies over extended distances. NATO and its allies face significant freedom of movement challenges not experienced by Russia.

Crossing borders, customs, and hazardous materials regulations require detailed expertise in this "pre-war" security environment. The ability of NATO forces to generate "interior line" effects will help balance the European security posture.

The paradox of micro logistics over macro distances is a growing challenge in Europe. Sustaining company-sized maneuver formations in widely dispersed locations has forced our sustainment organizations to morph into nondoctrinal roles and use nondoctrinal procedures. Warfighter readiness requires a deep and broad immersion in our doctrinal sustainment functions and the integration of both Active and Reserve capabilities.

The Army Materiel Command recently established the strategic European Activity Set, which includes equipment and capabilities to rebuild an echelon of strategic sustainment. Priority planning also continues for Army pre-positioned stocks. Integrating sustainment and theater-opening functions into these future requirements will add depth and complexity to the many tasks required of sustainment units. Understanding how to move and receive personnel and equipment is pivotal in developing speed and reducing response time.

Future Sustainment Design

The next phase in addressing the enduring and emergent requirements is to establish centralized sustainment mission command in the European theater. Over the past decade, the 21st TSC has inactivated 50 percent of its force, and a once multi-echelon and robust theater-level support command has been reduced to a fraction of its historic peak of

over 70,000 personnel.

The expansion of NATO operations and AOs have not been met with increased logistics, military police, medical, or contracting forces to support the increased footprint.

Maturing sustainment in the Atlantic Resolve AO is critical for long-term success. This will depend on the RAF brigade combat team's ability to deploy its full sustainment capability

stretched sustainment brigade—until a rotational EAB sustainment capability is resourced and aligned to the Atlantic Resolve AO.

TSC planners have begun incorporating expeditionary sustainment command headquarters in planning discussions about how to rapidly open and close new and multiple AOs. The integration of subordinate sustainment command echelons is a

for 70 years, but it has been decades since it was set for the RSOI of corps and divisions of expeditionary, CONUS-based forces. Decades have elapsed since USAREUR and the 21st TSC have practiced in the art of opening AOs within the USAREUR area of responsibility, particularly in Eastern Europe.

Shaping the security environment and developing the capacity needed to gradually or rapidly expand military operations is a complex and demanding task. The Combined Arms Support Command has been diligently exploring Army warfighting challenge #16, "Set the Theater, Sustain Operations, and Maintain Freedom of Movement." It is developing doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy concepts to meet this warfighting challenge.

Linking comprehensive war games to the needs of opening and setting the theater sustainment base (to include engineer, signal, military police, air and missile defense, and movement control assets) will be essential as we consider how sustainment is integrated into force flow, expeditionary base operations, and long-term force design.

The sustainment community will compete for resources in future total Army analysis cycles, and we must ensure we have the depth to mobilize, equip, and sustain future operations.

The sustainment community will compete for resources in future total Army analysis cycles, and we must ensure we have the depth to mobilize, equip, and sustain future operations.

and on the Army to source a tailored sustainment brigade for the Atlantic Resolve AO. This tailored sustainment brigade would give the 21st TSC the depth and capacity required to provide sustainment to both theater assigned and RAF forces.

Simultaneously, this brigade will enable the TSC to reinvest in generating sustainable readiness model training for assigned forces and allow them to focus on their RSOI and theater sustainment competencies to set the European theater.

Current theater sustainment structure cannot fully meet all requirements with the assigned single sustainment brigade headquarters and CSSB. The 21st TSC has dedicated the 16th Sustainment Brigade, its only sustainment brigade, to sustainment mission command of the Atlantic Resolve AO.

The 39th Transportation Battalion (Movement Control) adapted to perform the functions of a CSSB headquarters and separate MCB functions inside the Atlantic Resolve AO. The near-term operational risk of assigning mission command for the Atlantic Resolve AO places the burden of managing theater sustainment on the TSC staff—instead of on an already

growing operational imperative.

Developing a deliberate means to train, assess, and incorporate CONUS and RC expeditionary sustainment command and sustainment brigade capabilities into our enduring force posture will greatly enhance our support to NATO and the next spiral of policy development for the NATO Readiness Action Plan.

Echelons of equipment and the subsequent doctrinal employment of a sustainment mission command headquarters will solidify the TSC's ability to rapidly open, set, and sustain multiple AOs from the theater sustainment base. We need to expand the role and deepen the participation of the RC. The European theater relies upon the RC's ability to rapidly mobilize and deploy essential sustainment, transportation, maintenance, medical, and engineering capabilities. A portion of our theater sustainment plan focuses on capabilities not inherent to the Active component and that cannot be contracted in an active theater of war.

Setting the Theater

We are defining theater opening and setting the theater in USAREUR. In Europe, the theater has been "opened"

Sustaining NATO

Planning for when and how to integrate expeditionary, CONUS-based forces, linking them to existing NATO and allied capabilities, and planning for joint and combined logistics support to unified land operations is a daunting task. Key components in the 21st TSC planning effort are incorporating theater-level tabletop exercises (TTX) and sustainment terrain walks, and integrating multiple Department of Defense and multinational allies and partners.

Through TTXs, the 21st TSC has been able to use current and anticipated operational scenarios to link

our strategic sustainment providers to theater war planners in a series of structured vignette-based war games. These conceptual exercises highlight the roles, responsibilities, gaps, and mitigation plans related to various military scenarios.

These TTXs have proven effective in shaping our discourse and planning efforts with allies because we are able to highlight areas such as bulk commodity consumption, the magnitude of movement, and engineering assets required to sustain future NATO planning efforts and the time lines associated with executing these efforts.

Wargaming sessions and TTXs bring together strategic leaders and joint, multinational, and theater-level planners to collectively discuss real and perceived capacity, capability, and throughput constraints. These exercises have led to a renewed focus on NATO standards for operations and logistics, freedom of movement initiatives, and the development of acquisition and cross-service agreements required to facilitate a rapid reinforcement of our allies.

Developing Leaders

Warfare throughout history has changed little over time. It is a struggle of wills, the extension of politics by other means, and a crucible in which violence, character, and courage collide. Leader development for our military and civilian workforce needs to be grounded in the study of warfare, the science of logistics, and the practice and art of leadership.

The star by which we need to set our path is one of training leaders and units in high-end combat operations. Full-spectrum conflict requires unit capability built upon Soldiers who possess competence in their warfighting and sustainment tasks. Only by teaching and exposing our junior leaders to the realities of combat will we be able to properly resource the collective echelons of command.

Army leaders must be ready for the crucible of combat. Leaders inside our sustainment community need to

prepare for war and to prepare their units to perform their missions with the highest level of competence.

Providing anticipatory sustainment to dispersed assigned and RAF units executing Atlantic Resolve provides tremendous opportunities for unit training, but this alone falls short of the full-spectrum training required to achieve warfighter readiness.

The Army's sustainable readiness model has to account for the need to program rotational forces for NATO exercises and the need to build and exercise European scenarios into combat training center and mission command training program warfighter exercises.

Building a bench of leaders who understand the complexities of European security, and how to operate inside NATO, will have strategic importance in the future. Expanding our interoperability and deepening our ties with NATO allies requires a dedicated and institutional approach beyond what the assigned forces in Europe can currently manage.

The European security environment has dramatically changed in recent years. The rapid manner in which our Army has responded to this emergent condition has been remarkable. By focusing on readiness and striving to achieve warfighter readiness, we will be able to build strategic deterrence against potential aggressors. The strategic impact of our Army is the solid knowledge that we have trained for the crucible of combat and can integrate our formations with allies in any future scenario.

In the future European theater of operations, readiness will be built upon anticipated requirements that will set the theater of operations. Sustainment formations will need to operate in a secure network, under a missile defense shield, and have sufficient and dispersed stocks of ammunition, fuel, and water to execute a campaign across time and distance. The ability to anticipate future requirements is directly linked to properly aligned strategic and

operational assets that force a potential adversary to pause.

The bedrock of our force is the adaptive and responsive leaders who have reflexive competence in their military skills—leaders that understand doctrine and how their formations integrate into the larger whole and who are decisive in the face of uncertainty. These leaders must ensure their units are practiced and ready for near-peer warfare. The uncertainty surrounding the location and time of the next security threat demands that we prepare now.

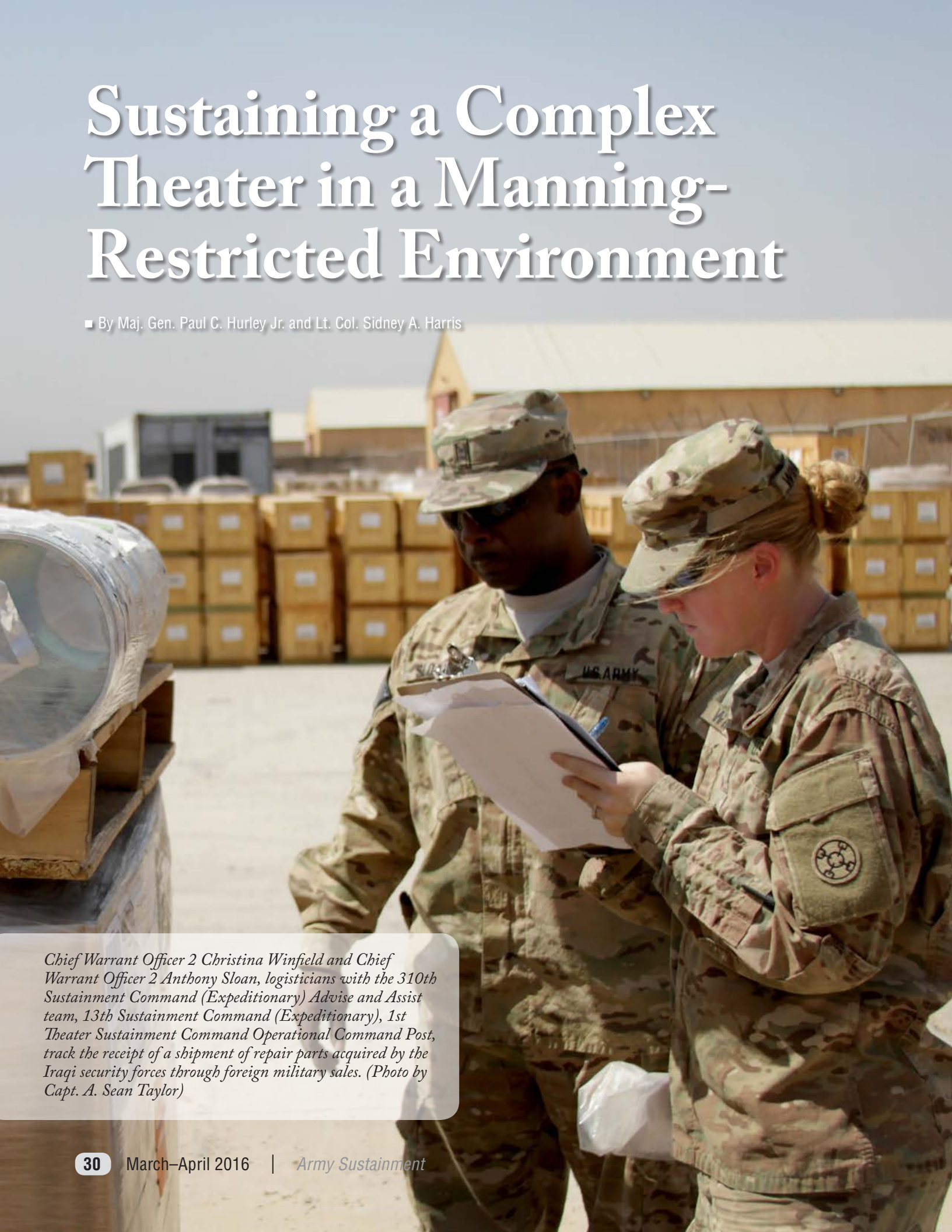
Maj. Gen. Duane A. Gamble is the commanding general of the 21st Theater Sustainment Command (TSC) in Kaiserslautern, Germany. He has a bachelor's degree in business economics from McDaniel College, a master's degree in logistics management from the Florida Institute of Technology, and a master's degree in national resource strategy from the Industrial College of the Armed Forces. He is a graduate of the Ordnance Officer Basic and Advanced Courses, the Army Command and General Staff College, and the Industrial College of the Armed Forces.

Col. Matthew D. Redding is the chief of staff of the 21st TSC. He has a bachelor's degrees in government and philosophy from Saint Lawrence University, a master's degree in supply chain management from the Smith School of Business, and a master's degree in Strategic Studies from the Marine Corps War College. He is a graduate of the Air Defense Artillery Officer Basic Course, the Combined Logistics Advanced Course, the Army Command and General Staff College, and the Marine Corps War College.

Maj. Craig A. Daniel works in the Commander's Initiatives Group of the 21st TSC. He has a bachelor's degree in criminal justice from Radford University and an MBA. He is a graduate of the Quartermaster Officer Basic Course, the Combined Logistics Captains Career Course, and the Army Command and General Staff College.

Sustaining a Complex Theater in a Manning-Restricted Environment

■ By Maj. Gen. Paul C. Hurley Jr. and Lt. Col. Sidney A. Harris



Chief Warrant Officer 2 Christina Winfield and Chief Warrant Officer 2 Anthony Sloan, logisticians with the 310th Sustainment Command (Expeditionary) Advise and Assist team, 13th Sustainment Command (Expeditionary), 1st Theater Sustainment Command Operational Command Post, track the receipt of a shipment of repair parts acquired by the Iraqi security forces through foreign military sales. (Photo by Capt. A. Sean Taylor)

In an environment of shrinking Department of Defense resources, the U.S. Army Central and 1st Theater Sustainment Command (1st TSC) commanders are coping with a complex operational environment that is force manning level (FML)-restricted and contract-enabled. The complexity of these operational variables, coupled with split-based sustainment mission command, required the 1st TSC to design an innovative headquarters structure that enabled it to operate effectively at all levels, tactical through strategic, with a smaller footprint in theater.

The 1st TSC developed a solution that reduced logistics force structure overhead while increasing mission command capability and capacity. By combining the expeditionary sustainment command (ESC) and TSC structure into a mission-tailored operational command post (OCP), the sustainment community streamlined the support structure required to orchestrate tactical and operational logistics across the Central Command (CENTCOM) theater without diminishing strategic effects.

ASCC Enabling Units

An Army service component command's (ASCC's) theater-enabling units include a TSC, theater aviation brigade, theater signal command, theater engineer command, theater medical command, and a military intelligence brigade.

Together these enabling commands and brigades form the architecture that deploying or rotational units plug into within a combatant commander's (COCOM's) area of responsibility (AOR). These units work under the direction of the ASCC commander and allow units to shoot, move, communicate, and sustain themselves within the theater.

TSC Responsibilities

The TSC, as the senior logistics headquarters in theater, has a dual mission: setting the theater's logistics infrastructure during Phase 0

(shape) to support future operations, and providing mission command for tactical and operational logistics formations as they provide sustainment support to a combined joint task force (CJTF) or to U.S. maneuver elements.

A TSC sets conditions to enable Army and coalition land forces to win in a complex operational environment. The TSC, as an extension of the ASCC, assists with the administrative control of Army forces in theater and provides the joint force with Title 10 support, to include setting the theater, organizing (tailoring forces to requirements), supplying, equipping, training, building partner capacity, mobilizing and demobilizing units, outfitting and repairing equipment, and constructing and maintaining facilities.

As the senior logistics headquarters, the TSC plans, coordinates, and resources all Army or lead-service logistics requirements while synchronizing theaterwide distribution.

The TSC supports both the ASCC as a key theater enabler and provides sustainment in support of operations executed by the theater's combined force land component command (CFLCC). This includes maintaining logistics overwatch of the theater and sustaining U.S. and, as necessary, coalition land power forces in support of national policy, the COCOM's theater campaign plan, and the ASCC's theater security cooperation plan.

The TSC accomplishes the ASCC's theater security cooperation goals by setting the theater and continuously shaping the environment through its persistent presence, exercises, seminars, and key engagements with regional partners. In short, the TSC provides a sustainment mission command structure for the ASCC and supports all phases of operations, from Phase 0 (shape) through Phase 5 (enable civil authority).

TSC and ESC Planning Tasks

The TSC is not structured with enough depth to provide long-term support for a CJTF or multinational

FEATURES

The 1st Theater Sustainment Command provides a template that may help shape Army sustainment doctrine to support a complex theater with a smaller force.

force at the tactical and low operational levels of war while simultaneously rendering strategic- and high operational-level support to the ASCC. (See figure 1.)

The TSC relies on the ESC to assume tactical logistics responsibilities in support of the joint operations area (JOA) so that it can resume its operational-level sustainment mission command and strategic-level theater-setting responsibilities.

To ensure understanding of the TSC's and ESC's roles in the current operational environment, we must examine the planning capability in both the ESC and the TSC within the FML-restricted, contract-enabled sustainment environment.

Contract-enabled logistics is necessary primarily because of theaterwide FML restrictions. The heavy reliance on contracts for sustainment means that the TSC and ESC must anticipate logistics requirements much farther in advance. Unfortunately, the ESC does not have a G-5 (plans) "long range" planning section author-

ized on its modified table of organization and equipment (MTOE).

Ideally, an ESC supports CJTF operations by executing support at the tactical and low operational levels within the G-3's current operations (CUOPS) and future operations (FUOPS) planning horizons. The ESC provides sustainment and synchronizes its support with the TSC, which operates at the high operational and strategic levels within the G-3 FUOPS and G-5 planning horizons in support of the ASCC and the COCOM.

Any migration of TSC staff energy to the tactical level, the domain of the ESC, degrades the ability of the TSC to plan and operate at the strategic level. This typically occurs when the TSC conducts sustainment support for unified land operations in support of the CFLCC or a CJTF.

If the ESC concentrates on the JOA's requirements in support of the CJTF, the TSC is not encumbered with tactical- and low operational-level sustainment requirements and

can focus on long-term, theaterwide support to the ASCC.

In essence, the TSC commander assumes the role of the deputy commanding general for sustainment for the ASCC and uses the TSC staff to execute ASCC shaping tasks at the strategic level and in long-range planning.

Creating a Hybrid OCP

The 1st TSC has maintained a forward presence in the CENTCOM AOR since 2006 when it replaced the 377th TSC. The 1st TSC assigned personnel to one of three teams (red, white, or blue). It deployed each team for a nine-month period corresponding to the deployment rotation of an ESC.

The staff was a combined TSC and ESC headquarters in Kuwait that provided sustainment mission command for up to 22,000 Soldiers, civilians, and contractors across the CENTCOM AOR. Even with a hybrid sustainment headquarters structure, consisting of a full ESC

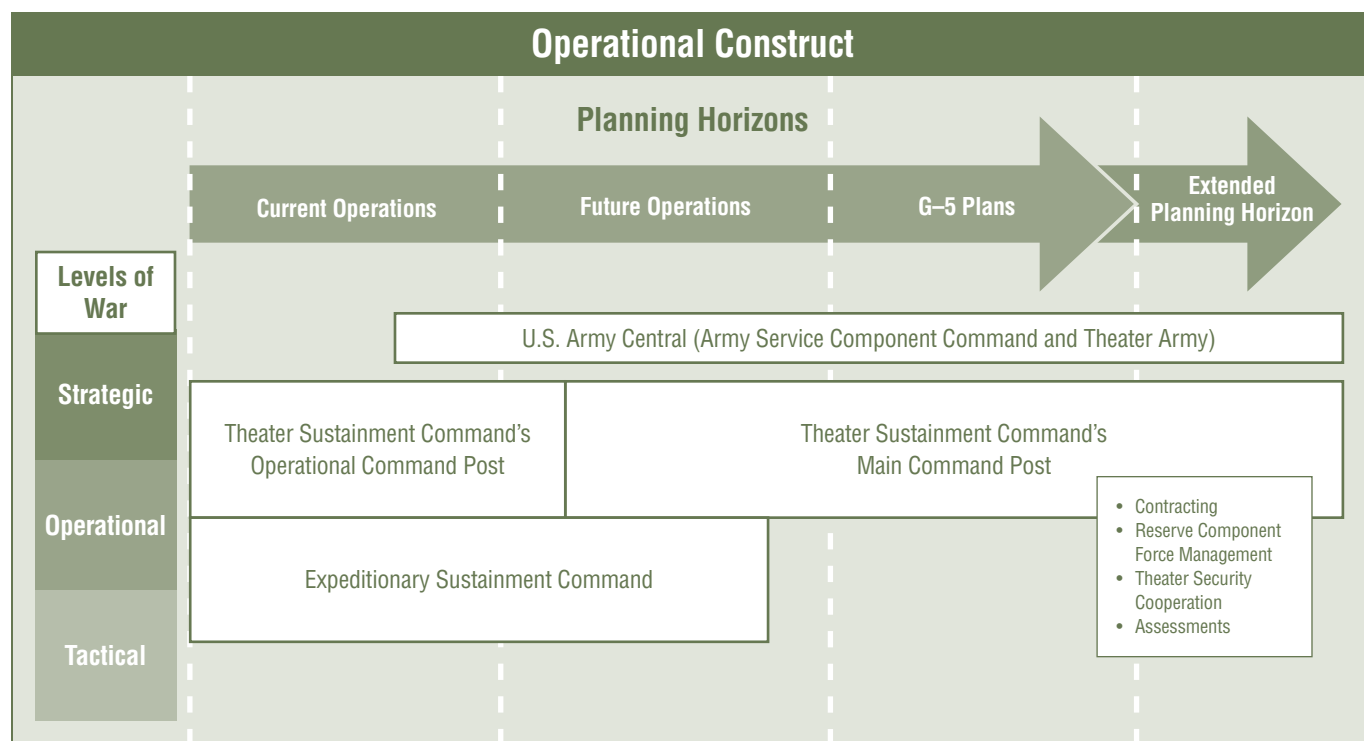


Figure 1. This figure illustrates the roles of the theater sustainment command (TSC) and expeditionary sustainment command (ESC) in planning. The ESC staff operates at the low operational and tactical levels of planning, while the TSC focuses on the strategic and high operational levels of planning in support of the Army service component command.

with TSC augmentation, the OCP still did not have the depth needed to maintain multiple command posts with full functionality across all staff sections.

To meet the increasing velocity and complexity of sustainment operations in the CENTCOM region, the 1st TSC developed a unique solution in which the TSC main command post (MCP) located at Fort Bragg, North Carolina, shapes long-term conditions and provides rapid reach-back support to a hybrid TSC and ESC OCP in theater. This solution reduces force structure overhead and increases mission command capability and capacity.

To compensate for its split-based operations and growing operational mission set in theater, the OCP leveraged the CUOPS and FUOPS execution capability of the ESC and the long-range plans capability of the TSC. This hybrid OCP has effectively managed sustainment operations across the most active and volatile region in the world.

Assigning Responsibilities

The hybrid structure required the staff to develop terms of reference that outlined the specific responsibilities of each command post. These responsibilities were broken down by functional area and planning horizon.

The TSC MCP. The TSC MCP focused on the long-range (G-5) planning horizon and on the tasks of setting the theater, theater security cooperation activities, force management and generation, predeployment training for incoming units, and reach-back support across all staff sections at Fort Bragg.

The TSC in the OCP. The TSC forward element (part of the hybrid OCP structure) focused on near-term planning (CUOPS and FUOPS) and sustainment mission command at the high operational and strategic levels. Additionally, the 1st TSC OCP team coordinated with strategic partners such as the Army Materiel Command, Trans-

portation Command, Defense Logistics Agency, and CENTCOM to obtain sustainment effects in theater.

The ESC in the OCP. Lastly, the ESC focused on near-term planning for sustainment mission command at the low operational and tactical levels. Fundamentally, the ESC staff was dedicated to day-to-day tactical-level logistics across the theater.

Considerations

Because of its unique role to set logistics conditions at the high operational and strategic levels, the TSC OCP cell that augments the ESC staff must be configured with the maturity and depth of experience required to assist the ASCC with its theater-shaping functions. This is especially important given the staff reductions associated with the new 5.4 ASCC MTOE.

The residual effects of the ASCC 5.4 MTOE transition, in which some operational and strategic ASCC responsibilities were migrated to the TSC, increased the requirement for an experienced TSC augmentation cell. In response to this unique situation, the 1st TSC developed a hybrid OCP that combined the full ESC staff and a mission-tailored TSC OCP team to meet current and future sustainment mission command requirements of the CENTCOM AOR.

Whether it was by design, good planning, or pure happenstance, the 1st TSC developed a hybrid ESC-TSC structure that could be the start point for future force management design initiatives targeting perceived excess structure in the ESC and TSC.

The complexity of the current operational environment, coupled with the reduced size and experience level of the ESC and TSC, required the 1st TSC to innovatively address expanding mission command requirements while minimizing the size of the logistics footprint in theater. Under this construct, the TSC OCP cell provides tactical and operational sustainment mission command in

theater while simultaneously setting operational and strategic conditions for the ASCC.

The 1st TSC has developed an innovative way to operate in the increasingly complex, FML-restricted, contract-enabled operational environment with lower structural overhead and proven sustainment results. Ultimately, the Army could adjust sustainment doctrine and make the hybrid OCP approach standard across the TSCs to create efficiency in support of the Army's reduction to 450,000.

By combining their capabilities into a mission-tailored OCP, the ESC and TSC improve the synergy between the ASCC's theater-setting and shaping activities and streamline the support structure required to orchestrate tactical and operational logistics across the theater.

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Lt. Col. Sidney A. Harris is the deputy chief of staff for the 1st Theater Sustainment Command. He was commissioned through the Reserve Officer Training Corps program at Virginia Tech in 1995. He holds a bachelor's degree in biology from Radford University and a master's degree in health science from Touro University. He is a graduate of the Transportation Officer Basic Course, the Combined Logistics Captains Career Course, and Intermediate Level Education.



The Korean Theater of Operations Is the Proving Ground for Sustainers

■ By Brig. Gen. John P. Sullivan and Lt. Col. Benjamin J. Harris

A Soldier qualifies on the MK-19 grenade launcher on a gunnery range in Korea. Although the Korean Armistice Agreement has been in place for over 62 years, the armistice could transition to a contingency operation at any moment, underscoring the critical requirement to maintain readiness at all times.



Every day in the Republic of Korea (ROK), the 19th Expeditionary Sustainment Command (ESC), also known as Team 19, synchronizes and executes sustainment operations in support of the Eighth Army and U.S. Forces Korea (USFK). The sustainers of Team 19 are challenged to continuously improve their skills while maintaining an expeditionary mindset.

Although the Korean Armistice Agreement has been in place for over 62 years, recent events demonstrate that the armistice could transition to a contingency operation at any moment, underscoring the critical requirement to maintain “Fight Tonight” readiness at all times.

The 19th ESC

Korea is a rewarding place to serve and a challenging proving ground for warfighter logisticians. It provides ample opportunities for sustainers to hone their crafts while playing an essential part in deterrence on the peninsula. Over the course of their assignments with Team 19, Soldiers exponentially increase their tactical warfighting skills, knowledge base, and leadership abilities while becoming world-class sustainers who are ready to lead Army sustainment into the future.

Headquartered in Daegu, ROK, the 19th ESC is the only theater-committed, forward-deployed ESC in the Army. It provides mission command for sustainment operations in Korea and connects strategic sustainment capability with tactical requirements. It executes joint distribution; reception, staging, onward movement, and integration; and Army executive agent logistics

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The 19th Expeditionary Sustainment Command works closely with its Korean counterparts to develop Soldiers and leaders and execute sustainment operations in support of U.S. Forces Korea and the Eighth Army.

support for USFK.

The 19th ESC commander serves as the senior responsible officer for Area IV, which is the southern hub for sustainment and power projection on the peninsula. The ESC consists of approximately 5,600 assigned personnel spread across the Korean theater of operations.

The 19th ESC has a long and distinguished history in Korea. It was first activated as the 19th General Support Command in Seoul on July 15, 1964. The command's headquarters relocated to Daegu as part of the consolidation of the Eighth Army's Support Command and Depot Command in 1972. Over the next 30 years, the command was redesignated multiple times, changing from a command to a brigade to a Theater Army Area Command until it became the 19th ESC on December 16, 2005.

Organizations

Today, the 19th ESC has subordinate units spread from Busan in the south to the Joint Security Area in the north. Collectively, the 19th ESC comprises a team of professionals, including Soldiers, Department of the Army civilians, and Korean nationals, who provide sustainment for all U.S. forces in the ROK. During armistice operations, Team 19 is composed of the Materiel Support Command-Korea (MSC-K) and the 94th Military Police (MP) Battalion. During contingencies, this would expand as additional sustainment units deploy to the peninsula.

MSC-K consists of three tactical battalions (the 25th Transportation Battalion, the 6th Ordnance Battalion, and the 498th Combat Support Sustainment Battalion), the Korean Service Corps Battalion, and the theater's maintenance and supply Industrial Base.

25th Transportation Battalion

The 25th Transportation Battalion, working closely with ROK counterparts, coordinates and schedules all U.S. military movements on the peninsula. Every day, the 25th Trans-

portation Battalion works with the Korea Railroad Corporation to facilitate rail movements.

During contingency operations, the battalion partners with the ROK Transportation Command at all of the ROK Army's 4-star headquarters, which include the Capital Defense Command, First ROK Army, Third ROK Army, and the 2nd Operational Command.

Over the past two years, the battalion has coordinated more than 17,000 movement requests, 206 unit deployments, five rotational unit deployments, 30 Korean Marine Exchange Program deployments for the III Marine Expeditionary Force, and two Pacific Pathways exercises.

6th Ordnance Battalion

The 6th Ordnance Battalion is the only active duty battalion of its type. The battalion's Soldiers store, maintain, and issue all U.S. ammunition and explosives on the peninsula. It works side by side with ROK Army soldiers in ROK ammunition depots and supply points using ROK Army equipment.

It also makes ammunition operations on the peninsula safer by retrograding or demilitarizing obsolete ammunition. Since May 2013, it has retrograded over 54,737 short tons of ammunition and explosives.

Along with the 120th ROK Army Infantry Regiment, the 6th Ordnance Battalion conducted the first ever combined base defense exercise at Camp Carroll and two remains excavation exercises.

Korean Service Corps Battalion

The Korean Service Corps Battalion, which was established in 1950 to augment U.S. sustainment operations, is the largest U.S. battalion on the peninsula. Today this unique organization is involved in virtually all of the Eighth Army's major missions.

The battalion conducts reception operations at Incheon International Airport, moves major combat systems for the 2nd Infantry Division using its heavy equipment transport-

er company, maintains combat systems in motor pools, and maintains and stores supplies and ammunition at central issue facilities and ammunition depots.

Comprising 17 companies during armistice operations, the battalion can expand to have more than 146 companies and over 21,000 paramilitary Korean nationals during a contingency.

The Industrial Base

The MSC-K Industrial Base operates in 19 facilities across Camp Carroll. It is co-located with Defense Logistics Agency (DLA) Distribution Korea and the Army Field Support Battalion-Northeast Asia, which manages Army pre-positioned stocks stored in the Pacific.

The Industrial Base is organized into directorates and divisions and led by Department of the Army civilians and local national Korean employees. This organization gives the Eighth Army depot-level capabilities that enhance readiness while saving transportation costs and time.

Using Industrial Base facilities significantly reduces the average turnaround time for repairs and increases readiness for critical combat systems.

94th MP Battalion

Team 19 also includes the 94th MP Battalion, the only MP battalion on the peninsula and the largest forward deployed MP battalion in the Army. The "Polar Bear" battalion has a diverse mission; every day it has more than 400 MP personnel working across the peninsula to provide law enforcement, criminal investigation, military working dog, close protection, and traffic accident investigation services.

Headquartered at Camp Humphreys, the battalion has companies stationed throughout the peninsula, patrolling from the sea to the Demilitarized Zone. While supporting law and order, they also make time to conduct Polar Bear Tactical Training. This training consists of gunnery qualifications and lanes training that test the Soldiers' ability to perform

their wartime mission and that determine their proficiency as it relates to the units' mission essential task list. One platoon at a time from each company plans and executes collective training to improve tactical and law enforcement skills.

Partnerships

By working with multiple strategic partners, the 19th ESC integrates and synchronizes strategic sustainment capabilities with operational and tactical requirements throughout the peninsula.

These partners include the Army Materiel Command's 403rd Army Field Support Brigade, the Military Surface Deployment and Distribution Command's 837th Transportation Battalion, the Defense Contract Management Agency-Korea, the 411th Contracting Support Brigade, the U.S. Army Medical Materiel Center-Korea, DLA Energy, and DLA Distribution.

Another unique and critical part of the 19th ESC mission is the combined nature of all of its operations in Korea. By closely working with ROK Army counterparts, to include the ROK 2nd Operational Command, First ROK Army, Third ROK Army, the ROK Transportation Command, and the ROK Logistics Command, the 19th ESC builds on the strong alliance between the United States and the ROK to improve effectiveness and efficiency in sustaining units throughout the Korean theater of operations.

In conjunction with its partners, Team 19 manages the southern hub, which is the sustainment and power projection backbone for the peninsula. It works closely with the U.S. Army Garrison Daegu to improve installation capabilities and services that enable the sustainment mission and improve quality of life for Soldiers, civilians, and families that live in the area.

Additionally, the ESC's outreach efforts through community relations programs such as the Korean American Friendship Circle and the USFK Good Neighbor Program, combined

with continued relationships with local governments, help promote partnerships and cultural understanding between Team 19 and the surrounding communities.

Every day, Team 19 warfighters execute sustainment operations in support of USFK and the Eighth Army, improving their skill sets while maintaining readiness. Korea is an assignment of choice; it is a challenging proving ground that provides great opportunities for sustainers to hone their crafts and play an essential part in deterrence on the peninsula.

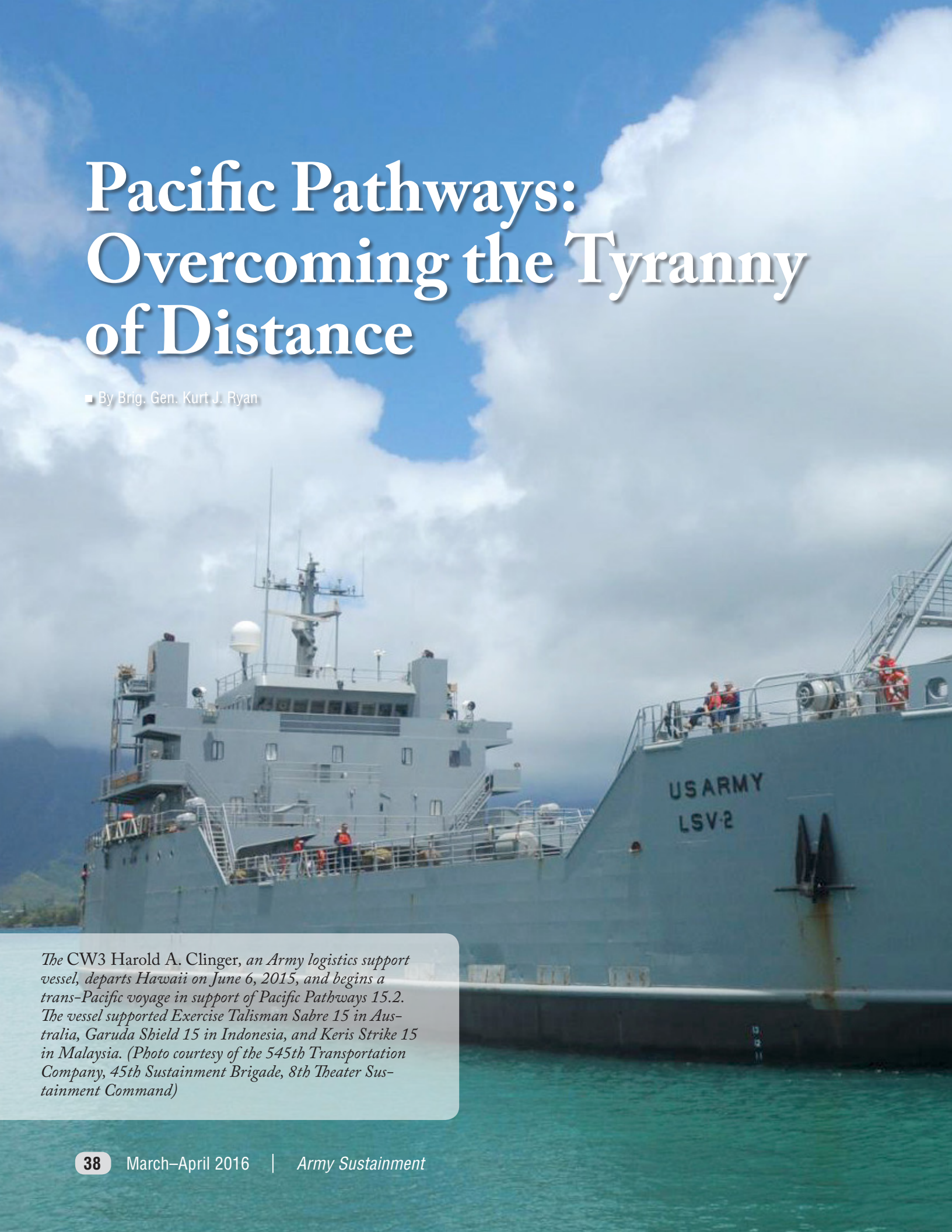
Team 19 works closely with its ROK counterparts to train its Soldiers and leaders. At the conclusion of an assignment with Team 19, a sustainer is more capable and ready to lead. As it has done for more than 50 years, Team 19 continues to strengthen the alliance while remaining ready to Fight Tonight.

Brig. Gen. John P. Sullivan is the commander of the 19th Expeditionary Sustainment Command. He is a distinguished military graduate of the Reserve Officers' Training Corps Program at Fordham University. He holds a master's degree in logistics management from the Florida Institute of Technology and a master's degree in national security and strategic studies from the College of Naval Command and Staff. He is a graduate of the Transportation Officer Basic and Advanced Courses, the Combined Arms Staff Service School, and the Joint and Combined Warfighting School.

Lt. Col. Benjamin J. Harris is the equal opportunity program manager for the 19th Expeditionary Sustainment Command at Camp Henry, Korea. He holds a bachelor's degree in history from Penn State and a master's degree in history from the Command and General Staff College. He is a graduate of the Armor Officer Basic Course, the Adjutant General Captains Career Course, the Army Command and General Staff Course, and the Defense Equal Opportunity Management Institute.

Pacific Pathways: Overcoming the Tyranny of Distance

■ By Brig. Gen. Kurt J. Ryan

A large, grey US Army Logistics Support Vessel (LSV-2) is shown from a low angle, sailing on a greenish-blue body of water. The vessel has multiple decks with railings, ladders, and various antennas and sensors. Several crew members in orange safety gear are visible on the decks. The sky is blue with large, white, fluffy clouds. The text "US ARMY LSV-2" is painted in black on the side of the hull. The vessel is moving towards the left of the frame.

The CW3 Harold A. Clinger, an Army logistics support vessel, departs Hawaii on June 6, 2015, and begins a trans-Pacific voyage in support of Pacific Pathways 15.2. The vessel supported Exercise Talisman Sabre 15 in Australia, Garuda Shield 15 in Indonesia, and Keris Strike 15 in Malaysia. (Photo courtesy of the 545th Transportation Company, 45th Sustainment Brigade, 8th Theater Sustainment Command)



In 1781, Gen. George Washington, commander of the Continental Army, used French ships to sail seasoned colonial soldiers and supplies to the Virginia Peninsula. Those soldiers surprised and then defeated the British commander Lord Charles Cornwallis at the Battle of Yorktown. Some claim this victory turned the world upside down; sea power combined with the transport of land forces would become key to the young nation's ability to project power worldwide for the next 200 years.

Today, following nearly a decade and a half of having rotational combat forces fighting in the Middle East, a highly experienced and capable Army is mostly back home in the United States and training to meet new missions around the world. As outlined in the nation's recent defense strategy, the military has begun to "pivot" or "rebalance" to focus on the Indo-Asia-Pacific region.

Pacific Pathways

The Army is testing new ways of engaging throughout the Pacific region, which is characterized by vast oceans, a complex grouping of islands,

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The Pacific Pathways program strengthens security cooperation and provides an array of options for the U.S. government to respond to crises in the Pacific region.

major continents, and large littoral populations encompassing several dozen nations. To get there and operate there, the Army is experimenting with an innovative employment concept known as “Pacific Pathways,” or just “Pathways” for short.

The program leverages contract and military sealift married with Army capability packages to operate across the Pacific for two purposes: to strengthen security cooperation and conduct crisis response. Since the Spanish-American War, the Army has had a vested interest in sustaining peace and stability in the Pacific. A necessary element in support of that goal is the continued ability to sustain extensive, long-term sea-basing operations throughout the region.

A unit deploying under this program is called a Pathway. The first Pathway left the U.S. West Coast in June 2014 with elements of the 2nd Stryker Brigade Combat Team, 2nd Infantry Division, from Joint Base Lewis-McChord, Washington.

It traveled to Indonesia and Malaysia, where U.S. Soldiers participated in back-to-back exercises with Indonesian and Malaysian troops over the course of several weeks. Following these training events, the Pathway sailed to Japan to participate in a bilateral exercise with Japan Self-Defense Forces.

In November, the unit returned to Washington after navigating a five-month, 17,000-mile Pacific journey. During this trip, the unit not only participated in a number of training events but also remained available in the theater to respond to regional crises, if needed.

The Army conducted three Pacific Pathways deployments in 2015 and participated in multinational exercises in Thailand, South Korea, the Philippines, Australia, Indonesia, Malaysia, Mongolia, and Japan. Each deployment consisted of elements of a brigade combat team from the 25th Infantry Division. Two Pathways are scheduled for 2016, and more are planned for 2017.

Although it seems like common

sense to string together a group of geographically close but otherwise disparate exercises, Pathways represents a new way of doing business. It saves the Army money by reducing back-and-forth transportation costs for individual engagement exercises.

The Pathways initiative also allows the United States to have a rotational presence in parts of the Pacific where permanent basing may not be possible, thereby providing a quick response capability for humanitarian emergencies or regional crises.

By carefully sequencing training events and using the same ship for different missions (for example, a scheduled rotation of Army forces to Korea and the transfer of military hardware to foreign nations), the Army will save the U.S. government millions of dollars. The three Pathways in 2015 were combined training events that, if implemented in isolation, would have cost taxpayers twice as much to conduct.

Room for Improvement

The Pathways program certainly has areas that can be improved. For example, choosing the right ship is critical to agility and flexibility. Current laws and policy limit access to the most capable and cost-effective vessels—those that are owned by the government and managed by the Military Sealift Command.

When U.S. government vessels are not available, the government prefers contracting U.S. flag commercial ships. When these ships are unavailable, the military must rely on contracting other commercial vessels.

The first problem is that the U.S. Army in the Pacific currently lacks dedicated strategic and operational intratheater assigned sealift. Having dedicated strategic sealift vessels instead of relying on commercial vessels would make the Pathways initiative more effective.

It would allow access to shallower ports, enable multiple loading and unloading options, provide secure communications, offer bunks for more troops, allow for bulk fuel,

ammunition, and water storage, and provide maintenance and medical treatment facilities. It would also strengthen the capabilities of the U.S. Pacific Command.

Second, to increase effective operational capability for units on a Pathways deployment, a tailored array of crisis-response equipment and supplies should be part of the unit's ship manifest. For example, during typhoon season, a Pathways ship could contain humanitarian crisis response equipment and supplies, such as emergency shelter supplies, food, bottled water, and medical kits, in addition to the equipment necessary for the unit's planned military exercises.

To strengthen the ability of any Pathways unit to engage in crisis response, the Army should strengthen expeditionary mission command packages—preferably at the division level—and routinely exercise them during a comprehensive emergency deployment readiness exercise. These command and control elements could be structured and trained to fly on short notice for rapid deployment on a small number of cargo airplanes.

Linking this rapidly deployable command and control capability with a Pathways unit could dramatically improve the nation's ability to respond to typhoons, tsunamis, and other crises in the vast Indo-Asia-Pacific region.

Criticism of the Program

Despite Pathways' benefits, skeptics have raised questions about the initiative. Some claim it infringes on already well-defined missions executed by the Navy and Marine Corps. Others say that the Pathways program may be a poor allocation of Army resources during a time of shrinking defense budgets.

Still others argue that there are more pressing demands for Army forces around the world in light of emerging threats in Europe and the Middle East. The harshest critics see the program as part of a broader effort by the Army to protect its share of the Pentagon budget.



The crew of the CW3 Harold A. Clinger begins a trans-Pacific voyage in support of Pacific Pathways 15.2 on June 6, 2015. (Photo courtesy of the 545th Transportation Company, 45th Sustainment Brigade, 8th Theater Sustainment Command)

Rather than competing for resources, the Pathways initiative in fact complements other services' engagements in the Indo-Asia-Pacific region. The region is obviously vast, and many crises—whether man-made or natural—occur with little warning.

By placing units on a Pathway for several months, the Army contributes to effectively meeting regional objectives for military-to-military engagement while also providing senior U.S. leaders with flexibility and options for responding to crises across the huge distances in the Pacific.

Learning from and improving on the Pacific Pathways deployments will ensure that future iterations will provide greater value for the military and, more broadly, the entire United States. U.S. Army forces continue

to build security and stability with allies and partners throughout the Indo-Asia-Pacific region.

The Pathways initiative represents an opportunity for the U.S. military to achieve that objective more efficiently and more effectively than it has in the past while also providing a greater array of options for the U.S. government to respond to crises across a massive region.

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DLA Troop Support Supplies Army Expeditionary Logistics

■ By Brig. Gen. Charles R. Hamilton



Soldiers of the 1430th Engineer Company, Michigan Army National Guard, along with Airmen and a ground crew, offload an aircraft in Liberia in preparation to assist Liberian engineers in building new barracks in November 2015. (Photo by Senior Master Sgt. Robert Sutton)

Before engineers from the 1430th Engineer Company, Michigan Army National Guard, deployed to Africa to build barracks with their Liberian counterparts, they needed the construction materials to get the job done. Defense Logistics Agency (DLA) Troop Support offered a menu of options to support this project for Liberia's growing army, and it made sure all of the materials were in place when the engineers deployed to Mon-

rovia in November 2015.

DLA Troop Support regularly provides the Army a wide array of support. As the Army downsizes, the organization can support a smaller force that will likely respond to more missions in remote locations around the globe.

As one of the Army's key unified action partners, DLA Troop Support is an essential resource for an Army that is transitioning to a smaller, expeditionary force. Given the reductions

to Army logistics formations and the resource-constrained environment, it is critical for Soldiers to understand how to leverage the joint capabilities of unified action partners, including DLA Troop Support.

About DLA Troop Support

DLA Troop Support, headquartered in Philadelphia, Pennsylvania, annually provides \$13 billion worth of food, clothing and textiles, con-

FEATURES

From food to industrial hardware and on-the-ground maintenance support, DLA Troop Support provides warfighters what they need to accomplish the mission.

struction and engineering equipment, pharmaceuticals, medical supplies and equipment, and industrial hardware items for U.S. warfighters and other valued customers worldwide. It has a global workforce of approximately 2,900 civilian and military personnel.

The organization manages five diverse supply chains and is the Department of Defense's executive agent for class I (subsistence), class II (clothing and individual equipment), class IV (construction and barrier materials), and class VIII (medical materiel).

DLA Troop Support is the link between the Army and civilian industry partners that can provide these supplies. On one end, its employees work with Army customers to help develop requirements. On the other end, the acquisition workforce partners with industry to determine the best way to get required items to customers when and where they need them.

DLA Troop Support representatives also are on the ground to help customers reach the best logistics solutions as fast as possible. It does this through two regional offices: DLA Troop Support Europe and Africa, headquartered in Kaiserslautern, Germany, and DLA Troop Support Pacific, headquartered at Joint Base Pearl Harbor-Hickam, Hawaii. From these two offices, DLA Troop Support provides representatives throughout each theater of operations, including in Afghanistan, Iraq, and Kuwait.

Expeditionary Support

The Army is transitioning from almost 15 years of repeated deployments to well-established bases to increased presence in places the Army did not expect to be.

Lt. Gen. Gustave Perna, deputy chief of staff, G-4, wrote in his September–October 2015 *Army Sustainment* article, "With the days of predictable rotations over, and new missions arising all over the world, logisticians must prepare to support an Army 2025 force that is smaller but more responsive to contingencies

in austere environments worldwide."

DLA Troop Support has a long history of supporting expeditionary forces. During the Civil War, when it was still known as Schuylkill Arsenal, it employed 10,000 seamstresses to make uniforms for the Union Army.

More recently, the maintenance, repair, and operations (MRO) program has enabled customers to order materials for facilities maintenance and construction projects. The MRO contract in Africa had only been in place for a year when the 1430th Engineer Company came to DLA Troop Support for construction materials for the Liberian army barracks project.

The MRO team at DLA Troop Support Europe and Africa began working with the 1430th in September 2015. Along with the regional vendor, it developed the specifics of the construction materials requirements. The engineers were presented with several support options based on lead time and cost.

Delivering heavy materials such as gravel and lumber can be challenging in Africa, where infrastructure, local sources of supply, and transportation options are limited. But within 14 days of the order being issued, all of the materials were delivered, including roofing and framing materials, walls, doors, windows, and electrical supplies.

DLA Troop Support has supported U.S. Army Africa on various projects in Niger, Cameroon, and Chad. The MRO vendor in the region has established partnerships with local providers for transportation. Regional MRO contracts are now in place to provide this kind of support throughout the United States and the world.

Class I Support

Through contractual relationships with food vendors around the world, DLA Troop Support is able to feed troops wherever they go, from feeding the first units on the ground during a contingency to supplying full-service dining facilities.

During various exercises in Europe

last summer, DLA Troop Support's subsistence team ensured Army units on the move were fed and had bottled water. DLA Troop Support also arranged for delivery of meals ready-to-eat (MREs) and unitized group rations (UGRs) for missions in remote areas throughout Africa.

During Operation United Assistance, DLA Troop Support provided 57,000 cases of MREs, 90,000 cases of UGRs, and 165,000 cases of bottled water. The subsistence team also locally purchased milk, bread, and fresh fruits and vegetables. The vendor even leased warehouse space to handle the receipt and distribution of construction, food, and medical items.

To accomplish class I support for United Assistance, DLA Troop Support again worked with industry partners to navigate the austere environment with limited transportation options to get Soldiers what they needed to accomplish their mission on time.

Class VIII Support

Personal protective equipment was among the medical items urgently needed during Operation United Assistance. DLA Troop Support's medical team quickly responded and provided more than 1.4 million protective sets that included full-body suits, hoods, masks, gloves, boots, aprons, goggles, and more.

Service members and employees and volunteers from other government and nongovernmental organizations working in the region during the Ebola response used the sets once and then disposed of them.

Wherever the Army needs medical supplies, including pharmaceuticals, DLA has several innovative support programs that enable the delivery of those items within days, not weeks or months.

Support on the Ground

DLA Troop Support's logistics experts are on the ground to receive the Army's demand signal as soon as possible and help units find logistics



Spc. Deffor Benjamin, left, of the 104th Engineer Company, 62nd Engineer Battalion, and a Liberian soldier build an Ebola treatment unit in Gbediah, Liberia, on Dec. 19, 2014. Defense Logistics Agency Troop Support provided most of the construction materials used to build such facilities. (Photo by Sgt. Ange Desinor)

solutions. As construction on Ebola treatment units in Liberia began and the materiel requirements changed on the fly, the DLA Troop Support representative in Monrovia initiated the necessary order adjustments. Contracting officer representatives were also co-located with industry partners to ensure they understood and fulfilled customers' needs.

DLA's overall ability to respond quickly to contingencies is stronger now than ever with its recent formation of two rapid deployment teams. The teams consist of experts from each of DLA's supply chains and its distribution, disposition, information technology, expeditionary contracting, and legal service sections. These professionals are trained, equipped, and able to deploy around the globe on short notice.

DLA Troop Support continually improves its acquisition processes, fostering innovation to deliver the best products as fast as possible at the best value to its customers. It does this without losing sight that the warfighter comes first in everything it does.

As one of the Army's key unified action partners, DLA Troop Sup-

port is primed to support the Army as it emerges as a more expeditionary force.

Brig. Gen. Charles R. Hamilton is the commander of Defense Logistics Agency (DLA) Troop Support. He holds a bachelor's degree in business administration from Virginia State University, a master's degree in public administration from Central Michigan University, and a master's degree in management studies from the Marine Corps University. His military education includes the Quartermaster Officer Basic and Advanced Courses, the Senior Service College as a 2012 Office of the Secretary of Defense corporate fellow, the Marine Command and Staff College, and the Joint Forces Staff College.

DLA Troop Support provides effective and efficient support to U.S. Army warfighters in order to allow them to achieve their global missions. For more information about the Defense Logistics Agency's other field activities supporting the Army, read "The Army and DLA: On Time, Every Time" by Air Force Lt. Gen. Andy Busch, the director of DLA, on page 16.



Sgt. 1st Class Brian Bevins, a multiple launch rocket system crew member assigned to the 6th Battalion, 37th Field Artillery Regiment, 210th Fires Brigade, 2nd Infantry Division, loads a pallet of ammunition onto the back of a light medium tactical vehicle during an exercise on Oct. 17, 2013, at Camp Casey, Republic of Korea. (Photo by Staff Sgt. Carlos R. Davis)

Ammunition Operations in Korea

From the strategic through tactical levels, ammunition operations in Korea exemplify the strong partnership between the U.S. Army and Republic of Korea Army.

■ By Maj. John Rich

U.S. Army ammunition operations within the Korean theater of operations (KTO) are unique from those conducted in other locations. This uniqueness is due in large part to the Korean Armistice Agreement, which ended Korean War operations in 1953.

An armistice is a ceasefire between military forces, whereas a treaty is an agreement between governments. The two nations never signed a peace treat-

ty, so the Korean War never officially ended. At any moment hostilities could break out, so the mantra for U.S. Army units in Korea is "Fight Tonight." To ensure that U.S. Forces Korea (USFK) is ready to fight tonight, the ammunition community must be forward thinking and anticipate the needs of each unit in the KTO.

Combined Operations

USFK conducts combined ammu-

nition operations with the Republic of Korea (ROK) Army. The Single Ammunition Logistics System-Korea (SALS-K) governs ammunition operations in the KTO. USFK and the ROK Ministry of National Defense established SALS-K in a memorandum of agreement (MOA) dated Nov. 25, 1974.

The MOA, signed by the USFK commander at the time, Gen. Richard G. Stilwell, and the ROK min-

ister of national defense, Suh Jyong Chul, outlines the receipt, storage, transportation, accountability, inventory, surveillance, demilitarization, maintenance, security, and issue of U.S. conventional ammunition in ROK ammunition depots, ammunition supply points (ASPs), and other facilities.

SALS-K is a good example of the strong ROK-U.S. partnership from the strategic through tactical levels. At the strategic level, all U.S. ammunition, explosives, and components are stored in ROK ammunition depots and ASPs. USFK and the Army Materiel Command closely manage these items to ensure adequate ammunition is available and limited storage space is not overloaded.

At the operational level, ammunition managers at USFK, Eighth Army, and the 19th Expeditionary Sustainment Command (ESC) forecast future requirements and place requisitions to sustain operations, again without overloading storage space. Ammunition managers also plan the retrograde and demilitarization of obsolete ammunition and explosives to free up storage space.

At the tactical level, the 6th Ordnance Battalion (6th OD), a subordinate unit of the 19th ESC and the Materiel Support Command-Korea, manages all U.S. ammunition and explosives in Korea.

Supported U.S. units draw their ammunition from the 6th OD's ammunition companies, which are co-located at ROK ammunition depots and ASPs. Ultimately, the 6th OD coordinates from the tactical level with strategic enablers to ensure U.S. forces remain ready.

Transferring Ammunition

The SALS-K agreement also details the bygone War Reserve Stockpile for Allies-Korea (WRSA-K) program. WRSA-K required stockpiling U.S. conventional ammunition in the KTO to alleviate shortages in the ROK Army ammunition stocks.

Once a sufficient amount of U.S. war reserve ammunition was stock-

piled in the KTO, a strategic plan was required to transfer and position those assets at ROK Army ammunition depots and ASPs. This ammunition was owned by the United States but available to the ROK Army in the event of war.

As time passed, much of this ammunition became obsolete either because of changes in equipment or the age of the ammunition. This required a new plan to dispose of the obsolete ammunition.

The WRSA-K Termination Agreement became an act of public law in December 2005, and at the 40th U.S.-ROK Security Consultative Meeting in Washington, D.C., in October 2008, the United States and the ROK signed an MOA outlining the plan to transfer ammunition and terminate the WRSA-K program. The MOA outlines the specific transfer of munitions, equipment, and materiel from WRSA-K to the ROK and identifies what will be transferred and what the United States will retain.

To retrograde the obsolete ammunition, USFK receives one Military Sealift Command vessel in the winter and one in the summer to transport containers of former WRSA-K ammunition to the continental United States (CONUS). Since 2009, USFK has retrograded more than 160,000 short tons of ammunition out of the KTO. All former WRSA-K ammunition must be retrograded by 2024.

The WRSA-K MOA is an important part of ammunition management in the KTO because of the strategic implications of the negotiated time line and associated ammunition posture in Korea.

In 2008, the former WRSA-K retrograde program began with nearly 258,000 short tons of ammunition needing to be retrograded out of the KTO. By October 2015, the 6th OD had significantly reduced the remaining amount to approximately 97,000 short tons.

This mission requires the teamwork of U.S. Soldiers, Department of the Army civilians, ROK Army soldiers, Korean augmentation to the

U.S. Army soldiers, Korean general schedule civilians, and Korean Service Corps (KSC) personnel.

The team atmosphere in the KTO ammunition community enables innovative ideas to become reality. For example, starting in 2011, U.S. Army Pacific requested the use of Army pre-positioned stock landing craft utility ships to retrograde obsolete fuses and propellant to Japan for demilitarization. This forward-thinking idea led to cost savings. It shortened the time line for retrograde completion and is an example of partnership and collaboration in the KTO.

Demilitarization Facility

The ROK and U.S. governments also negotiated an agreement to construct a demilitarization facility (DEFAC) in order to further reduce the amount of obsolete and unserviceable ammunition in the KTO. A mutual logistics support agreement signed in November 2011 led to the completion of the DEFAC, which began processing munitions in September 2012.

The DEFAC is an eco-friendly, closed-loop facility that efficiently demilitarizes both U.S. and ROK munitions, reducing the amount that requires retrograde. Processing a large array of munitions that includes small-arms ammunition, artillery projectiles, and fuses enables the DEFAC to reclaim materials for future use. Reclaimed flaked trinitrotoluene (better known as TNT) is packaged, shipped, and reused for other applications.

By employing Korean nationals as operations and safety professionals, the DEFAC provides cost savings to the U.S. government and strengthens the ROK-U.S. alliance.

6th OD Operations

The 6th OD maintains all U.S. ammunition and explosives in the KTO and is the Army's only active duty ordnance ammunition battalion. Using ROK Army equipment, the 6th OD conducts daily combined ammunition operations with ROK am-

munition units at ROK ammunition depots and ASPs.

The 6th OD's operations include storing, accounting for, maintaining, and issuing ammunition, explosives, and components and using SALS-K and various web-based U.S. Army ammunition systems to maintain total ammunition visibility. The battalion also retrogrades former WRSA-K

deployment of U.S. combat forces to the Korean Peninsula during a crisis.

U.S. logistics units and equipment may reinforce or replace WHNS assets later in the fight. Usually, WHNS assets are in the form of trucks, facilities, communications, food, or personnel from the KSC. In the case of the 6th OD, WHNS includes the ammunition depots and ASPs, fork-

unique experience is only found in Korea, so the 6th OD may be a good fit for personnel with a sense of adventure and advancement.

Korea is also a great place for ammunition specialists to become experts in automation systems. On a daily basis, ammunition Soldiers use automated information systems such as the Standard Army Ammunition System-Modernization, Worldwide Ammunition Reporting System-New Technology, Total Ammunition Management Information System, Munitions History Program, and National Level Ammunition Capability.

The armistice mission in the KTO affords the same opportunities as a deployment for system users. For the Soldiers who actually work on the systems, this means that they have the opportunity to be mentored by experienced noncommissioned officers, warrant officers, and civilians who are experts in their trades. The KTO experience of mentorship and daily on-the-job experience molds well-rounded ammunition Soldiers.

As the United States continues to focus on the Pacific, the KTO will undoubtedly remain important. The many KTO-unique ammunition missions, such as the WRSA-K retrograde, SALS-K, WHNS, and the DEFAC, present rewarding challenges and are important to shaping the Pacific. KTO ammunition Soldiers are part of a future force that deters aggression by always being ready to fight tonight.

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Korea is also a great place for ammunition specialists to become experts in automation systems.

ammunition and demilitarizes artillery ammunition and propellant at the ROK Army DEFAC.

The U.S. Army and the 6th OD are using ROK facilities, transportation assets, and personnel to receive, store, and issue U.S. ammunition. Under the SALS-K agreement, the United States pays a fair negotiated price for services rendered, which requires attention to detail during every step. Advanced planning, coordination, and meticulous record keeping aids in maintaining accurate accountability for expended resources.

U.S. Army ammunition units operating at CONUS ASPs and ammunition depots must exercise the same care. However, the Soldiers, civilians, and contractors working there generally come from a common background, receive the same training, enjoy the same holidays, and speak the same language.

KTO-based ammunition operations have an added challenge of a language barrier and a combined environment. This is a challenge that the wartime host-nation support (WHNS) ammunition units welcome as they work closely with their Korean counterparts.

The 6th OD is the Army's only WHNS ordnance battalion. WHNS is logistics support provided by the ROK government from military and civilian resources to allow the rapid

lifts and other materials-handling equipment, and site security provided by the ROK Army.

Full-time KSC personnel are also assigned to the 6th OD along with Korean national civilian workers. Every day, the 6th OD interacts with ROK Army ammunition units at the ammunition depots and ASPs.

KTO Benefits

Personnel from the 6th OD find unique opportunities to use their expertise in ammunition management, expand their knowledge, and challenge their skills in a diverse environment.

In the KTO, ordnance Soldiers conduct their branch-specific duties daily in the ammunition depots and ASPs. In contrast, CONUS-based ammunition Soldiers only augment civilian personnel as they conduct ASP operations.

Ammunition warrant officers are also afforded a unique opportunity in the KTO. Accountable officer positions are limited in CONUS, but there are three accountable officer positions in the 6th OD, each responsible for several ammunition depots or ASPs and each with a slightly different mission focus.

The accountable officers manage daily operations at several locations and work alongside Soldiers, Army civilians, Korean nationals, KSC personnel, and ROK Army soldiers. This



Min Su Yi, a mechanic in the Army Materiel Support Command–Korea's Tactical Wheeled Vehicle Team Four, tears apart a heavy expanded-mobility tactical truck fuel tanker. The vehicle's body, engine, transmission, and communications equipment will go to different work centers for simultaneous testing, repairs, cleaning, and paint.

Materiel Support Command–Korea Provides World-Class Logistics Support

The U.S. Army's Materiel Support Command–Korea benefits from a hardworking and well-integrated U.S. and Korean workforce.

■ By Scott E. Fowler and Austin W. Anderson

Shortly after a Military Sealift Command vessel was grounded off the coast of Okinawa, Japan, on Jan. 22, 2015, the Materiel Support Command–Korea (MSC–K) was notified that six humvees were inbound to the Port of Busan, Republic of Korea (ROK), for repair.

The vehicles and associated communication equipment, urgently needed

for Exercise Cobra Gold in February, had been deeply submerged in seawater during the accident and were badly damaged.

MSC–K marshaled both its tactical and Industrial Base resources to transport the equipment, remove its corrosion, repair it to 10/20 standard, paint it, and have it outbound for Thailand in time to participate in the exercise.

Although the extensive repairs required hundreds of parts and more than 1,350 man-hours of labor, the cost to the U.S. government was minimal thanks to low labor rates, extensive fabrication capabilities, and the close proximity of a Defense Logistics Agency Disposition Services facility. All of these assets were available to MSC–K because of its posi-



In the Major Assembly Division of the Army Materiel Support Command–Korea (MSC–K), Kil Song Kim performs a final quality inspection on a 500-kilowatt generator. Kim has been working for MSC–K since 1975.

tion at the sustainment hub of Korea.

History and Organization

On Sept. 15, 1964, several small logistics units in the rural farming community of Waegwan, ROK, were combined and designated as the U.S. Army Camp Carroll Depot. The depot's mission was to provide general support maintenance for the Eighth Army and store operational and reserve stocks.

More than 50 years later, this organization is now designated as the MSC–K and has transformed into a unit similar to a theater sustainment brigade. It has elements on almost every camp and base in Korea.

MSC–K's 25th Transportation Battalion coordinates the movement of all U.S. military personnel, equipment, supplies, mail, and other materials by air, rail, bus, and truck. Its 6th Ordnance Battalion stores, maintains, and issues all U.S. ammunition from ROK military ammunition supply points and ammunition de-

pots. MSC–K's 498th Combat Sustainment Support Battalion provides area maintenance, supply, personnel, and finance support.

Members of the paramilitary Korean Service Corps (KSC) Battalion are embedded in dozens of units and perform missions varying from the after-hours transportation of M1 Abrams tanks to providing official translators for the Eighth Army commanding general. KSC personnel stock shelves in the commissary, operate forklifts, repair equipment, drive trucks, and perform hundreds of other important functions.

At the core of MSC–K lies the Industrial Base, operating in 19 facilities across Camp Carroll. It is co-located with the Defense Logistics Agency Distribution–Korea and the Army Field Support Battalion–Northeast Asia, which manages Army prepositioned stocks stored in the Pacific.

The Industrial Base is organized into directorates and divisions and led by Department of the Army civilians

and Korean national employees.

The Directorate for Maintenance provides pass-back field-level-and-below depot sustainment support for U.S. Army, Navy, Air Force, and Marine Corps customers in Korea and Japan.

Cost Savings

MSC–K is able to keep its quality standards high and production costs low because the ROK assists with many of the costs associated with stationing U.S. forces overseas.

Through a program known as Labor Cost Sharing, the ROK government contributes up to 75 percent of the cost of labor for Korean national employees. Because more than 90 percent of Industrial Base employees are Korean nationals, the U.S. government saves a significant amount of money.

Logistics Cost Sharing is another ROK-funded program that allows MSC–K to purchase supplies, tools, equipment, and services for its repair

and production facilities. The only requirement is that the items must be purchased from a Korean vendor and, in most cases, be produced in Korea.

By leveraging Logistics Cost Sharing, MSC-K has added capabilities, improved quality and safety, and increased efficiency at no cost to U.S. taxpayers.

In the last three years, MSC-K has received more than \$18 million of Logistics Cost Sharing funds to purchase a 60-ton crane, a rail car mover, part washers, paint drying booths, ventilation systems, forklifts, and dozens of other items.

Maintenance Operations

In one of the Directorate of Maintenance's largest facilities, Thomas Robertson and Chung Uk Yim walk along the bays of the Heavy Equipment Division to ensure that their workers receive the safety briefings that start their day. Since the ability to speak English is not a requirement for 90 percent of the workforce, every U.S. civilian is partnered with a bilingual senior Korean national.

Refurbishment is performed as part of the Theater Sustainment Repair Program. The program has been a unique part of operations in Korea for over 30 years and is a key reason that readiness rates, even for aging fleets, remain high. Wheeled and tracked vehicles, small arms, optics, radios, and all types of ground support equipment are eligible for refurbishment under the program every five years.

Mechanics use the "inspect and repair only as necessary" concept and only replace defective parts. At the end of the 90-day process, a refurbished truck will look and handle like new and all modification work orders, safety of use messages, and services will have been applied.

MSC-K is a qualified provider for the Army Materiel Command's National Maintenance Program. The directorate is also a source of repair for transmissions, radiators, wheel assemblies, and other repair parts. MSC-K has the lowest labor rate of

the current 14 National Maintenance Program sources of repair. It is one of only two Army units to have ever been rated maturity level 5 (best in class) in three consecutive International Organization for Standardization 9001 quality audits.

Under theater sustainment repair and return, or pass-back maintenance, units send in their most difficult problems and worst wrecks. Pass-back maintenance constitutes the largest portion of the Directorate for Maintenance workload.

Units also ask MSC-K to fabricate specialized parts that are not available through the supply system. MSC-K has wood, metal, hose, and cable fabrication capabilities. Last year it started repairing hydraulic cylinders and fire suppression bottles to address specific maintenance concerns from its customers.

Transportation Operations

MSC-K's Supply and Transportation Directorate (S&T) plays another critical role in Industrial Base operations. Its missions include the receipt, classification, storage, and worldwide distribution of various classes of supplies.

Units directed to retrograde class VII (major end items) equipment outside of Korea can turn it in to MSC-K. S&T will then work directly with MSC-K's Directorate of Maintenance to bring the equipment up to the standard required by disposition instructions.

S&T inventories and orders missing items and instruction manuals and professionally cleans, packages, and prepares equipment for shipment. S&T's ability to efficiently and safely process and distribute heavy equipment through the retrograde process speaks highly of the level of expertise in the workforce and dedication to keeping the defense supply chain moving and the warfighter sustained.

Storage Operations

On the southeastern coast of Korea, the Busan Storage Center per-

forms logistics operations such as the receipt, quality control, and care of supplies in storage, including rations, lumber, packaged lubricants, and war reserve operational project stocks.

One of the center's critical missions is agriculture inspections. The Busan Storage Center has U.S. Department of Agriculture-certified personnel to perform inspections of equipment being retrograded to the continental United States. This provides cost savings to units by keeping them from having to send personnel on temporary duty to perform this task.

From its humble beginnings in the 1960s as the U.S. Army Camp Carroll Depot, MSC-K has grown to become an integral part of logistics for all military services stationed in Korea. MSC-K is a truly unique organization that provides a quality product and saves the Army money through cost-sharing programs.

The organization's motto of "Two Nations—One Team" reflects MSC-K's tight integration of its local-national workforce and its commitment to providing logistics support throughout the Korean theater.

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Austin W. Anderson is a supervisor quality assurance specialist serving as the director for quality management at the Materiel Support Command-Korea. He is a retired chief warrant officer five and holds an MBA from the University of Phoenix. He is Level III certified in both Production Quality Manufacturing and Life Cycle Logistics, is a member of the Acquisition Corps, and is a Certified Lean Six Sigma Black Belt.

What Is the Army Doing With Operational Energy?

Operational energy management has become an important facet of Army sustainment and should be incorporated in doctrine and reinforced during training.

■ By Maj. Ryan T. Hulse

About four years ago, Maj. Gen. James L. Hodge, then the commanding general of the Combined Arms Support Command (CASCOM), wrote an article for *Army Sustainment* entitled, “Every Soldier is an Energy Manager.” In the article, he briefly discussed operational energy and the creation of a new operational energy office at CASCOM.

The goal of the CASCOM Operational Energy Branch is to reduce consumption and demand to provide operational commanders with increased capabilities in the form of extended range and endurance, increased freedom of action, and therefore, less risk. The office wants the Army’s combat systems and platforms to be more energy efficient, and at the same time, it wants to change the behavior of Soldiers so that they use energy wisely.

Operational Energy Background

The Duncan Hunter National Defense Authorization Act for fiscal year 2009 defines operational energy as “the energy required for training, moving, and sustaining military forces and weapons platforms for military operations.” It includes, but is not limited to, energy used by tactical power systems, generators, and weapons platforms.

The U.S. military’s energy demand has steadily increased since World War II. We have added more protection to our vehicles and weapon platforms, increased our aviation assets, modernized our systems with

added equipment and technology, and added quality of life services in our larger bases overseas.

Compare the fuel consumption of our forces between World War II and today. During World War II, one Soldier used on average one gallon of fuel per day. In 2007 during Operations Enduring Freedom and Iraqi Freedom, the average usage was 22 gallons per Soldier per day. Today, fuel comprises about 50 percent of ground resupply in theaters of operations, while water comprises about 20 percent.

In 2009, while he was the undersecretary of defense for acquisition, logistics, and technology, Secretary of Defense Ashton B. Carter testified to Congress that “protecting large fuel convoys imposes a huge burden on the combat forces.” This means that the Army regularly has had to use infantry, military police, and field artillery Soldiers to protect fuel and water convoys instead of using them for their traditional tactical missions.

Former Secretary of the Army John McHugh stated that “for every 44 convoys we put on the road, we lose one Soldier.” In the future, sustaining operational forces will be even more challenging. Army forces will require sufficient access to power and energy to enable maneuver and freedom of action over wide areas.

That power and energy will provide operational reach, endurance, resilience, and flexibility to respond to operational demands. In order

for the Army to be more energy efficient, we must incorporate energy awareness, training, and education at all levels.

Training and Education

CASCOM’s Army Operational Energy Training Strategy sets forth the plan for incorporating operational energy concepts, practices, and techniques into the institutional, operational, and self-development training domains.

The goals of the strategy are to give Soldiers and leaders the knowledge and skills needed to manage and use operational energy effectively and to make energy a consideration in all they do. The approach should add minimal time (one to two hours) to current training requirements.

To create an energy-informed culture, we need to give every Soldier basic energy conservation responsibilities and techniques to conserve energy. Soldiers should receive tiered technical training and leader education in power production, distribution, storage, planning, and management.

The Army should integrate energy management concepts and best practices into certain doctrinal publications and task all leaders with the responsibility of communicating to their Soldiers the importance of using energy effectively.

Operational energy training is divided into three main categories: awareness, technical training, and education. Energy training and education will be integrated into all

skill levels and ranks to “establish an energy informed culture through education, training and awareness programs that value energy as a resource that enables enhanced capabilities and lowers operational risk,” in accordance with the 2013 Department of Defense Operational Energy Policy.

Every Soldier will understand operational energy concepts through awareness training. Content will be developed for the institutional, operational, and self-development domains.

Institutional domain. Training for the institutional domain will begin with awareness training in initial military training. The training will establish the principles of conservation as habits at the start of service and continue throughout professional and leadership development.

Technical components of operational energy are currently taught in military occupational specialty-specific courses and may need to be added, as directed by the proponent school, to other institutional courses.

Operational domain. Operational energy training will be included in the operational domain through home-station training and technical training for operators, power managers, and advisers. Operational energy issues will be integrated into scenarios during contingency training at combat training centers when practicable.

Self-development domain. Operational energy training in the self-development domain will support the training received in the other training domains and will include graphic training aids, job aids, training handouts, and online learning.

Soldiers will have access to these self-development resources:

- Operational energy training videos.
- Graphic Training Aid 09-16-001, Tactical Electric Power Planning and Operations Operational Reference Guide.
- AutoDISE, which is a computer

model developed to simulate the use of the Distribution Illumination System, Electrical (available at <https://www.autodise.net>).

- An operational energy interactive application for smartphones and tablets (will be available in the Central Army Registry at <https://rdl.train.army.mil/catalog>).

- Allied Logistic Publication 4.2, Land Forces Logistic Doctrine.

An Energy Efficient Army

The Training and Doctrine Command’s capability developers must add energy key performance parameters to their capability development documents and capability

To create an energy-informed culture, we need to give every Soldier basic energy conservation responsibilities and techniques to conserve energy.

Doctrine and Concepts

The Operational Energy Branch has developed a plan to incorporate operational energy concepts into specific logistics publications. However, no overarching Army operational energy doctrine addresses operational power and energy for expeditionary operations, nor is the use and management of this critical commodity addressed in operational publications.

To ensure that it delivers critical knowledge to the point of need, the CASCOT Operational Energy Branch will work with proponents to add operational energy planning and management considerations into selected operational publications, to include the following:

- Army Doctrine Reference Publication (ADRP) 1, The Army Profession.
- ADRP 4-0, Sustainment.
- ADRP 5-0, The Operations Process.
- ADRP 6-0, Mission Command.
- ADRP 7-0, Training Units and Developing Leaders.
- Field Manual 4-95, Logistics Operations.
- Field Manual 6-0, Commander and Staff Organization and Operations.

production documents. Capability developers must follow the updated 2015 Joint Capabilities Integration and Development System manual, which provides instructions for developing capabilities, including energy key performance parameters.

Force 2025 and Beyond is being designed as a flexible and agile force with more options to resolve crises in multiple locations. As the Army becomes more expeditionary, the Operational Energy Branch will continue to evaluate energy-related technologies at network integration evaluations and Army warfighting assessments at Fort Bliss, Texas.

The Operational Energy Branch is working with lead planners of a network integration evaluation on an expeditionary base camp with several operational energy-related technologies and is assisting in the development of a tactical power management concept.

The team is also working with Project Manager Expeditionary Energy and Sustainment Systems and the Army Materiel Command on automatic start-stop tactical power generation microgrids, which will tie multiple generators and alternative power sources together and provide electricity more efficiently at contingency basing sites.

In addition to working on the advanced medium mobile power source, a generator that uses 21 percent less fuel than older systems, the branch is addressing five of CASCOM's top priorities related to operational energy technologies for the future.

Autonomous convoy operations. The team is supporting the development of autonomous convoy operations, which involve driverless supply vehicles that follow a manned vehicle in the combat zone. The benefits include minimizing the logistics footprint, reducing risk to Soldiers, and preserving freedom of maneuver and action.

Alternative water sources. Using alternative water sources would save operational energy. For example, the water from air system extracts water from air then cools it and purifies it to be drinking water. The benefits include minimizing the logistics footprint, reducing risk to Soldiers, and increasing the availability of water in the combat zone without using resupply.

Additive manufacturing. With additive manufacturing, also called 3D printing, replacement parts can be quickly manufactured on site. The benefits include manufacturing closer to the point of need, reducing the stockpiling of parts in the combat zone, minimizing the logistics footprint, and reducing risk to Soldiers by reducing the number of supply convoys.

Intelligent power management distribution system. The intelligent power management distribution system is a portable, rugged power distribution system with automatic load balancing and electrical hazard warnings. Its benefits include a reduced burden on the warfighter during power grid set up, greater power grid reliability, and fewer potential injuries caused by electrical hazards.

Autonomous aerial delivery. An unmanned vertical take-off and lift flight module could be used for resupply operations. The capability would allow a quicker turnaround time for emergency resupply and

more scalable and responsive resupply of tactical deployed units.

The Army's ability to effectively manage operational energy directly affects operational reach and endurance. Energy management concepts must be reflected in doctrine and reinforced in training, education, accountability systems, and communications programs. The goal is to make every Soldier and civilian an energy manager who makes energy a consideration in every action.

CASCOM will update doctrine to reflect the methods that will meet the operational energy objectives already found in policy and guidance. It will do this using a multifaceted approach that leverages the capabilities of existing training platforms, such as institutional training sites and web-based familiarization courses. Leaders need to supplement this training by highlighting why energy effectiveness is important.

Awareness goes a long way, but to maintain momentum we need to improve operational energy training and education. Education is the platform that bridges the gap between awareness and action. Once we begin to change the behavior of Soldiers to use energy more efficiently, then every Soldier will be an energy manager.



The Army's principal power distribution system, the power distribution illumination system electrical, is a rugged version of a home circuit breaker panel. It safely distributes power and is easy to connect and disconnect.

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Hotel Forward Support Company petroleum supply specialists conduct mobile fuel operations on a Stryker vehicle at the Joint Readiness Training Center, at Fort Polk, Louisiana. (Photo by Sgt. William A. Pribila)

Lessons Learned From a Distribution Platoon Supporting a Stryker Battalion

■ By 1st Lt. Christopher W. Kim

I arrived at my first duty station in 2014 while forward support companies (FSCs) were first being added to support maneuver battalions in the 2nd Stryker Brigade Combat Team (SBCT), 25th Infantry Division. I was lucky enough to see the initial transition of equipment and personnel to these FSCs and, later, to experience the FSC concept at work during tactical operations training at the Joint Readiness Training Center (JRTC) at Fort Polk, Louisiana.

Although FSCs are new to SBCTs, having FSCs attached to maneuver battalions is not a new concept. Oth-

er types of brigade combat teams have long had FSCs integrated into their structures.

SBCT FSCs have four sections: a headquarters section, field feeding team section, a distribution platoon, and a maintenance platoon. The duties of an FSC distribution platoon are critical to mission success; it distributes supplies, enabling the warfighter to continue to fight.

What makes distribution operations in support of a Stryker unit unique is that the Stryker vehicle provides maneuver commanders a great deal of mobility for unified land operations.

This, in turn, allows the FSC to have flexibility in supporting the Stryker battalion.

Distribution MTOE

The distribution platoon's modified table of organization and equipment (MTOE) contains five M1120 heavy expanded-mobility tactical truck (HEMTT) load-handling system (LHS) prime movers, seven M1076 palletized load system (PLS) trailers, and two M987 HEMTT fuel tanker trucks. In addition to the two M987s, the platoon is authorized two mobile fuel pods, which gives the FSC a ro-

bust fueling capability.

The platoon's key logistics platform, the M1120 HEMTT LHS, can traverse the most rugged terrain and has an enormous carrying capability (over 10 tons). As it is, the equipment makeup of a distribution platoon allows for great flexibility in supporting the maneuver battalion. This is demonstrated by the capability of one LHS and one PLS to distribute more than 16 pallets of supplies, weighing a total of over 20 tons, to the supported warfighter.

Distribution Challenges

The distribution platoon's MTOE creates some challenges. The challenges are obvious when the platoon is training at JRTC and possibly in other operations.

Hippo shortage. One limitation is that the platoon does not have an LHS-compatible water tank rack (hippo) on its MTOE. Because of this shortage, the platoon must involve the brigade support battalion in water resupply operations.

Security platform shortage. The platoon cannot defend itself during tactical convoy operations because it lacks organic security capabilities aside from the crew-served weapon ring mounts on the M1120 HEMTTs.

Personnel shortages. The current MTOE does not give the platoon the ability to maintain communications during a tactical convoy. When the truck commanders are also tasked as the gunners, maintaining mission command of a vehicle convoy is nearly impossible.

Additionally, the platoon must coordinate with maneuver units for logistics convoy security. When the distribution platoon must rely on the maneuver units for convoy security, it creates friction before any type of movement because maneuver commanders are reluctant to use their combat power to support the FSC that is supposed to be supporting them.

As units deploy to combat theaters such as Iraq and Afghanistan, their unit deployment lists (UDLs) are often modified to meet the needs of the

mission. Deployed BSBs have sometimes added up-armored humvees to their UDLs in order to provide security for tactical convoy operations. So it is possible that rapidly deploying SBCTs may be able to gain additional equipment such as up-armored humvees for platoons needing convoy security platforms. Additional Soldiers could be pulled from the other FSC sections to assist in manning the convoy security vehicles.

Lessons Learned at JRTC

JRTC tests a unit's ability to rapidly deploy and fight against a hybrid and well-resourced opposing force. JRTC rigorously tests the higher headquarters' ability to perform mission command at a level that cannot be replicated at home station.

Part of my FSC was given the opportunity to attend JRTC attached to a Stryker company from the 3rd Infantry Brigade Combat Team, 25th Infantry Division. The FSC attachment consisted of two M1120A2 LHSs, one M1076 PLS trailer, one M978A2 HEMTT fuel tanker, one M1076 humvee, one M7 forward repair system, one contact truck, one M984A2 HEMTT wrecker, and one M10783 medium tactical vehicle with shop shelter.

RSOI. Upon arriving at JRTC, my FSC went through the reception, staging, onward movement, and integration (RSOI) process. As sustainers, we worked around the clock to ensure the supported maneuver unit had its vehicles fully mission capable and was 100-percent full on all classes of supply before onward movement.

The distribution platoon first felt its personnel and equipment shortfalls during the RSOI process. With only two LHSs, the platoon was extremely hard-pressed to draw and deliver supplies. Difficulty pushing supplies was compounded by the requirement to leave personnel in the staging area to guard sensitive items. The number of personnel authorized by the MTOE does not allow for flexibility when it comes to any additional duties, for example, guard duty.

Maintenance. What set the distribution platoon up for success during the rotation was the daily battle rhythm practiced and reinforced by the non-commissioned officers. The platoon conducted preventive maintenance checks and services before and after each tactical convoy operation. Soldiers made sure that each vehicle was staged and ready to go at all times.

Vehicle maintenance was critical to the platoon's success because it had brought only a small portion of its equipment. If any vehicles had become not mission capable, we would have been unable to resupply our supported maneuver unit.

Refueling and repairing vehicles as soon as they returned from a mission became second nature. The platoon's mission was never complete until all maintenance tasks were finished.

Convoy security arrangements. The platoon's observer-coach/trainer required convoys to have at least three security vehicles and a wrecker. Because of MTOE shortfalls, this requirement was almost impossible for the distribution platoon to meet.

The platoon had to rely on other units for support in order to complete its missions. The commander of the supported Stryker company could not provide security consistently for trips to the brigade support area. Our supported Stryker company provided escorts a few times but was hard-pressed to provide dedicated escorts because the unit was constantly engaged with the opposing forces.

The company commander had requirements to meet and did not want to devote his combat power to escort a convoy. Instead, the distribution platoon tagged along with the brigade engineer battalion's FSC, which was equipped with M1151 up-armored humvees.

Adding to the MTOE three up-armored humvees and the personnel needed to man them would alleviate the issues faced both in garrison and at JRTC. This change would provide the platoon more personnel to rotate on vehicles and the freedom of movement needed to distribute sup-



The distribution platoon's ammunition sergeant loads up small-arms ammunition in preparation for a logistics convoy. (Photo by Sgt. Jonathan Dunlap)

plies without having to rely on outside resources.

Home-station cross-training. One of the biggest lessons learned was the importance of cross-training military occupational specialties (MOSs). The distribution platoon in an FSC is best described as a miniature version of a BSB distribution company. The platoon has the same types of Soldiers as the distribution company: heavy vehicle driver, ammunition specialist, and petroleum supply specialist Soldiers. One reason the platoon was able to mitigate the personnel shortages was our focus on driver's training and MOS cross-training prior to arriving at JRTC.

Every single member of my platoon was trained and licensed on every vehicle on the platoon's MTOE. Cross-training not only alleviated the workload by allowing us to rotate personnel but also allowed any member of the platoon to fill in for any distribution task.

Because the fuel point operated 24

hours on some days, heavy vehicle operators had to fill in for the petroleum supply specialists. The ammunition specialist was tasked with assisting the battalion S-3's land and ammunition section, making him unavailable for class V (ammunition) draw and turn-in. In this case, the platoon's two heavy vehicle operators had cross-trained and become certified in ammunition handling to fill in for the ammunition specialist.

Additionally, the platoon drew a pre-positioned hippo, a piece of equipment that is not on its MTOE. Luckily, home-station cross-training had familiarized all heavy vehicle operators with hippo operation.

Every distribution platoon Soldier in an SBCT should be cross-trained on the other platoon members' MOSs. Every single member of the platoon must be cross-trained on 10-level MOS tasks and be able to operate every vehicle on the MTOE.

Also, because black out driving is the norm for any JRTC night mis-

sion, everyone must be trained and licensed on night-vision devices for all vehicles.

The distribution platoon's time at JRTC was invaluable in showing us the strengths and weaknesses of the formation and what changes are needed to best support the warfighter. As we prepare for our next combat training center rotation, we will be focusing on 10-level cross-training, warrior tasks, and battle drills.

1st Lt. Christopher W. Kim is the executive officer of Hotel Forward Support Company, 225th Brigade Support Battalion. When he wrote this article he was the distribution platoon leader for Hotel Forward Support Company, 225th Brigade Support Battalion, which supported the 1st Battalion, 21st Infantry Regiment, 2nd Stryker Brigade Combat Team, 25th Infantry Division. He holds a bachelor's degree in history from North Georgia College.



Leaders from the 194th Combat Sustainment Support Battalion and 81st Maintenance Battalion issue a convoy warning order for Area of Operations Dagmar during a training exercise at Camp Carroll, Republic of Korea.

Sustaining the Alliance: Combined Army Logistics in the Republic of Korea

Army units from the United States and the Republic of Korea executed a combined logistics exercise to improve interoperability, mission command, and mission execution.

■ By Maj. Aaron J. Becker and Maj. Richard I. Reeves

Training in a combined environment is undoubtedly one of the biggest highlights of serving in the Republic of Korea. The nation hosts exercises Key Resolve and Ulchi Freedom Guardian, two annual training events that target training at the highest echelons of U.S. and Republic of Korea forces.

In 2014, the 501st Sustainment Brigade also executed a combined logistics support area exercise with

the 3rd Logistics Support Command (LSC), Republic of Korea (ROK) Army, which focused on interoperability down to the small-unit level.

This exercise, called Champion Thunder, included combined mission command and mission execution, force protection, convoy operations, and air-ground integration using rotary-wing air support from the 2nd Combat Aviation Brigade, 2nd Infantry Division. Champion Thun-

der emphasized the strength of the alliance and the necessity of future combined training at every echelon.

Forging a Partnership

Throughout more than 60 years of armistice, maintaining the strong ties between U.S. and ROK forces has remained paramount to mission accomplishment on the Korean peninsula. In the summer of 2014, the incoming commander of the 501st

Sustainment Brigade stated that one of his first goals was to execute a combined logistics exercise with the brigade's ROK Army counterparts from the 3rd LSC.

Wasting no time, the commander and the 3rd LSC commander used the 501st Sustainment Brigade change of command reception to huddle and discuss initial planning considerations. During this short meeting, the two commanders agreed on a few initial planning considerations:

- The units would plan and train in a combined multiechelon environment down to the small-unit level, enhancing interoperability, mission command, and mission execution.
- The exercise would center on the combined logistics support area concept, mirroring the way the units are expected to “fight tonight” and win on the peninsula, should deterrence fail.
- The training would be held in brutal winter conditions at Training Area Monkey 7, just a few kilometers from the Military Demarcation Line separating South and North Korea.

Over the next two months, the 501st Sustainment Brigade and the 3rd LSC executed a series of combined biweekly in-progress reviews and reconnaissance missions. Additional training areas were acquired to extend the lines of communication among elements. Training plans were developed at every echelon, and an operational scenario was created to ensure the exercise was realistic and captured the complex, tough realities of mid-intensity conflict.

Additionally, in order to address the need for opposing forces, both commands identified a small cadre of observer-controllers and opposing forces to enhance the training effect and to provide feedback and mentorship throughout the exercise. A rehearsal of concept (ROC) drill, the culminating event for the

planning phase, was scheduled for mid-November to ensure all staffs synchronized their efforts and understood the concept of the operation.

Preparing to Execute

The 501st Sustainment Brigade and the 3rd LSC both conducted extensive command post exercises and rehearsals to prepare for Champion Thunder. During these rehearsals, several communication and staff integration obstacles were identified and mitigated through collaboration among elements and ingenuity at every level.

During this period, the units created combined staff battle-tracking tools, identified liaison officers, adopted a combined battle rhythm, and planned the use of enablers (such as rotary-wing air support for convoys and sling load operations). All of these measures proved invaluable later on during the execution phase.

The ROC drill was rehearsed and executed at Camp Carroll, ROK, over a three-day period in mid-November 2014. The terrain model depicted a robust three-dimensional picture of the operational environment that displayed brigade, battalion, and company areas, main supply routes (MSRs), alternate supply routes, security zones, and supported adjacent and friendly units. Staff members from both U.S. and ROK Army forces briefed the scheme of maneuver for each phase of the operation.

Area of Operations (AO) Monkey and Forward Operating Base Unity contained elements of the 501st Sustainment Brigade and 3rd LSC operating together in a combined logistics support area. From this position, the combined force supported units operating in AO Monkey and 15 kilometers northwest in AO Dagmar. The two AOs, connected by MSR Green, contained Alternate Supply Routes Ford, Chevy, and Dodge.

The ROC drill highlighted the complexity of the combined operation. Both commanders provided guidance for the staff to ensure combined mission command and interoperability objectives were met.

The ROC drill culminated with the approval of these commander's training objectives (CTOs):

- CTO 1: Validate deployment readiness.
- CTO 2: Exercise mission command within a combined logistics support area; enhance interoperability between the U.S. and ROK staffs.
- CTO 3: Exercise combined staff and tactical operations center procedures; refine tactical standard operating procedures accordingly.
- CTO 4: Enhance interoperability.

Mission Execution

Units from the 501st Sustainment Brigade and the 3rd LSC deployed north to Champion Thunder on Dec. 1, 2014, closed in on their objectives inside AO Monkey, and established combined command posts and security positions. Temperatures hovered between 5 and 8 degrees Fahrenheit, and the wind chill and ice made for a tough environment.

U.S. and ROK noncommissioned officers and junior officers vigilantly checked on their Soldiers and ensured that defensive positions, observation posts, and command posts were manned within the priorities of work. Teams set up satellite communication platforms, data cables, and field phone wires quickly to expand mission command and connect command nodes throughout the AO.

Daylight dwindled and the temperatures continued to plummet, but morale remained high as 501st Sustainment Brigade and 3rd LSC Soldiers received their first hot meals of Champion Thunder served from field kitchen equipment.

In the brigade headquarters, members of the 501st Sustainment Brigade and 3rd LSC staffs conducted their first combined working groups and huddles of the exercise. The meetings focused on convoy resupply operations in support of elements from the 2nd Infantry Di-

vision at AO Dagmar.

Movements to and from Dagmar would not be easy. MSR Green was a mix of canalized one-lane secondary roads and a busy four-lane highway. Additionally, the 3rd LSC S-2 section received notional intelligence concerning numerous reports of enemy activity along the route, to include improvised explosive devices and sniper attacks directed at adjacent units that were conducting combat patrols.

With this assessment now painting a dangerous picture of their new AO, battalion staffs from both organizations worked with higher units to ensure protection enablers were available during movement over the next 48 hours.

The brigade coordinated rotary-wing air support from the 2nd Battalion (Assault), 2nd Aviation Regiment, 2nd Combat Aviation Brigade, whose task was intelligence, surveillance, and reconnaissance in support of the convoys.

In the battalion areas, the 501st Sustainment Brigade's 194th Combat Sustainment Support Battalion (CSSB) and the 3rd LSC's 81st

Maintenance Battalion worked many of the same issues at their levels. The battalion commanders met regularly with the staffs for updates on convoy planning, water production, fuel, and maintenance statuses.

The commanders conducted battle-field circulation together throughout their company areas and perimeters during the night. With little sleep on the horizon and no break in the cold, Champion Thunder was off to a challenging start.

Achieving a Battle Rhythm

When all 501st Sustainment Brigade and 3rd LSC mission command nodes and initial defensive positions reached full operational capability late at night on Dec. 2, 2014, the company elements focused their attention on the upcoming resupply convoys.

The 46th Transportation Company, 194th CSSB, and the ROK's 1-600 Transportation Company, 81st Maintenance Battalion, conducted convoy operation order briefs and rehearsals.

Meanwhile, the 61st Maintenance Company, 194th CSSB, and the

812th Maintenance Company, 81st Maintenance Battalion, conducted technical inspections of convoy platforms and weapon systems and prepared recovery assets to support the movements.

Leaders from both organizations busied themselves with defensive position improvements, patrols, feeding and rest plans, and combat equipment checks. U.S. and ROK Soldiers executed these tasks as fully integrated units throughout the perimeter and in the convoys. This was challenging but also rewarding as young leaders learned new tactics, techniques, and procedures during every task and mission.

Early on the morning of Dec. 3, the first resupply convoy departed for AO Dagmar to resupply notional elements of the 2nd Infantry Division. Approximately 30 minutes into the mission, a vehicle struck a notional improvised explosive device and was disabled. Troops inside the vehicle were injured, and the convoy executed a patrol halt.

The 194th CSSB and 81st Maintenance Battalion personnel inside the command post received the report from the convoy commander and activated the quick reaction force (QRF) and recovery team to support the disabled vehicle and the convoy. Although a language barrier existed between the elements, the rehearsals conducted prior to the mission mitigated many obstacles and saved precious response time.

As the QRF and recovery team maneuvered to the point of the attack, a UH-60 Black Hawk helicopter from the 2nd Battalion (Assault), 2nd Aviation Regiment, flew over the convoy.

The helicopter crew provided intelligence, surveillance, and reconnaissance and pointed out enemy troops attempting to conduct a coordinated attack against the halted convoy. ROK and U.S. Soldiers both monitored the transmissions and, with the help of Korean augmentees to the U.S. Army assigned to each element, the messages were



Soldiers from the 501st Special Troops Battalion's headquarters and headquarters company occupy Forward Operating Base Unity at Camp Carroll, Republic of Korea, on Dec. 1, 2014.

quickly translated.

Once the QRF arrived, ROK maintenance recovery personnel from the 812th Maintenance Company conducted a hasty recovery of the 46th Transportation Company's vehicle and conducted field expedient maintenance to place it back into operation.

The successful response and recovery operation gave Soldiers from both organizations tremendous confidence in their ability to function as a cohesive combined unit in a moment of intense adversity. This did not go unnoticed by the observer-controllers who praised the efforts after the mission was complete.

During this event, the brigade and LSC staffs sent reports to higher units, shared intelligence, and coordinated for assets to support the units. Liaison officers in both tactical operations centers were invaluable to solving problems and deconflicting information on the spot.

Over the next 36 hours, the combined headquarters ordered five more convoys along with several maintenance and supply operations, all of which proved to be valuable training as the staffs worked diligently to improve integration, close communication and coordination gaps, and achieve a sustainable battle rhythm.

Change of Mission

As the weeklong combined training exercise matured, the battalions also exercised chemical, biological, radiological, nuclear, and explosives training, base defense, water purification, and fuel operations.

By Dec. 7, all of the more than 600 Soldiers from both organizations participating in the exercise were fully integrated with their counterparts at every echelon and were confident in their ability to accomplish the mission.

When the change of mission order was published late on Dec. 7, the units executed an after-action review chaired by the leaders of both organizations. While there was plenty



Soldiers from the 501st Sustainment Brigade and 3rd Logistics Support Command, Republic of Korea Army, listen as leaders brief them on upcoming operations for Champion Thunder at Area of Operations Monkey.

to be proud of, both the 501st Sustainment Brigade and the 3rd LSC recognized this exercise was only the first step in creating a lasting bond of friendship and combined training between the units.

The lessons learned would quickly be lost if the combined force did not plan, execute, and reinforce interoperability throughout future exercises. For this reason, both commanders have continued to engage regularly since the exercise. They plan to codify the relationship with the creation of a combined standard operating procedure and to test it annually with an event that builds on the success of Champion Thunder.

This event demonstrated that the U.S. Army's relationship with the ROK Army remains an integral part of maintaining the peace enjoyed for more than 60 years in the Republic of Korea. The ROK Army is a highly trained, well-equipped, and motivated force with plenty to teach the U.S. Army at every echelon.

Executing combined training is an incredible opportunity and a

privilege for those serving in the "Land of the Morning Calm" to further strengthen this unbreakable alliance.

Maj. Aaron J. Becker is the support operations officer for the 194th Combat Sustainment Support Battalion. He has a bachelor's degree in liberal arts and a master's degree in international relations. He is a graduate of the Quartermaster Officer Basic Course, Combined Logistics Captains Career Course, Command and General Staff School, Airborne School, and Air Assault School.

Maj. Richard I. Reeves is the S-3 of the 501st Sustainment Brigade at Camp Carroll, Korea. He holds a bachelor's degree in history and social science from California State University at Humboldt and a master's degree in history with a focus on early 20th century American imperialism. He is a graduate of the Officer Candidate School, Quartermaster Officer Basic Course, Combined Logistics Captains Career Course, and Command and General Staff Officer Course.



A wheeled-vehicle mechanic uses the Maintenance Support Device version 2 to diagnose vehicle faults. (Photo by Daniel R. Moody)

Modernizing Automatic Test Systems for Force 2025 and Beyond

■ By Daniel R. Moody

For over 35 years, Army weapon systems have relied on automatic test systems to diagnose and isolate platform failures. Two kinds of systems, at-platform automatic test systems (APATS) and off-platform automatic test systems (OPATS), diagnose maintenance issues for all levels of weapon systems.

Air and ground weapons systems are not fail proof; they require regular maintenance to ensure their readiness. As the Army transforms to Force 2025 and Beyond, materiel modernization of automatic test sys-

tems must keep pace so that the force can shoot, move, and communicate on demand.

APATS

APATS provide platform-level diagnostics on air and ground systems. They give the maintainer the ability to identify line replaceable module (LRM) faults.

Contact Test Set. The first generation of APATS, the Contact Test Set, was fielded in the late 1980s. The set provided electronic interaction with weapon systems and limited di-

agnostic ability. It was considered a momentum builder for the automatic test system initiative.

SPORT. In the 1990s, the Product Director for Test, Measurement, and Diagnostic Equipment (PD TMDE) developed the next generation of APATS. The Soldier Portable On-System Repair Tool (SPORT) gave the maintainer the ability to diagnose and repair various weapon systems using electronic technical manuals (ETMs) on a controller diagnostic aid.

The controller diagnostic aid was a

lightweight portable computer with an Intel processor chip, hard drive, CD-ROM drive, and Microsoft Windows 95. The device allowed for the upload and download of weapon systems data using military standard vehicle data bus technology.

In the late 1990s, SPORT was obsolete, and PD TMDE fielded the next generation of APATS: the Maintenance Support Device (MSD).

MSD. The MSD was identified as the Army's preferred APATS and ETM reader. The MSD made use of the latest technology from commercial industries and featured a clamshell design, increased processor speed, and greater storage capabilities than its predecessors.

Its ruggedized design and automated capabilities resulted in increased customer demand. By 2006, with the fielding of MSD version 2, the Army had 40,000 devices that supported over 50 weapons systems, including some in the tactical wheeled vehicle fleet.

The increased demands for graphics, ETMs, and user versatility resulted in an MSD redesign. In December 2011, the MSD version 3 was fielded as a smaller, more capable APATS netbook. It has the same ruggedized shell as the previous MSD, but it can be configured to have a clamshell or tablet design. The multicore processor speed, expandable RAM, large removable hard drive, and Windows 7 operating system improved its diagnostic test capability.

MSD version 3 is a ruggedized, self-contained, portable system that Army maintainers use in harsh field environments and at all maintenance levels to test, diagnose, and repair complex electronics in missile, aviation, and vehicular weapons systems. It is the primary reader of ETMs and platform-specific applications used to upload and download mission data.

MSD version 3 has been tentatively identified to host the Unit Level Logistics System-Aviation Enhanced, which will enable field-level avia-

tion maintenance personnel to track rotary-wing aircraft maintenance and preventive maintenance checks and services and to manage prescribed load lists. These innovative changes within APATS have kept pace with the Army's emerging requirements and have supported weapons system readiness.

OPATS

Unlike APATS, OPATS have no single source of procurement and management. A maintainer uses the OPATS to diagnose defective LRMs and to conduct fault isolation tasks that may involve schematic or diagram analysis to accurately diagnose the fault.

DSESTS. The Direct Support Electrical Systems Test Set (DSESTS), fielded in the early 1980s, is the Army's first OPATS. The DSESTS consists of an M900 series 5-ton truck, an expansion shelter, automated test equipment (ATE), and additional hardware and software components that together make up a test program set for each LRM.

Military occupational specialty (MOS) 91G (fire control repairer) Soldiers use the DSESTS to run off-system diagnostic tests and isolate faults on the M1A1 Abrams tanks and M2 Bradley fighting vehicle LRMs. The DSESTS continues to provide an OPATS capability for Abrams and Bradley platforms.

BSTF. In the early 1990's, PD TMDE fielded the integrated family of test equipment Base Shop Test Facility (BSTF) version 3. This version of BSTF consisted of a prime mover from the family of medium tactical vehicles, an S-250 shelter, ATE, and assorted test program sets to support each LRM. This equipment aided MOS 94Y (integrated family of test equipment operator/maintainer) Soldiers in diagnosing and repairing electronic LRMs for aviation and missile weapon systems.

PD TMDE fielded a new OPATS, BSTF version 5, in 2002 to provide LRM support of the OH-58D Kiowa helicopter optical system. This

version was fielded to aviation support battalions.

Standardization

In 2004, multiple policies were established to standardize and downsize automatic test systems. In a July 28, 2004, memorandum on Department of Defense policy for automatic test systems, the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics directed the Army to standardize and downsize its automatic test systems.

The Army directed compliance with the policy and implemented regulations to support its own policy in Army Regulation 750-43, Army Test, Measurement, and Diagnostic Equipment.

Test Systems for the Future

In 2015, Combined Arms Support Command TMDE capability developers completed the requirements analysis for the future APATS to support the Force 2025 and Beyond platform diagnostics mission.

MSD version 4. The latest version of MSD is being considered as the data collection source for condition-based maintenance plus initiatives for future weapon systems. The update will also allow MSD to communicate with Global Combat Support System-Army.

MSD version 4 will consist of two models: a ruggedized tablet and a clamshell laptop. Each model will have a line item number and separate basis of issue plan for easier property book accountability and maintenance.

PD TMDE's two-pronged acquisition approach for the fourth version of MSD will potentially result in overall lower program cost, improved fielding time lines, and increased procurement quantities. The MSD version 4 fielding is expected to begin in 2016.

NGATS. The Combined Arms Support Command developed the requirements for the Next Generation Automated Test System (NGATS) in an effort to address the



The Direct Support Electrical System Test Set, the Army's first off-platform automatic test system, is still in use today.

obsolescence and redundancy of previous OPATS. The capabilities production document was approved in April 2007, and NGATS was selected as the Army's replacement for DSESTS and BSTF (versions 3 and 5).

The NGATS capabilities production document was coded as a joint interest requirement, so PD TMDE leveraged Navy and Marine Corps automatic test system architecture to develop some of the NGATS hardware solutions.

The NGATS configuration consists of two heavy expanded-mobility tactical trucks, two 20-foot shelters, one 60-kilowatt generator, ATE, and multiple test program sets to perform diagnostic support for all variants of the Abrams tank, Bradley fighting vehicle, Paladin artillery system,

Avenger air defense system, and future weapons system platforms.

The open architecture design and use of commercial technology enable NGATS to be a general purpose OPATS focusing on increasing diagnostic capabilities, lowering no evidence of failure rates for weapon system LRMs, and improving readiness.

The NGATS aligns with the Army's two levels of maintenance and will be operationally assigned to field and sustainment maintenance organizations. PD TMDE plans to begin fielding NGATS in 2017 to brigade combat teams, Training and Doctrine Command schoolhouses, and depots.

Designated as the Army's preferred automatic test systems, the MSD version 4 and NGATS will provide

weapon systems with technologically advanced diagnostic tools by fielding a single source of ATE. This single-source method will reduce logistics costs, enable faster diagnoses, and provide precise measurement capability for increased fault isolation accuracy rates well beyond 2025.

Daniel Moody is a test, measurement, and diagnostic equipment (TMDE) military analyst at the Combined Arms Support Command and is the Army's capability developer for TMDE. He is also a retired Army electronic maintenance systems warrant officer. He holds an executive certificate in leadership from the Massachusetts Institute of Technology and a bachelor's degree in management studies from the University of Maryland.

Let's Talk!

milSuite

An expeditionary mindset: Ready for anything

August 31, 2015

By Lt. Gen. Gustave "Gus" Perna

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A 1st Armored Division Soldier ground guides a Stryker vehicle into position as part of a refuel on-trail Iron Focus at Fort Bliss, Texas, on March 30, 2015.

The urgency of training logistics leaders to perform expeditionary logistics hit home to me earlier this year when I spoke to a thousand majors in the Command and General Staff Officers' Course at Fort Leavenworth, Kansas. Many of these top-quality officers had served on multiple deployments to Iraq or Afghanistan. However, they all entered the Army in 2003, so they are heading out to run battalions and brigades having never seen

Story Highlights

- The Army needs a well-planned and well-executed logistics leader development campaign in order to develop an expeditionary mindset.

September-October 2015 issue of Army Sustainment magazine

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Army G-4

An Expeditionary Mindset, Ready for Anything

By Lt. Gen. Gustave "Gus" Perna (@gustave.f.perna)

The Army needs a well-planned and well-executed logistics leader development campaign in order to develop an expeditionary mindset.

<http://go.usa.gov/3628k>

Blind Spot

Defining Analytics and Its Supporting Role in Military Logistics Intelligence

By Dr. Christopher R. Paparone (@christopher.r.paparone) and George L. Topic Jr.

To improve organizational learning and decision-making, Army logisticians should view analytics as part of the broader perspective of evidenced-based management, or what the authors call, military logistics intelligence.

<http://go.usa.gov/3628z>

Commentary

Trained and Ready Logistics Forces

By Col. Robert L. Hatcher Jr. (@robert.l.hatcher)

The Army had to work hard to develop logistics force training and readiness at its current levels. The next challenge will be to maintain these levels of training and readiness.

<http://go.usa.gov/3629f>

The Need to Expand Training and Education on Nonstandard Logistics

By Capt. Christopher J. Sheehan

Nonstandard logistics is an important component of unconventional warfare, but no existing course focuses solely on that subject.

<http://go.usa.gov/3629g>

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The Armament Graduate School is part of the Armament Research, Development and Engineering Center (ARDEC), whose... fb.me/HJCyhsEU



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@ArmySustainment @ARDEC Is this strictly a residential program, or is this something other members of the LCMC participate?



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Good question. @Campbellms Do you want to know if it's available to the @JML_LCMC?



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@ArmySustainment @JML_LCMC Seems like we would want people with the production operations onboard with this as well



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@Campbellms @JML_LCMC @ARDEC I agree. From a collaboration standpoint, it seems that it would provide a wider experience base.



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@Campbellms @ARDEC says it is open to all members of the LCMC. If you are @ Picatinny they will cover tuition and books. @JML_LCMC



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Thanks! I'll definitely look into it....Hope this becomes online, as TDY these days is not easy to get.

FAVORITE

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On the Border: The National Guard Mobilizes for War in 1916

■ By Alexander F. Barnes



President Woodrow Wilson had a deeply concerned look on his face. The chief of staff of the Army had just updated him in the Oval Office, and the news had not been good. Turning now to his senior defense adviser, Secretary of War Newton Baker, the president said, "With the Regular Army stretched so thin, I'm not sure we have any other options but to mobilize the National Guard."

Baker nodded but cautioned, "Sir, you

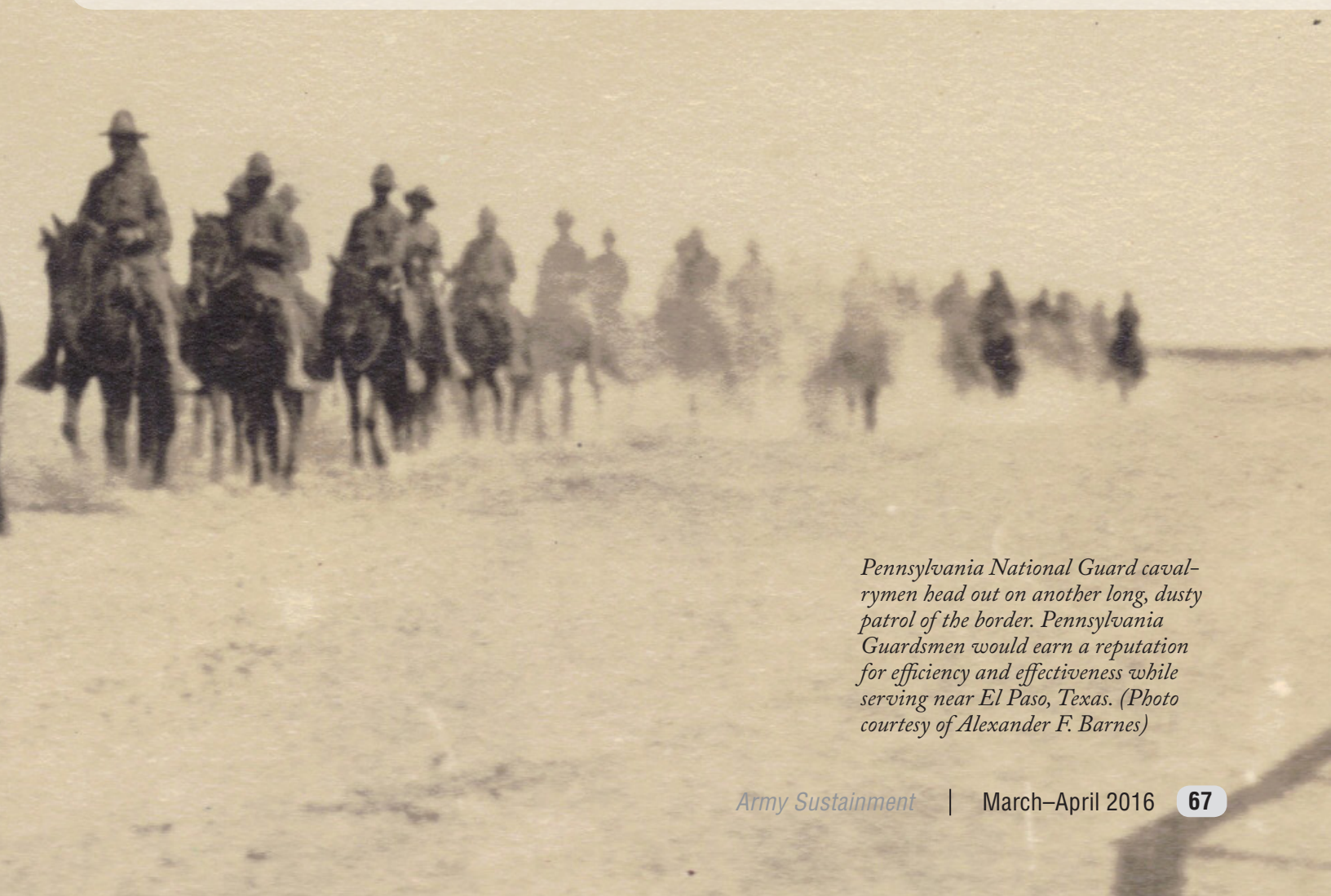
know we just reorganized them, and most are still trying to figure out what their units are supposed to look like."

"I know, I know," the president said slowly. "But these latest cross-border attacks have forced our hand."

Baker nodded his head again and said, "Yes, sir. It'll be painful for everyone, but the Guard can make a difference." He paused and then said, "If there's a positive side to this, at least now we can inform the states electronically. I'll have my staff

send out the telegrams to each governor this afternoon."

Wilson quickly shook Baker's hand and turned back to the other report on his desk: a German submarine campaign was sinking British and French ships faster than they could be made. Eventually the United States would have to take a side in the war, but for now, the problem on the Mexican border was his biggest concern. The nation had been attacked, and something had to be done about it.



Pennsylvania National Guard cavalrymen head out on another long, dusty patrol of the border. Pennsylvania Guardsmen would earn a reputation for efficiency and effectiveness while serving near El Paso, Texas. (Photo courtesy of Alexander F. Barnes)

HISTORY

The mobilization of National Guard units in response to Pancho Villa's raid on the United States led to the development of a well-trained National Guard force.

Pancho Villa's attack on the United States in March 1916 drew a surprisingly fast military reaction. The U.S. government was determined to bring the raider to justice. Unfortunately, although Brig. Gen. John J. Pershing led a horse-mounted column of Regular Army Soldiers across the U.S. border into Mexico less than a week after the attack, Villa proved to be elusive.

Although U.S. Soldiers succeeded in defeating some of his followers, Villa himself remained an uncatchable shadow. As Pershing plunged deeper and deeper into Mexico, other Regular Army units guarding the 1,200-mile border were forced to leave their positions and follow him southward to secure the supply line. Very quickly, what once had been a very thin line of defense between the United States and border raiders became no line at all.

Mobilizing the Guard

In early May 1916, other Mexican raiders hit the Texas towns of Glen Springs and Boquillas. Because of these attacks, President Woodrow Wilson decided that the only way to maintain security on the border was to activate National Guard units from Texas, Arizona, and New Mexico. He federalized them into national service on May 8.

Unfortunately, none of these states had very large units. Together the states could raise only about 5,000 Soldiers, and most of them were infantrymen. They had very few badly needed cavalrymen, and it was obvious that many more Soldiers were necessary.

By mid-June, Wilson decided to mobilize an additional 110,000 National Guard Soldiers for border service. This expansion included National Guard units from every state except Nevada, which had no National Guard.

According to Herbert M. Mason's book *The Great Pursuit*, the call-up brought onto active duty "three regiments, 13 separate squadrons, and 22 separate troops of cavalry ... 108 regiments and seven battalions of infan-

try, and six regiments, 12 battalions, and 17 batteries of field artillery."

The method used to announce the call-up was simple. On June 18, Secretary of War Newton Baker sent telegrams to the governors of all 47 states that had National Guard units and the District of Columbia. He informed them that their military units were now needed by the federal government. As a result, all across the country, unit commanders and state adjutant generals began the process of notifying their Soldiers to begin mobilization.

However, mobilizing the force was much easier said than done. The National Defense Act of 1916 had been implemented just two weeks earlier, and many of the state adjutant generals had not expected to have to comply with it so soon. The provisions of this act established uniformity in periods of enlistment and conformity with federal regulations for the Regular Army and National Guard.

The legislation also called for a standard pay scale. Under these guidelines, generals received \$16.67 a day while second lieutenants, the lowest ranking officers, received \$4.72. Among the enlisted ranks, a private received 60 cents a day and the sergeants earned a full dollar.

There were, however, many things that the act did not cover, such as an integrated plan for moving Soldiers from the different states across the country by rail. With the fear that a full-scale war with Mexico was just around the corner, each state was left to its own devices to arrange transportation for its Soldiers to the border.

Physical Exams

Just getting the troops clothed and ready to deploy proved challenging. When Soldiers and units arrived at their mobilization stations, a number of critical events had to take place in addition to issuing weapons and equipment. First among these was the individual Soldier physical examination.

New York's original policy on physical examinations had decreed that a Soldier would not receive a physical

until he was actually activated and brought on duty. This proved to be ineffective because of the scarcity of military doctors; it would have taken New York's units more than a year just to mobilize and deploy.

Across the nation, the sheer number of Soldiers that had to be examined created a problem. Equally troublesome, the number of prospective Soldiers that failed the rudimentary physical was staggering. The reasons were varied and included venereal disease, defective vision, hernias, bad teeth, obesity, overall poor physique (underweight or under height), amputations, or deformities.

When the final mobilization records were tallied, the state that had the lowest rate of rejections was Colorado with 10.3 percent while Ohio topped the list with 25.2 percent. Arkansas' similar rejection of 870 out of the 2,078 that were examined at the Little Rock mobilization site proved that Ohio was not alone in this shortcoming.

For the fourteen Midwest states that made up the Army's Central Department, the average number of rejections was over 15 percent. The New York adjutant general, Gen. John O'Ryan, would later point out the basic fallacy in the system: physical exams should take place before an enlistee joins the unit, not while he is getting ready to deploy.

States Prepare

In each state, the problems were fairly uniform; the major difference was the number of Guardsmen being mobilized. The smaller states, such as Rhode Island, Connecticut, and Delaware, had an advantage by having fewer troops and all their facilities located fairly close together. For larger states with big populations, such as Michigan, Pennsylvania, and New York, the scope of the problem was obvious.

A New York National Guard staff officer pointed out that the horses and mules of the command required no less than 320,000 gallons of water a day during mobilization.

According to a June 20, 1916, article from *The New York Times*, the New York Guard put in a requisition for "150,000 pounds of beef (75 tons), 200,000 pounds of flour (100 tons), 150,000 pounds of potatoes (75 tons), 35,000 pounds of sugar (17 ½ tons), 20,000 dozen eggs, 40,000 pounds of bacon (20 tons), 30,000 pounds of mutton (15 tons), 12,000 pounds

the clock, it was able to dispatch a regiment each day to the border. Using this method, the state deployed a total of 11,749 troops between June 28 and July 9.

The Utah National Guard was also pressing to put its best foot forward. Having been a state for only some 20 years, the citizens wanted to prove they were equal to the task. When



National Guardsmen board the train that will carry them across the country to the Mexican border in 1916. (Photo courtesy of Alexander F. Barnes)

of butter (6 tons), 12,000 pounds of beans (6 tons), 10,000 pounds of dried fish (5 tons), and 25,000 pounds of onions."

It was noted that this would feed the New York Soldiers for just two weeks, after which time the entire order would have to be repeated.

While the New York Guard was mobilizing, the state's citizens showed their support by gathering outside the armories and offering help and encouragement. With all of this support, the units hurried to complete their preparations and depart for mobilization camps near Poughkeepsie.

The Pennsylvania National Guard was equally busy. By conducting Soldiers' physical examinations around

the Utah National Guard received its mobilization orders on June 18, 1916, the state could provide two desperately needed cavalry squadrons, a field artillery battery, and a field hospital. Altogether these units totaled 800 Soldiers.

The first Utah Guardsmen arrived in Nogales, Arizona, just 11 days after the mobilization order was received and were noted for their competence and reliability. They were soon joined by Guardsmen from Idaho, Connecticut, and California.

California's governor, Hiram W. Johnson, had likewise jumped on the mobilization process and directed the officers and men of his state's National Guard to assemble at the



No longer looking confused or out of place, these New York cavalrymen show the leaner, more mature look of Soldiers who have completed six months of training in the desert. (Photo courtesy of Alexander F. Barnes)

armories immediately.

In spite of the short notice, most of his units were ready to deploy within 12 hours of the scheduled times. The entire operation of mustering and transporting the California National Guard to defensive positions on the California-Mexico border was accomplished within two weeks.

States Lag Behind

Some other states were not pulling their weight. One member of the U.S. Senate pointed out that several of the southern states had not sent their required quota of troops. Henry Cabot Lodge, a Republican senator from Massachusetts, declared that only 7,000 to 8,000 southern Guardsmen were serving on the border.

Lodge further stated that even this number was inflated because that total included Soldiers from Arizona, New Mexico, Texas, Virginia, and Maryland. It soon became apparent that most of the troops from North

Carolina, South Carolina, and Florida were still at their mobilization stations in their home states.

Alabama also had problems getting its Guard units out the door. Although the governor had received notification of the federalizing of his troops at the same time as the other states in July, it was October before he could report back that he had 182 officers and 3,194 enlisted men in training at Alabama's mobilization site.

Further discussions disclosed that there were still some 59,000 Guardsmen in mobilization camps nationwide awaiting either equipment, transportation, or both. The blame for equipment shortages was placed on the War Department for not having enough uniforms, weapons, and field gear to supply the newly activated Guard units.

Ohio also had problems getting its troops to the border. In fact, Ohio's struggles became so well-known and documented that both the War De-

partment and the Army's Central Department conducted investigations into why the state's Soldiers were not mobilizing at the same pace as most other states.

Guard units in Ohio were ready to move to their mobilization camps for final preparations, but the state had not yet decided where to locate those camps. As a result, the Soldiers remained at their home-station armories.

It did not take much digging to determine the cause. The problem actually had its roots in the Spanish-American War. During that conflict, many of the Ohio volunteer units were forced to stay at mobilization sites that had no billets or proper tents to protect the Soldiers from the elements.

In the following years, the Ohio state government looked into several possible locations for setting up a mobilization site to prevent this problem from reoccurring. As can often happen when work is conducted by committee, the location and requirements

for the site kept changing. When a site near Columbus, Ohio, was finally selected in 1914, nothing more was done.

With mobilization declared, the Ohio adjutant general started to build the camp using local labor, Soldiers, and even some convicts from a nearby prison. In spite of all of these efforts, the camp was not ready until June 27, 1916.

In effect, Ohio had lost 9 days in preparing its Soldiers. This had a ripple effect; the transportation assets that should have gone to move Ohio Soldiers were given instead to other states that had units ready to move.

In contrast, nearby Illinois, which also did not have a ready mobilization site, used its state fairgrounds as a mobilization site and quickly dispatched its units southward. In fact, Illinois would later boast that its 1st Infantry Regiment was the very first National Guard unit to reach the border near San Antonio, Texas.

Two other nearby states also struggled with mobilizing, although not to the same degree as Ohio. The Kentucky Guard's mobilization was delayed for five days as state officials twice changed the mobilization site's location.

West Virginia had a more unusual problem; its mobilization site had been previously changed, and everyone in the state knew the new location. Unfortunately, no one had bothered to tell the War Department.

As a result, the War Department promptly sent all of the much-needed unit equipment to the old site, which had been converted to serve as the state's tuberculosis sanitarium.

Another typical problem for many states was a tradition dating back to the Civil War: all administrative and personnel entries in the unit records had to be done by hand with no typewritten entries and had to be filled without using ditto marks.

Equipment Shortages

One problem common to all of the states was a dramatic shortage of field equipment. Adding to all of its oth-

er mobilization woes, Ohio reported that its Soldiers were short 1,405 first aid packs and 13 first aid kits.

According to Cole C. Kingseed's master's degree thesis entitled, "A Test of Readiness: the Ohio National Guard and the Mexican Border Mobilization, 1916–1917," they were also short "32 pistols, 268 pistol

The inability of some Guard units to find the equipment that had been shipped to them is a familiar scenario even 100 years later.

magazines, 2 blacksmith sets, 177 entrenching shovels, 271 wire cutters ... 3,781 waist belts and 115 march kits."

After conducting an investigation into these shortages, the inspecting officer stated that the biggest problem was that the Army's depots simply did not have enough equipment to meet the state's demands. He also commented, however, that there had been problems in the invoice and requisition processes, such as an accidental shipment of materiel to the wrong destination and confusion among unit officers and quartermasters about what equipment was actually on hand for issue.

Adding to the field-gear problem was an unusual War Department stipulation that in the event of call-ups, unit commanders were not to requisition needed equipment. Instead, the Army's depots, using lists of the units' projected "war strength," would determine the necessary amount and ship it to the appropriate state mobilization site.

Of this practice, Gen. O'Ryan wrote that "it would be difficult for the most cunning mind to devise a scheme better calculated to create confusion, indecision and disorganization at a time of national stress."

On the Border

For better or for worse, the Nation-

al Guard was now alert and mobilized, all the while believing they were headed for a war. Ultimately, the war with Mexico never came about.

Instead of fighting their way to Mexico City as their forefathers had in the 1850s, the National Guard units settled into a cycle of border guard duty and rigorous training.

The desert proved a tough environment and, with the Soldiers adapting as best they could, most units were rounding into shape by December 1916.

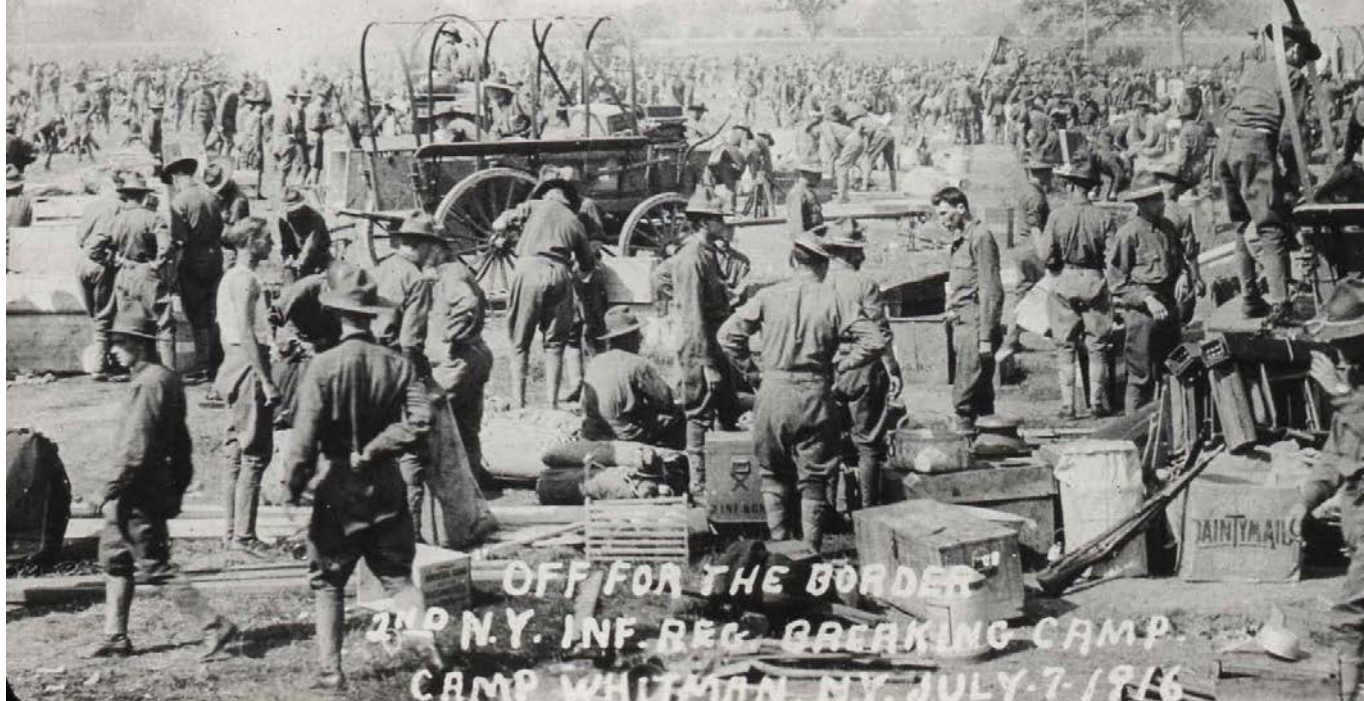
In February 1917, when it was apparent to all that the Punitive Expedition had accomplished about all it was going to, Pershing was ordered to bring his command out of Mexico. The Guard units were likewise gradually withdrawn from the border and sent home.

It was just in time. President Wilson had reached the end of his patience with the Germans and was about to take his nation to war against them. Many of the Guard units returned home to find a new set of mobilization orders waiting for them to protect "key installations" from sabotage.

If the president was going to fight to make the world safe for democracy, the National Guard, now toughened after months of realistic training on the border in Texas, New Mexico, California, and Arizona, was going to be a key part of his force. It was no coincidence that three of the first five divisions sent to France were from the National Guard.

Lessons Learned

Today's Soldiers can learn from the National Guard's experiences in 1916.



The organized confusion of deployment preparation is obvious in this July 7, 1916, photo of the 2nd New York Infantry Regiment preparing to depart for the Mexican border. (Photo courtesy of the New York Division of Military and Naval Affairs)

Having the right equipment is important; even more important is knowing where it is. The inability of some Guard units to find the equipment that had been shipped to them is a familiar scenario even 100 years later. During Operation Desert Storm and the early days of Operation Iraqi Freedom, the loss of visibility caused a great deal of confusion and often required missing equipment to be reordered.

The day you receive mobilization orders is not the day to start determining who is deployable. Common sense would later prevail during the build-up for World War I, when individual physicals were conducted before Soldiers were assigned to units. During the Border Campaign, however, it remained a sticking point and delayed many units.

We often think of the people of the early 20th century as living a healthy and robust life, but the percentage of men rejected for service on account of physical problems proves that a false assumption.

Nothing happens until something moves. Despite the very large and excellent rail network that covered the country, the distances involved in moving large numbers of Soldiers from the Northeast states were

daunting. Many of the mobilization sites were not located near railheads, so Soldiers were forced to use other modes of transportation just to get to departure sites.

Taking notice of this problem, when the Army began constructing 32 division-sized training camps in 1917, a key consideration in camp location was proximity to rail. Most camps even had the railroad extended directly into the camp to simplify transportation.

Having a mobilization plan is only good if everyone knows what it is. Some states were not prepared to mobilize and others, although prepared, had not shared their mobilization plan with their Soldiers or with the War Department.

Those who ignore history are doomed to repeat it. Learn from mistakes. One of the most surprising aspects of Army training in the late 19th century and early 20th century was how little emphasis was placed on marksmanship and individual weapons training.

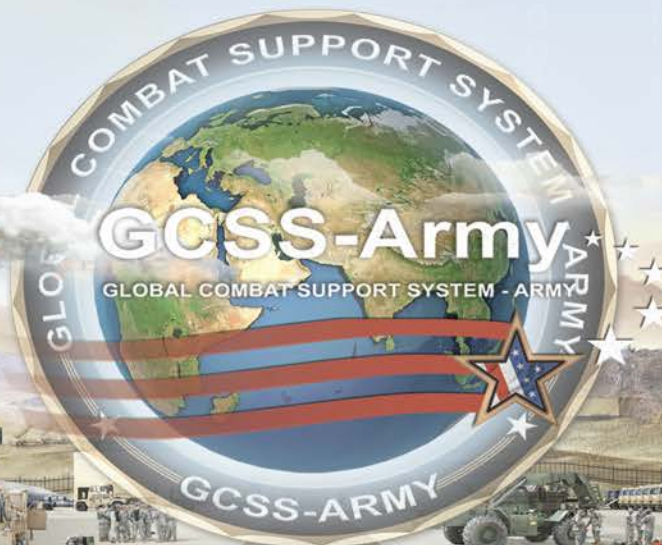
Fortunately, some officers recognized this deficiency and ensured that a great deal of time was spent on weapons training while they were on the border. Later, as the divisions were being trained at their stateside

camps, the emphasis remained and the one area in which the doughboys excelled was marksmanship.

An unforeseen byproduct of Pancho Villa's raid was the creation of a well-trained National Guard force just in time for the United States to enter into World War I. The 150,000 Guardsmen that served on the border received more valuable training during their time there than would have been possible in years of normal home-armory training. It also highlighted the growing importance of the National Guard in the U.S. military strategy.

As Pennsylvania's adjutant general later stated, "We heard a call for service; we went out and did our duty without complaint, and if we get a call next week we will do it over again."

Alexander F. Barnes recently retired from the Enterprise Systems Directorate of the Army Combined Arms Support Command at Fort Lee, Virginia, and is now the command historian for the Virginia National Guard. A former enlisted Marine and Army warrant officer, he holds a master's degree in archeology from the State University of New York at Binghamton.



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