THE ARMY'S OFFICIAL PROFESSIONAL BULLETIN ON SUSTAINMEN

MAY–JUNE 2018

ARMY SUSTAINMENT

WWW.ARMY.MIL/ARMYSUSTAINMENT

HIP-POCKET GUIDE MAINTENA

BRIGADE MAINTENANCE MEETING IS A BATTLE DRILL THA
RTICIPANTS MUST KNOW THEIR ROLES AND RESPONS

ING FACTORS

rain, Troops, Time, and

R) available

- The goal is to Maintenance
- SPO and SP
- Scrub and di
- SSA Account customer pic
- Identify jobs

CLICK HERE

Expeditionary Battlefield Sustainment

Inside

PB 700–18–03 Headquarters, Department of the Army • Approved for public release; distribution is unlimited.

TABLE OF CONTENTS

ON THE COVER

Mine-resistant ambush-protected vehicles being transported from Kandahar Airfield, Afghanistan, await downloading from a C-17 Globemaster III at Bagram Airfield, Afghanistan. Three of the vehicles were destined for the United States to receive upgrades. (Photo by Justin Graff)

DEPARTMENTS

"The command maintenance program and the command supply discipline program are absolutely key commander's programs. Commanders must be ruthless in enforcing standards. The maintenance standard in our Army is 10/20, and that's non-negotiable."

Gen. Robert B. "Abe" Abrams, p. 8

FEATURES

Submitting an Article
Submit your article as a Microsoft Word document to usarmy.lee.tradoc.mbx.leeeasm@mail.mil. If you have questions, please contact us by email or call (804) 765–4761 or DSN 539–4761.

ARMY SUSTAINMENT

PB 700–18–03
VOLUME 50, ISSUE 3
MAY-JUNE 2018

PHONE: (804) 765–4761 (DSN 539–4761)
USARMY.LEE.TRADOC.MBX.LEEEASM@MAIL.MIL
WEBSITE: WWW.ARMY.MIL/ARMYSUSTAINMENT

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

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

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

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

Distribution: Units may obtain copies through the initial distribution system (DA Form 12 series). Private domestic subscriptions at $30.00 per year and international subscriptions at $42.00 per year are available by visiting http://bookstore.gpo.gov on the Web. Subscribers should submit address changes directly to *Army Sustainment* (see address below). *Army Sustainment* also is available at http://www.army.mil/armysustainment.

Postmaster: Send address changes to:
EDITOR ARMY SUSTAINMENT/ALU/2401
QUARTERS RD/FT LEE VA 23801–1705.

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

By Order of the Secretary of the Army:

MARK A. MILLEY
General, United States Army
Chief of Staff

GERALD B. O'KEEFE
Administrative Assistant to the Secretary of the Army

1807902

Soldiers Must Relearn Expeditionary Skills for the Next Fight

Expeditionary battlefield logistics takes us back to the basic responsibilities of planning, synchronizing, and transporting commodities in support of maneuver commanders.

■ By Gen. Gustave "Gus" Perna

More than 17 years of war has taught us much. But as the Army's senior logistician, I am most concerned about what we have forgotten and how it jeopardizes readiness.

Forward operating base logistics separated logisticians from their core responsibilities. Decisions we made under predictable conditions served us well but resulted in the atrophy of our expeditionary logistics skills. Purposely or not, Soldiers and leaders were removed from readiness tasks.

Now it is time for logisticians to regain and exercise their expeditionary skills that will sustain us moving forward. Expeditionary skills include the fundamentals of deploying the force, opening ports and airfields, and setting and sustaining theaters in an evolving threat environment.

Luxuries of time, contractor support, and connectivity are unlikely to exist in upcoming wars. Future battlefields will require us to anticipate warfighters' needs, integrate logistics support, and respond rapidly with innovation, ingenuity, and agility.

As professionals, we must understand the battlefield by studying the terrain and the enemy situation. Ammunition, fuel, and water can become simply computations to logisticians, but they are more than math problems; they are readiness enablers.

At all levels, logisticians must inherently understand these numbers, recognize what it takes to support a brigade combat team, division, and corps during an offensive attack, and then execute.

Over the past decade, we got into the habit of merely managing commodities, and that behavior pattern should be wiped from our memory. We cannot wait for or rely on situation reports and logistics status reports. Logisticians must have battlefield situational awareness to be able to use information from radio chatter and other traditional methods to anticipate requirements.

Expeditionary battlefield logistics moves us beyond supply management. It takes us back to our core competencies and basic responsibilities to plan, integrate, synchronize, echelon, and transport commodities in support of the maneuver commander. It means every Soldier doing his or her job, including noncommissioned officers fulfilling their roles as the backbone, warrant officers providing their technical expertise, and leaders understanding planning and operational risk.

Refining our expeditionary skills means grasping and executing the art and science of sustainment; it means we work those math problems and understand those numbers. We prepare our shipments with offloading in mind. Our equipment is well-maintained, combat-configured, and ready for both internal movement and external support.

Sustainment planning must incorporate leap-frog capability for scenarios in which sustainers are constantly moving and simultaneously supporting. These are the expeditionary skills sustainment organizations must perfect and demonstrate to survive on the battlefield.

When it is time to deploy, it is too late to practice battlefield sustainment skills. Logisticians must exercise and train on those skills today to be ready for the next contingency.

When we merge our expeditionary sustainment skills with our intrinsic expertise in forecasting, risk analysis, and supply chain management, we will be well-positioned to face our next challenge with courage and confidence.

Gen. Gustave "Gus" Perna is the commander of the Army Materiel Command at Redstone Arsenal, Alabama.

Logistics Innovations and Getting the Basics Right

The Deputy Chief of Staff, G-4, has been making strides to enhance materiel readiness and ensure the availability of logistics support. Sustainers can do many things to assist in these efforts.

■ By Lt. Gen. Aundre F. Piggee

In my Army career, I have deployed to the National Training Center three times. During a rotation when I was a young second lieutenant, I proceeded to get lost almost every night, but I eventually made it to my logistics release points because of the basic skills I had learned at my home station. This experience has shaped my thinking for 37 years.

Today, as the deputy chief of staff, G-4, I set policies that all Army logisticians will use on an expeditionary battlefield, where our basic skills will be put to the test. The Army may end up in a remote corner of the globe without much infrastructure, where our forces have to self-sustain and where our adversaries have new approaches to warfare. It will not be like the past 16 years of war, when our troops regularly arrived at well-established forward operating bases.

Logistics Innovations

The G-4 office and our partners have made strides in enhancing materiel readiness and ensuring logistics support is available to increase the lethality of combat units. The next expeditionary battlefield will have many improvements to help logisticians do the basics of supply and maintenance better.

Common authorized stockage list (mobile). We have implemented an innovative approach to planning what repair parts will be most needed in austere environments. Units are now given a common authorized stockage list with the goal of being 100 percent mobile. Within three months of converting to the new approach, brigade combat teams reported filling 19 percent more demands for parts than they had previously. This measure results in the faster repair of weapon systems.

Army pre-positioned stocks. We have grown our equipment stocks all over the world to serve as a deterrent and bring lethality forward. We are assembling the equipment in ready-to-fight configurations to meet a fight tonight scenario for early-entry forces. We also are working with the Army Materiel Command to update the facilities that store the equipment. Having the equipment already in place has another advantage: it decreases demand for strategic airlift and sealift so those assets can be used to move troops.

Logistics Civil Augmentation Program (LOGCAP) changes. A new version of LOGCAP will focus on setting and surging the global theater for Department of Defense contingency operations. LOGCAP has been a critical force multiplier that enables sustainment by leveraging contracts awarded ahead of time and executing planned and deliberate responses to full-spectrum operations globally. The new program seeks to have a management team on the ground within 72 hours of notification.

Field feeding. The old dictum, "An Army marches on its stomach," is as true today as ever. We are always trying to improve the quality of our meals ready-to-eat to ensure that they meet nutrition and calorie standards and that Soldiers like the food. With the help of warfighter evaluations, we are removing the less popular items and will be adding new favorites, such as

pepperoni pizza, a chicken burrito bowl, and a teriyaki meat stick.

Leap-ahead technologies. Across the Army, we also are aggressively developing leap-ahead technologies that will radically change sustainment on the battlefield. You can expect "spider web" sustainment with many modes, nodes, routes, and suppliers that are all interoperable with joint and coalition partners.

Spare parts will be manufactured using technologies such as additive manufacturing. We are examining technologies to produce water locally. Lift platforms will fly farther and faster, carry heavier payloads, and team with unmanned systems. Sensors and power management tools will monitor system performance and observe activity.

Sustainers also will rely less on echelons-above-brigade support. You will see a reduction in the "cognitive load" through the application of artificial intelligence and machine learning technologies.

HIP-POCKET GUIDE

MAINTENANCE MEETINGS

A U.S. ARMY LOGISTICS, G-4 PRODUCT

A BRIGADE MAINTENANCE MEETING IS A BATTLE DRILL THAT SHOULD BE CONDUCTED IN ONE HOUR. ALL PARTICIPANTS MUST KNOW THEIR ROLES AND RESPONSIBILITIES TO MAXIMIZE COMBAT POWER.

MEETING PLANNING FACTORS

- Discuss METT-TC (Mission, Enemy, Terrain, Troops, Time, and Considerations)
- Have an accurate equipment status report (ESR) available
- Maximize time maintenance managers have to build combat power
- Choose a predetermined location and time so that, if communications fail, units can still attend

ATTENDEES

- BCT XO
- BCT S-4
- BN XOs
- FSC Commanders
- FSC Maintenance Officers
- TF Maintenance Technicians
- TF Maintenance NCOs
- BSB Commander
- Support Operations Officer
- SPO MATO
- SSA Accountable Officer
- Maintenance Control Officer
- Brigade Logistics Support Team (BLST)
- LARs/FSRs

AGENDA

- Roll call
- BCT mission next 24/28/72 hours
- BCT priority of support/maintenance
- BCT XO issues
- Support operations issues
- Requisition status/ volume
- Logistics information systems issues
- ESR scrub
- Closing comments

ACTIONS PRIOR TO THE MEETING

- The goal is to synchronize efforts and resolve issues prior to the BCT Maintenance Meeting
- SPO and SPO MATO conduct pre-meeting
- Scrub and distribute ESR
- SSA Accountable Officer identifies critical parts awaiting customer pick-up and critical parts on ASL
- Identify jobs that require evacuation from the FSC to the FMC

ESR - EQUIPMENT STATUS REPORTS (FORMER 026 REPORT)

THE MOST IMPORTANT PROCESS

- Current combat power
- SSA comments on parts availability
- Logistics assistance representative (LAR) comments on long lead-time parts
- Contract generation
- Projected combat power based on contracts/maintenance meeting

END RESULT

- All key maintenance personnel have a clear picture of who is conducting what actions, when these actions must occur, and who will close the loop
- All maintenance resources are allocated to improve Combat Power
- A functional and accurate ESR

SOURCE: Brigade Sustainment In Decisive Action Operations | JAN18
http://usacac.army.mil/sites/default/files/publications/18-10.pdf

FOUND IN THE MAY – JUN 2018 EDITION OF *ARMY SUSTAINMENT*

HIP-POCKET GUIDE

ELEMENTS OF A SUSTAINMENT REHEARSAL

A U.S. ARMY LOGISTICS, G-4 PRODUCT

"THE BCT SUSTAINMENT REHEARSAL ENSURES THE SYNCHRONIZATION OF SUSTAINMENT EFFORTS BEFORE, DURING, AND AFTER COMBAT OPERATIONS. THE SUSTAINMENT REHEARSAL VALIDATES THE WHO, WHAT, WHEN, WHERE, AND HOW OF SUPPORT. THE SUSTAINMENT REHEARSAL USUALLY OCCURS AFTER THE COMBINED ARMS AND FIRE SUPPORT REHEARSALS, WHICH SHOULD NOT LAST MORE THAN 90 MINUTES." FM 3-96

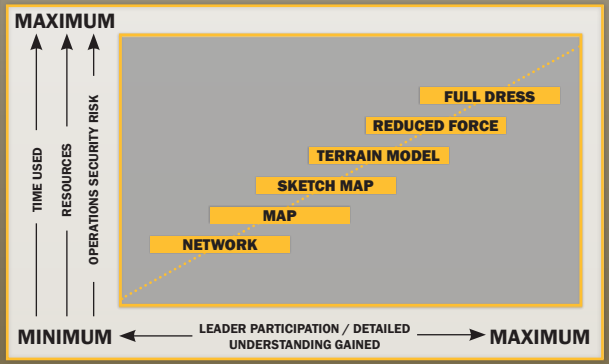
ATTENDEES

- BCT CDR/CSM
- BSB CDR
- BCT XO
- BN CSMs
- BCT S-4
- BCT S-1
- BCT SURGEON
- BCT MED PLNR
- BSB SPO
- BN XOs
- CHAPLAIN
- BCT S-2 REP
- BCT S-3
- BSMC CDR
- BN S-1s
- BN S-4s
- MED PLS
- CSSB REP
- FSC CDRs
- BLST

A rehearsal is a session in which a staff or unit practices expected actions to improve performance during execution. FM 6-0

BCT XO leads the rehearsal for the BCT CDR

BCT S-4 and SPO organize the rehearsal to ensure critical sustainment events are rehearsed.



KEYS TO SUCCESS

- Last opportunity for shared understanding prior to mission execution
- Immediately before, during, or after the combined arms rehearsal
- Cover all classes of supply and services
- 90 minutes or less
- Scripted but not read verbatim
- Use speaker systems (not near generators)

ACTIONS PRIOR TO THE MEETING

BCT XO: Roll Call
BCT CDR or BSB CDR: Opening Remarks, Priority of Support, Priority of Maintenance, CDR's intent
BCT S-3: Overview of Terrain, Task Organization, Concept of the Operation by phase
BCT S-2: Overview of Enemy Situation, MSRs/ASR
BCT SPO: BSA, FTCP, and CTCP Locations, LOGSTAT Reporting, LOGSYNC and Maintenance meeting
BCT S-4: Combat Slant, CL VII Regeneration
BCT SURG: Role I, Role II, AXP locations and triggers
BCT S-1: Personnel Replacements-Casualty Estimate
BN XOs: Maneuver actions during each phase
BN Med PLs: BN MSA/FAS Locations-POI to Role I
BDE XO: Inject Reaction Drills Throughout
BSB CDR: Final Guidance

SOURCE: Brigade Sustainment In Decisive Action Operations | JAN18
http://usacac.army.mil/sites/default/files/publications/18-10.pdf

FOUND IN THE MAY – JUN 2018 EDITION OF *ARMY SUSTAINMENT*

Logisticians will have improved visibility of fuel supplies. Information systems under development will automatically collect and transmit data about how much fuel is on hand, in transit, and consumed. This data will improve our operational energy management, just as data from the Global Combat Support System–Army is improving materiel management. Efforts also are underway to re-engineer business processes to inform the next-generation enterprise resource planning environment.

Improving Skills

These innovations will make us more ready as an organization, but individuals need to step up to the plate too. As I travel around the Army, I continue to hear about and see a need to better adhere to strict standards and discipline. Here are six suggestions on how to improve your expeditionary battlefield skills.

Start by getting the basics right. All the wizardry of technology does not matter if Soldiers cannot do the basics. I recently visited units in Hawaii and was glad to see they were practicing a handy mnemonic I used to employ, 35-Mike-Mike. That means sustainers must focus on the necessities first, such as ensuring their customers have the class III (petroleum, oils, and lubricants) to get to where they are going, the class V (ammunition) to fight, well-maintained and ready equipment, and necessary medical capabilities. With these four immediate priorities met, the basics of warfighter demands are covered.

Make sure to focus on the basics of blocking and tackling when dealing with maintenance and supply discipline. For example, when performing preventive maintenance checks and services on your unit's equipment, you must have sufficient technical manuals for all of your Soldiers and mechanics. Also, when you call a maintenance meeting, all of your commanders and leaders must be present.

It sounds so obvious, but these are the basic standards we need to adhere to. The Army's supply and maintenance discipline programs are commanders' programs and, as such, their results reveal units' readiness to execute expeditionary sustainment.

Focus on mission command. Logistics chains of command are necessary to ensure the best sustainment and to enable supported units to achieve their missions. What is essential is that the commander's intent is followed. Make sure that intent is understood by all subordinates, and discuss with your subordinate commanders the circumstances that may dictate a deviation from the ordered course of action. When facts change on a battlefield, courses of action may need to change too.

Insert yourselves into the planning process. Upon receipt of mission orders, be prepared to bring to the table a working concept of support. As a logistician, you must integrate yourself into the larger planning process and enter the process with accurate numbers.

One of our greatest challenges is reporting accuracy. Improper reporting makes the provisioning of anticipatory logistics nearly impossible to accomplish and leads to wasteful and last-minute resupply efforts. So, develop running estimates with an awareness of supported forces' logistics demands and how situations dictate specific commodity requirements and services.

Hold sustainment rehearsals. It is essential to validate readiness for a combat operation by conducting sustainment rehearsals of what will occur before, during, and after planned combat operations. They should be professionally run and cover the who, what, where, and how of support. It is the last opportunity to share knowledge prior to mission execution and is important to improving performance during execution.

This issue's hip-pocket guide is a great checklist of important elements of support and how to use those elements to run a successful sustainment rehearsal. Keep the guide in your pocket.

Incorporate lessons learned into home-station training. Expeditionary warfare demands contributions from the total force. Since the majority of sustainment units are in the reserve components, the readiness of citizen Soldiers is paramount. To help with training, some high-demand National Guard units will receive 63 training days a year, which is more than the standard 39 days.

Leaders at all levels should spend time incorporating into training the lessons learned from other Soldiers who have experienced similar challenges. We can learn from their hard-earned experience.

Build relationships. Relationships and roles are key. Logisticians must be clear about what roles will be accomplished by the forward support company, the brigade support battalion, and the combat sustainment support battalion. Start building relationships in garrison to know what each unit can do and what each unit can do for the other units, both on the battlefield and in garrison.

History teaches us that on an expeditionary battlefield the onus is on everyone to win. Seventy-four years ago, U.S. forces that landed at Normandy had great difficulties maneuvering Sherman tanks through overgrown thick hedges. For weeks, Gen. Omar Bradley and top leaders were baffled about how to solve the issue until a skilled sergeant in an ordnance unit came up with a simple solution.

Sgt. Curtis Culin III took the steel beams that the Germans had installed on the beaches (with the intent to rip the bottoms off our boats) and welded them to our tanks to slice through the hedge rows. It was, as Gen. Dwight D. Eisenhower said, "a godsend" for the invading U.S. forces.

That is why on an expeditionary battlefield, everyone needs to get the basics right, communicate up and down the chain of command, and be innovative in every mission.

Lt. Gen. Aundre F. Piggee is the Army deputy chief of staff, G-4. He oversees policies and procedures used by all Army logisticians throughout the world.

Growing Talent in Tactical Sustainment Leaders

■ By Maj. Gen. Paul C. Hurley Jr.

Fort Lee is working to provide the Army with smart, resilient sustainment leaders who are well-equipped to confront today's challenges.

Forbes magazine recently ranked the fastest growing career fields in the United States. The list includes careers in optometry, physical therapy, genetic counseling, and wind turbine services.

Unfortunately, platoon leader did not make the list, and neither did team leader, supply sergeant, support operations officer, or command sergeant major. The Army does not use job fairs, headhunters, or Monster.com to fill our critical positions. As Gen. Eric Shinseki famously observed, "We don't hire out. We grow our own leaders."

In the Army, leader development is a deadly serious business. The Army routinely asks our leaders to make life and death decisions, and we measure our bottom line in blood, sweat, and tears, not market share and profit margins.

The increased possibility that the Army will fight a large-scale combat operation in the near future makes the leader development process more important than ever. U.S. armed forces spent the past two decades waging difficult campaigns against terrorist organizations. Meanwhile, our adversaries grew in size and strength, developing new capabilities that will make future conflicts faster, deadlier, and more unpredictable. To survive and win in this environment, the next generation of tactical sustainment leaders needs to be smarter, tougher, and more adaptive than ever before.

Institutional Training

At Fort Lee, Virginia, we are working full time to develop the next generation of Army sustainment leaders. Each year, the Army Logistics University (ALU) trains more than 20,000 students physically, mentally, and professionally in order to build the competence and confidence necessary to lead America's sons and daughters into battle.

The Combined Arms Support Command's Sustainment Leader Development Implementation Plan identifies the ends, ways, and means to develop future leaders. It can be accessed here: http://www.cascom.army.mil/g_staff/g3/SUOS/site-sustainment/pages/leadership.htm. This work does not happen in a vacuum. As the battlefield changes, so do our programs.

The most noticeable change in our curriculum is more rigor. Across the university, instructors now challenge students daily to achieve excellence. In the near future, for example, noncommissioned officers (NCOs) attending the Senior Leader Course will write papers, execute the military decisionmaking process, and prepare and brief a variety of staff products. These assignments will receive a letter grade instead of the old "go/no-go" evaluation. Beginning this fall, sergeants who fail to meet the standards for effective communication will attend remedial training.

At the Basic Officer Leader Courses (BOLCs), new officers are being taught how to think and perform as junior leaders while simultaneously being equipped with an academic foundation for all areas of logistics: supply, maintenance, and transportation. To develop students' critical thinking, BOLC examinations now ask questions based on specific tactical scenarios rather than generic situations. Most importantly, to better cultivate their field craft and resilience, each lieutenant at BOLC now

demand an agile sustainment force. That requires the Army's logistics community to reduce the size and signature of the sustainment tail. Our sustainment units will need to rely on highly mobile mission command platforms, disperse into well-concealed base clusters, and leave supplies and materiel on trucks instead of creating sprawling support areas.

The focus on remaining mobile and reducing our logistics signature is paramount to survivability because enemy forces will possess precise indirect fires that can reach well into our brigade support areas as well as the support and consolidation areas of the division and corps. This more lethal enemy, capable of reaching farther than ever before, will require us to change the way we think about and plan sustainment operations.

Increased Focus on Survivability

The operational environment envisioned in FM 3-0 requires sustainment formations to generate security, not consume it. In other words, the requirement for sustainers to defend themselves, which has never gone away, will increase over time.

In recent operations, we have requested additional support from maneuver forces for security, especially for convoys. Maneuver forces have struggled to provide this assistance, and the new operational environment of FM 3-0 will only exacerbate the challenge in the future. As a result, sustainment units must be able to defend themselves and continue to increase their focus on survivability.

One aspect of this requirement demands that sustainment Soldiers and units get back to the fundamentals of individual and crew-served weapons proficiency. However, survivability includes not only active defensive measures but also passive measures such as physical concealment, agility, and electromagnetic concealment.

The sustainment enterprise now faces the challenge of a contested cyberspace domain and a lack of digital superiority. Our enemies can now degrade our digital communications and capitalize on our indiscriminate electromagnetic spectrum signatures.

We have become reliant on enterprise resource planning (ERP) systems, such as the Global Combat Support System–Army, that require constant internet connectivity to function properly. This ERP characteristic increases the electromagnetic signature of logistics nodes, which creates a vulnerability when facing a near-peer enemy equipped with jamming and locating technology.

Because of the proliferation of technology that can identify the location of logistics nodes by tracking the electromagnetic signature, we can no longer build large stockpiles of supplies on forward operating bases. Further, the large and relatively immobile command posts of expeditionary sustainment commands and sustainment brigades, as well as supply nodes at the brigade support area or division or corps consolidation area, are prime targets for increasingly accurate, long-range precision fires. Sustainment units must be able to rapidly establish, move, and re-establish support areas and small supply nodes across the battlespace.

Precision Sustainment

To achieve survivability, we must rely more on precision logistics than on sheer volume. Precision logistics allows us to sustain combat operations while avoiding detection by an increasingly lethal enemy. Such an approach represents a significant challenge in today's environment.

Maneuver force commanders are often forced to make inductive decisions because they lack timely and accurate predictive information that links proposed courses of action to projected combat readiness. This lack of predictive analytical capability precludes maneuver commanders from realizing the increased agility and logistics responsiveness required to fight, survive, and win within the combat environment that FM 3-0 describes.

New capabilities, such as ERP tools and the big data ERPs produce, will help sustainment units provide maneuver forces with the predictive analytics that enable the precision sustainment needed to fight over extended distances with minimal resupply. ERP systems allow sustainment planners to conduct the in-depth analysis required to understand what units have on hand and what supplies they will need to ensure the most efficient use of our sustainment capabilities and lift platforms.

Ultimately, the future battlefield will be incredibly complex and more dangerous than the battlefields of recent conflicts in Iraq and Afghanistan. To be successful, our sustainment formations must embrace ERPs and big data, but they must also be mindful of the disadvantages these tools present, such as an increased electromagnetic signature.

According to FM 3-0, our next fight will occur in a widely dispersed, fast-paced, chaotic, and highly lethal environment. Consequently, our sustainment community must train to conduct sustainment operations over extended distances, where agility and precision are the keys to survival and victory. Finally, we must continue to focus on the fundamentals of self-defense and master expeditionary logistics to be prepared to sustain the high-intensity, large-scale combat operations that we know we will face.

Maj. Gen. Paul C. Hurley Jr. is the commanding general of the Combined Arms Support Command and Sustainment Center of Excellence at Fort Lee, Virginia.

Maj. Hugh H. "Hank" Coleman III is a doctrine developer in the Combined Arms Support Command's G-3/5/7. He holds a bachelor's degree in business administration from Presbyterian College, a master's degree in transportation and logistics from North Dakota State University, and a master's degree in finance from the University of Maryland University College. He is a graduate of the Combined Logistics Captains Career Course and the Command and General Staff College.

The Logistics Branch Needs More Company-grade KD Assignments

Offering company-grade logistics officers more opportunities to fulfill key developmental requirements will help them stay on track with their career timelines.

■ By Capt. Nicholas Amuna

A company command is currently the only key developmental (KD) assignment available to company-grade logistics officers. This does a great disservice to the Army because of the time it takes to achieve company command. Because of the limited number of positions available to the wide pool of quartermaster, transportation, and ordnance officers, it takes a long time for officers to be placed in a company command.

I propose that two battalion or higher staff assignments could also fulfill the KD requirement for company-grade logistics officers. This would pave the way for logistics officers to take advantage of broadening opportunities while staying on track with their career timelines.

The Logistics Branch has one of the largest pools of commissioned officers. Currently, upon completion of the Logistics Captains Career Course, all quartermaster, transportation, and ordnance officers become multifunctional logisticians in functional area 90.

I believe strongly that the reason for having multifunctional logisticians is to develop robust logistics leaders to lead Soldiers in support of military missions worldwide. This idea may sound great on paper, but in my opinion, having a company command as a captain's only possible KD position does a great disservice to the Army.

A company command will equip officers with good leadership skills, but so will staff positions. In most cases, junior officers in staff positions are exposed to advanced leadership experiences and receive great mentorship while working with senior leaders.

I believe the wait time required for a logistics company-grade officer to assume company command is longer than that of company-grade officers from other branches. I believe the wait is longer because of the combination of quartermaster, transportation, and ordnance officers competing for a handful of company command opportunities.

The long wait time for company command assignments keeps many logistics officers from taking advantage of Army programs such as Advanced Civil Schooling, Training With Industry, fellowships with Army, joint, interagency, intergovernmental, and multinational staffs, and the Voluntary Transfer Incentive Program (VTIP).

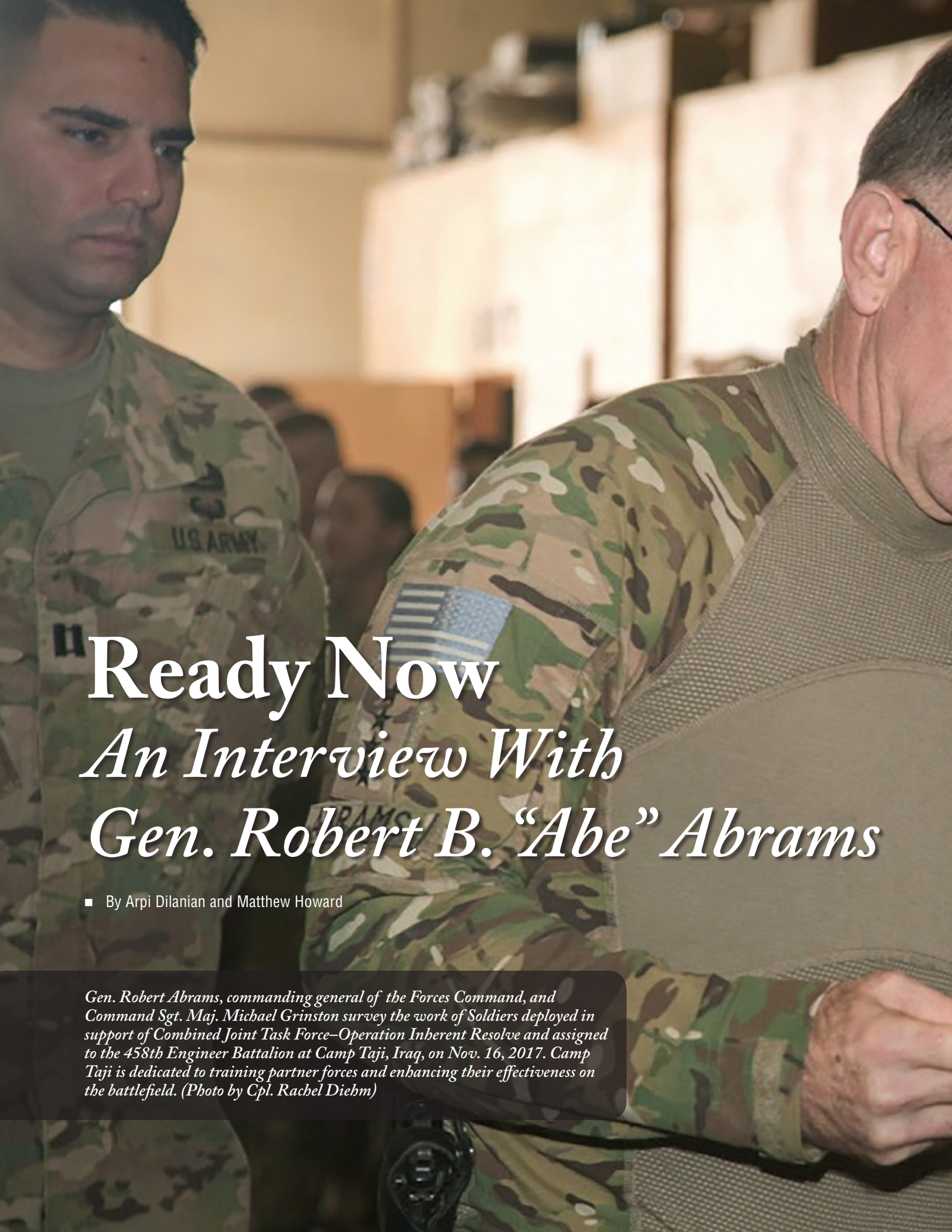
For example, the fiscal year 2018 VTIP in/out chart published by the Army Human Resources Command states that logistics captains in year groups 2009 through 2011 can transfer to another branch using the VTIP. However, most of these officers cannot submit a VTIP packet because they have not had the opportunity to complete company command—the only KD duty position for the logistics branch.

In some cases, officers with highly competitive civilian degrees, such as systems engineering, contract management, international relations, chemistry, and physics, end up leaving the Army for a civilian career instead of waiting and using their expertise in other military branches. Some officers think the logistics branch is holding them back with its limited KD opportunities available to them. They end up leaving voluntarily or through a separation board because they were not able to complete the right jobs at the right times for their career path.

The fiscal year 2018 VTIP in/out matrix supports my assertion that the logistics branch currently has enough company-grade officers who can be useful to other branches of the Army. Adding staff positions as KD opportunities will enable interested officers to apply for branch transfers to other functional areas.

I believe that my recommendation to expand the current KD requirements for company-grade logistics officers will help the outstanding large pool of experienced and well-educated young logisticians move into other functional areas.

Capt. Nicholas Amuna is the operational contract support planner for the 13th Expeditionary Sustainment Command at Fort Hood, Texas. He has a bachelor's degree in business logistics from Utrecht Business School in the Netherlands and a certificate in distribution business management from The Ohio State University. He has an MBA from Strayer University, and he has been recognized as a demonstrated master logistician by the Army Logistics University and the International Society of Logistics.



Ready Now

An Interview With Gen. Robert B. "Abe" Abrams

■ By Arpi Dilanian and Matthew Howard

Gen. Robert Abrams, commanding general of the Forces Command, and Command Sgt. Maj. Michael Grinston survey the work of Soldiers deployed in support of Combined Joint Task Force–Operation Inherent Resolve and assigned to the 458th Engineer Battalion at Camp Taji, Iraq, on Nov. 16, 2017. Camp Taji is dedicated to training partner forces and enhancing their effectiveness on the battlefield. (Photo by Cpl. Rachel Diehm)

FORSCOM's commanding general discusses how the Army is raising its game by improving training, readiness, and mobilization to counter emerging threats and sustain its global commitments.

As the commander of the Forces Command (FORSCOM), Gen. Robert B. "Abe" Abrams leads a team of over 776,000 Soldiers and 96,000 civilians in building and sustaining readiness across all components of America's Army.

A graduate of the United States Military Academy, Abrams has developed a reputation for training Soldiers and leading them in combat throughout his 36 years of service. Here are his thoughts on the future of Army sustainment.

How has expeditionary battlefield sustainment evolved throughout your career?

Sustainment has evolved through three distinct periods: pre-Operation Desert Storm, Desert Storm to about 2005, and 2005 onward.

During the Cold War, we were postured to assume our wartime mission at a moment's notice. As a lieutenant and captain, I was stationed in Germany. Europe was a very mature theater with a robust sustainment architecture. Exercises stressed our sustainment systems with a focus on moving units over long distances and sustaining them with refuel on the move.

I participated in six Reforger exercises. These were large-scale events that brought in 80,000 Soldiers in addition to the 250,000 already stationed in Europe. The exercises did an excellent job at the strategic level, but they really didn't challenge at the tactical level on skills such as reconstitution and battle damage assessment and repair.

We started to see change with the establishment of the National Training Center at Fort Irwin [California], where we learned the hard lessons associated with sustaining the force and high-tempo operations in an austere environment. What sprang from this was the idea of fixing forward. We learned that it was essential to fix forward to provide as much combat power as possible.

During Desert Storm, the theater was initially very immature and U.S. forces were 100 percent reliant on the echelons of sustainment we brought with us. There was no depth to supply; units had to sustain themselves on the battlefield until the supply base was built up. I was in the 1st Cavalry Division.

We loaded our equipment the second week of September 1990 and occupied an assembly area in the middle of the Saudi Arabian desert, 15 kilometers from the nearest road. We quickly recognized we would outrun our supplies if we did not begin to stock up.

To help solve this problem, the U.S. Central Command built five large logistics bases—proverbial mountains of iron. The initiation of combat in Iraq was predicated on a number of things; one of them was the buildup of supplies and forces. Unfortunately, that became our mindset for sustainment. We were always going to have these mountains.

For the invasion of Iraq in 2003, our Army followed the model of the Gulf War. Kuwait became home to a large logistics footprint that was well-established before the offensive into Baghdad. It was effective; when I deployed to Iraq in 2004, my unit had all the supplies and support we needed. I don't think I ever dropped below 10 days' worth of fuel inside my brigade; we never went without water or food or repair parts.

From 2005 on, our Army got very comfortable with forward operating bases. Tactical infrastructure had their full complement of basic load. But as a result, our skills—of being able to sustain ourselves in an austere environment at a high tempo within an immature theater—atrophied.

Today, with our focus on conducting continuous operations in austere environments, we have to be able to sustain ourselves at echelon and over distances and at a high tempo. And every piece of the

Gen. Robert B. "Abe" Abrams, commanding general of the Forces Command, speaks with Soldiers from the 4th Battalion, 27th Field Artillery Regiment, 1st Armored Division, at Tactical Assembly Area Fuhaymi, Iraq, while conducting battlefield circulation in the U.S. Central Command area of responsibility in November 2017. (Photo by Lt. Col. Edward Kennedy)

sustainment enterprise has to do its part.

With the shift back to decisive action training, what observations do you have about our modular force structure and doctrine?

Our modular force structure for sustainment is about right. The design is optimized for fixing forward, providing commanders at every level the tools they need to sustain themselves in an austere environment. Over the last three years, we have demonstrated our ability to do this. However, we've also recognized at the training centers that we're missing an echelon of maintenance that we used to have.

For the systems in our combat formations, all the mechanics are assigned at the lowest unit level. But a gap occurs when parts are not available or repairs take 48 to 72 hours. We actually have to evacuate or leave the equipment or vehicles for someone else to recover or repair so that the unit can continue the offensive. We've got to make some hard choices because there is a finite amount of force structure.

Overall, though, the force structure and doctrine for sustainment is actually pretty good. It works but it takes practice.

Can you discuss the "Ready Now" concept and how it is building readiness across the force?

Army Force Generation (ARFORGEN) was designed to prepare units to be at the highest state of readiness at a specific point in time for a specific mission. Quarterbacked by FORSCOM as the force generation provider, the entire Army enterprise would line up all the systems—personnel, supply, training, and modernization—to

assemble units over time. The ARFORGEN model ensured unit readiness on the day they were due in theater, the latest arrival date (LAD).

Under ARFORGEN, units only needed to be ready in time for their LAD. There was no incentive to being ready early or for sustaining readiness. We really lost this idea of being ready all the time.

Now, as we've drawn down out of Iraq and Afghanistan, world events in other regions have created an environment that is volatile, uncertain, complex, ambiguous, and dangerous. It's unpredictable and requires our Army to be prepared and ready at all times, rather than only as determined by a LAD.

Today, we're creating a sense of urgency throughout our entire Army to be "ready now." The Army is raising its game—in training, in readiness, in mobilization. We have shifted our training focus to counter these emerging threats while simultaneously sustaining our global commitments. We have the ability to be ready all the time, and that starts with changing our mindset. We need to go back to the readiness mentality that I grew up with as a young officer in Germany.

During the Cold War days, if the division called our squadron headquarters and gave the code word for "alert," we had two hours to recall everybody. It didn't matter the day or time; we had two hours to get everybody in and three hours to get everything out of our arms rooms—from every weapon to all of our nuclear, biological, and chemical defense equipment. Then, we went down to the motor pool, and got the vehicles started. At four hours, we had to be ready to leave for action.

We were ready all the time. Your rucksack "go bag" was packed and at the front door. Your vehicles were constantly in a state of readiness, always operational; you never went home if a vehicle was broken because you never knew when you would get alerted. We've got to get that mentality back in the Army.

When I talk about readiness and "Ready Now," it's not tied to any one plan or world problem; it's about a mentality we need to have. Over the last 30 years, our Army has had the luxury of choosing the time and place of employment, which allowed us to build up our forces beforehand.

Our future enemies may not afford us time to prepare, and that re-

quires our entire Army to be ready now.

How has replicating the operational environment in training enabled sustainment units that are deployed?

With the transition to large-scale combat operations training, it became apparent that a number of our fundamental skill sets had greatly atrophied. One of these shortcomings is with the diagnosis of maintenance faults.

Having nonstandard equipment like MRAPs [mine-resistant ambush-protected vehicles] and Gators in our inventory required our mechanics and warrant officers to learn whole new skill sets. Impressively, our Soldiers excelled at working on very unique, nonstandard types of equipment. Diagnosing a Bradley or Paladin, however, became an increasingly under-practiced skill. Again, performance at combat training centers and home stations highlights our deficiencies. We underestimated how out of practice we were with diagnosing some of our major combat systems.

While we have a good metric for diagnosis and testing, it is time-consuming. Getting back an inconclusive result from diagnostics, such as no evidence of failure (NEOF), prolongs the process. If you look at our NEOF rates, they had grown pretty high.

Additionally, repairs were also taking twice as long, for both ground and air. While our ground mechanics were deploying with units but working on nonstandard equipment, our aviation mechanics were not even deploying forward. Instead, we contracted our aviation maintenance because of limits on the number of personnel in theater. Predictably, green suit aviation maintainers' skills atrophied. Now that our Soldiers are back on the flight line doing phase maintenance inspections, they are taking two and three times longer to accomplish their tasks.

The training centers have been driving this issue to the forefront and have charted a path forward. Working with the Combined Arms Support Command, we [FORSCOM] created the Unit Diagnostics Immersion Program, a mobile training team in diagnostics skills and repair.

We've also partnered with the Army National Guard at Camp

Gen. Robert B. Abrams, the commanding general of Forces Command, and his senior enlisted advisor, Command Sgt. Maj. Michael A. Grinston, attend a briefing discussing I Corp's mission readiness at Joint Base Lewis-McChord, Wash., on Jan. 9, 2018. The briefing outlined I Corp's current and future training strategies to maintain force readiness. (Photo by Pvt. Adeline Witherspoon)

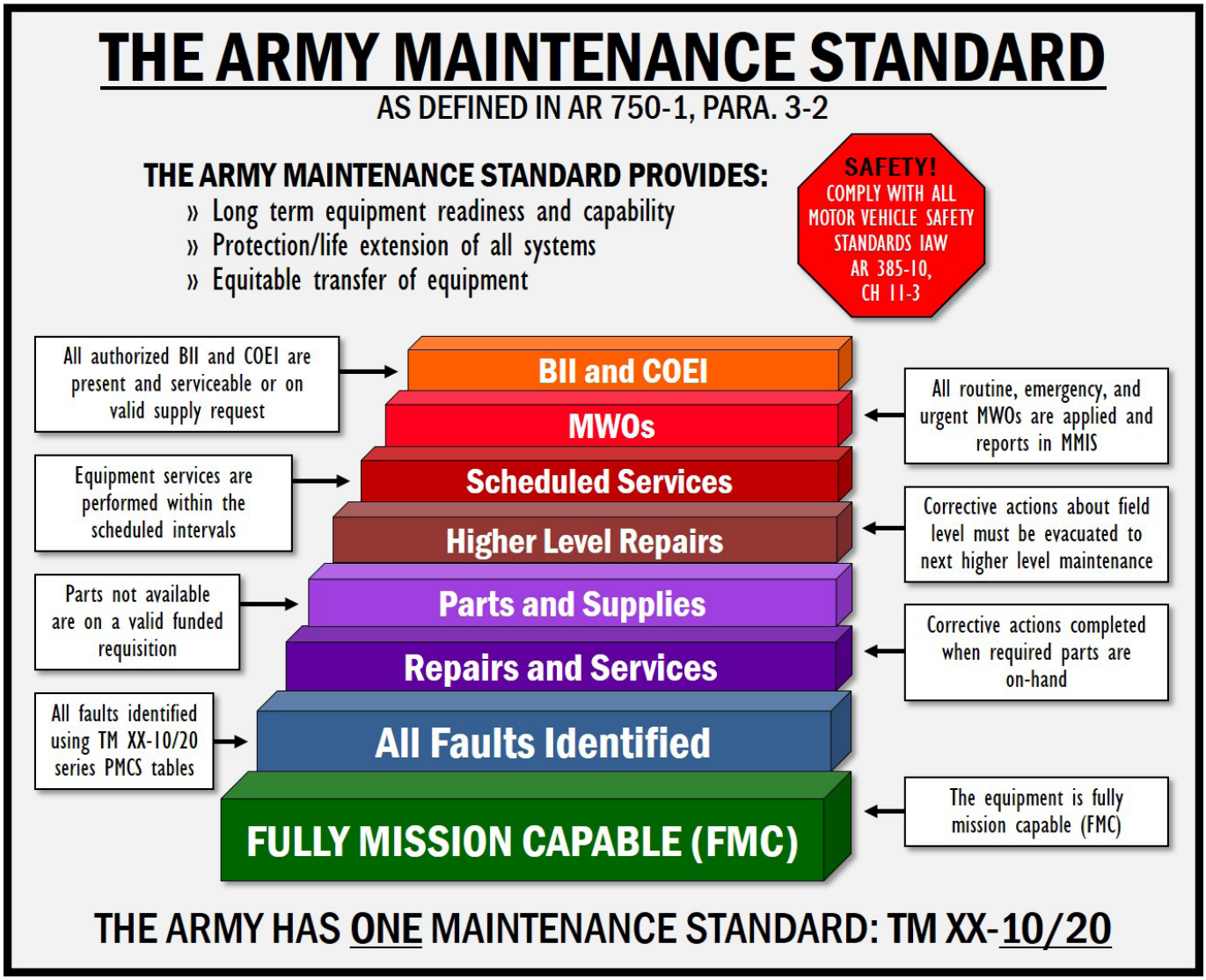


Figure 1. The Army maintenance standard described in Army Regulation 750-1, Army Materiel Maintenance Policy, is defined by the technical manual (TM) 10 series and TM 20 series and by the appropriate or applied technical data plans.

Dodge, Iowa, to pilot the Master Diagnostician Training initiative, a great two-week diagnostics course for tank, Bradley, and Paladin mechanics. That is a total Army solution that increases the technical skills and capabilities of our mechanics.

We're now starting to see results, especially in our armored units rotating to Eastern Europe, Korea, and southwest Asia. There's improvement in our operational readiness rates, we're lowering our NEOF rates, and we're able to sustain the fleet better. For our aviation fleet, we've implemented five aviation business rules. One of them is that aviation units will deploy with their mechanics. In 18 months, we've seen significant improvement in Army-managed item and aviation operational readiness rates as a result.

What is your advice for balancing training requirements with available time?

We should only do those things that directly contribute to readiness. People equate readiness to their ability to fight and conduct their wartime mission, but there are many facets. Readiness is holistic; it encompasses equipment readiness, personnel availability, supply, and training readiness, and those components need to be prioritized.

Commanders at every echelon must clearly communicate their priorities while being sensitive to the demands placed on those below. There is inherent risk in prioritization, and I expect leaders at every echelon to assume risk for those below them. Commanders must tell subordinate units not to do things that are low priority and [instead] focus on what is most important.

Units should also only train at

a tempo that can be sustained. A couple years ago, in the spirit of regaining proficiency in our warfighting skills, we trained at such a rate that we lost focus on fundamental support tasks. We can only maintain a tempo that can support performing preventive maintenance checks and services, conducting inventories, receiving new equipment, and turning in equipment to get rid of excess to standard.

We need to keep in mind that we have deployed (to either rotational missions or combat deployments) at a tempo under 1:2 since 2003. Even though our commitments in Iraq, Afghanistan, and Syria have decreased, our other worldwide commitments have increased. Our Army is really busy. And this makes time our most precious resource.

What recommendations do you have for sustaining supply and maintenance readiness levels?

The command maintenance program and the command supply discipline program are absolutely key commander's programs. Commanders must be ruthless in enforcing standards. The maintenance standard in our Army is 10/20, and that's non-negotiable. (See figure 1.)

In October 2013, a 16-day government shutdown followed by continuing resolutions caused the Army to institute a maintenance standard of "fully mission capable plus safety." The program required the Army to stop ordering repair parts for bench stock, shop stock, authorized stockage lists, and warehouses.

But by 2014, those austere measures were lifted and the standard returned to 10/20. Our formations have been slow to realize the change and our maintenance standards have suffered.

The maintenance of our systems is the lifeblood of the Army in terms of our ability to fight, and we have to be relentless in adherence to 10/20 standards. Commanders can assume risk in other areas, but our fleet has to be ready.

Are you comfortable with our force structure and readiness to meet early-entry requirements?

I think our force structure across all three components is about right. Based on our deployment timelines, I think we have adequate echelons of regular Army above-brigade sustainment units to sustain us for the first 20 to 40 days, and that will allow the Guard and Reserve time to get in place. The key is continuing to ensure our Guard and Reserve get the training money they need to sustain a certain level of readiness. They need to be able to deploy in short order.

It goes back to strategy. We should assume our potential enemies are not going to give us time to build up. We need a blunt force that is combat-capable, but we have a finite amount of force structure. So we are balancing everything that gives us adequate capacity to be able to respond, sustain what we're doing, protect the homeland, and give time for those Guard and Reserve echelon-above-brigade units to be able to deploy.

As the FORSCOM commander, what concerns you from a sustainment perspective?

Not-mission-capable time for supply is the biggest challenge for our ground fleets. From 2004 to 2015, we did not put a lot of demand on industry for parts for tanks, Bradleys, Paladins, and other systems. As a result, industry had little incentive to continue producing parts for these combat systems. The Army was left with only what we had in warehouses; the availability of repair parts was strained. Now, we're putting demand back on the system; it's slow to respond, but it's trending in the right direction.

Continuing resolutions and budget unpredictability are also concerning. While we're optimistic about recent developments, an unpredictable budget certainly impacts our ability to sustain our fleets over time.

But we do have unbelievable maintainers and sustainers; the work they do is tremendous. In my lifetime, we have not gone without, and that is a credit to our sustainment community. They have been anticipative, responsive, flexible, and agile. If you look at the eight imperatives of sustainment over my 36 years in the Army, our sustainers stepped up to the plate every single time.

You have commanded at every level in the Army. What is the biggest piece of advice you have for Soldiers?

First, give your best effort every day. I'm an optimist; I'm a glass-half-full kind of guy. I actually think every Soldier wakes up every day wanting to contribute and do their best.

Second, your service matters, regardless of how many years you've served. The world is a dangerous place, and it's as volatile and uncertain as ever. If you believe in our country, we must have an Army that can protect it. It takes special people who want to serve their country in uniform. Not everyone is physically capable of doing it, and neither is everyone willing. To those who are willing to serve, I say thank you and I'm proud to serve alongside you.

Arpi Dilanian is a strategic analyst in the Army G-4's Logistics Initiatives Group. She holds a bachelor's degree from American University and a master's degree from Rensselaer Polytechnic Institute.

Matthew Howard is a strategic analyst in the Army G-4's Logistics Initiatives Group. He holds bachelor's and master's degrees from Georgetown University.

Sustainment at the Forefront in the Future

An Interview With Retired Gen. John Campbell

By Arpi Dilanian and Matthew Howard

Secretary of Defense Ash Carter, Gen. John Campbell, and Afghan Defense Minister Mohammed Masoom Stanekzai visit Forward Operating Base Fenty in Jalalabad, Afghanistan, on Dec. 18, 2015. (Photo by Air Force Staff Sgt. Tony Coronado)

The 34th vice chief of staff of the Army discusses his experiences with sustainment and the importance it will play on tomorrow's battlefield.

After serving as the 34th Vice Chief of Staff of the Army, Gen. John F. Campbell's distinguished career culminated with his assignment as commander of U.S. Forces Afghanistan, during which he oversaw the day-to-day operations of joint forces across the region. Throughout his 36 years of service, the Army regularly transformed its approach to sustainment on the battlefield. In this interview, Campbell offers his impressions of how the Army can build readiness for the future fight.

Can you discuss the evolution of battlefield sustainment and readiness throughout your career?

I break my career into two big segments: everything prior to 9/11 and everything after. Growing up as an infantry platoon leader, company commander, and battalion commander pre-9/11, I really just focused on that small unit. Sustainment in those days was making sure you had enough chow, fuel, and water for your particular unit for a particular mission. You didn't think much outside that box.

For the most part, we had light and heavy forces; I was a lieutenant in the heavy, mechanized world and was a captain and above in the light world. In the heavy world, we were more unit-equipment focused, and warrant officers handled all of our maintenance issues. In the light world, we were Soldier-equipment focused and carried what we needed on our backs. We'd go in with about 72 hours of supplies and then, hopefully, sustainment would arrive.

After 9/11, everything changed in how we did sustainment, particularly the force structure. I was the executive officer for Gen. Pete Schoomaker when he became chief of staff of the Army in 2003. He started off looking at a modular force and how we got brigade combat teams to the fight. Our idea of logistics changed completely in how we had to organize and where we put our great logisticians. We talked about being expeditionary and tried to do that early on, but we really didn't understand what we were getting into in places like Iraq and Afghanistan.

After a while, we fell in on combat outposts and forward operating bases, and we got spoiled. Operator-type people come to expect it's just going to happen, and that's what happened to me because I always had great S-4s and G-4s. The biggest thing for me was how you viewed logistics based on the positions of leadership you held.

For commanders at any level, logistics can be the thing that hampers where you go and the ability to sustain your forces for whatever mission you're going on. In the world I grew up in, exercises like Reforger and Team Spirit trained logistics in real time at the division and corps levels. And we always took sustainment for granted because we had great people and great systems.

What were your biggest logistics challenges while deployed, and how did your logisticians overcome them?

Initially, the biggest challenge was making sure our logisticians were synced with the commander. In the past as we developed a plan, we'd have different courses of action and then it was kind of an afterthought—can we sustain the plan? Then we'd bring logisticians in, and they'd say we can or we can't and we'd have to adjust. Today we understand how important it is to bring our logisticians into the planning process from the very beginning.

Our logisticians have taken advantage of lessons learned from the years in Iraq and Afghanistan. In the past we might have said we couldn't move from point A to point B because we didn't have the trucks to be able to move all the equipment and people. So they figured out that we can go buy or rent the trucks or something simple like that. They've been very creative with taking a

complex problem set and coming up with a solution to support the operator. They understand that, in the end, it's their job to support operations on the ground.

For the past 16 years, the Army has relied on contractor support and supplies and equipment that were readily available in theater. How should the Army prepare to be more expeditionary in the future?

The Army has gotten away from the expeditionary mindset because we've been spoiled all these years. We are probably going to go into contested areas in the future where we will not be able to depend on contractors early on.

Much of the need for contractors developed because we did not have, or got rid of, those skill sets. Some of it had to do with how we fought using restricted force manning levels and could only have a certain number of Soldiers on the ground. We had to be creative, and using contractors was a solution. I think we will continue to have contractors in the long run, but we may not have them initially when we enter a theater.

In the past we've gotten through this challenge by pre-positioning stocks. Whether water, fuel, or vehicles, we've been able to pre-position stocks in places where we might have to fight. There are pluses and minuses as you do that in terms of maintaining stocks and keeping them ready to go, but pre-positioning has definitely helped us.

Technology is also going to help us get things quicker. You see it today in the commercial world with drones delivering fast food or packages. Maybe we'll prepackage a whole bunch of drones to quickly resupply Soldiers going in on the ground on a contested battlefield.

In the end, what has hurt us in the past is money and budget. The Army struggled because we did not have a predictable budget, and we have to have a predictable budget to help the warfighter and enable our logisticians.

I also think a lot of it is mindset. We have to get out of the mindset of expecting to go in and have hot food within 24 hours. I keep saying it: we're spoiled. We go to Afghanistan and Iraq and we have McDonald's, we have Burger King. But we have very, very resilient Soldiers, and I think if they understand what they're going into, they'll do fine.

Can you elaborate on the effects technology will have on future Army sustainment operations?

Technology is wonderful and saves lives. Whether it's in the medical arena, better protection on vehicles, or ammunition that can go farther and faster, I think that's all good. Aerial platforms that enable supplies to be brought forward quicker help our logisticians reduce

During an interview, retired Gen. John F. Campbell discusses his experiences with logistics during his Army career. (Photo by Matthew Howard)

the amount of weight we take in. And when we don't have to take in as much water, food, or ammunition, we don't have to burn as much fuel.

Information technology is also making our logisticians more efficient. Things like Global Combat Support System–Army and radio-frequency identification technology are enabling more modern business processes across the force, from arms rooms to motor pools.

But we can never forget that we have to continue bringing in the best and brightest Soldiers. We must continue educating them to make sure they understand their capabilities, and then we can couple that education with technology as we move forward. Technology is meant to make the job more efficient, lethal, and capable, but the Soldier has to understand how to utilize it.

In the end, it's still going to come down to the Soldier on the ground. An easy example is this: all of our Soldiers understand how to use GPS devices to figure out where they're going. But if somebody jams it, do they know how to use a compass? The human performance piece is going to be key in anything the Army does.

You've talked about the slow decision-making processes in the military. How can we benefit from improving our processes?

We always need to look at our processes and planning efforts and continue to improve them. Technology now evolves faster than a budget cycle, and we need to keep pace with logistics requirements. Looking at different businesses and how they interact with the Army, I try to ask, "What's the issue with industry and the Army, and why is this working or not working?"

A theme that keeps coming up is talking to industry early on, making sure you're synced, and working out the requirement. Industry wants to get out there and help and invest some of its own money to get where the Army wants to go. But if the Army's not talking to industry early on, we're not helping each other.

In the commercial world, technology is out there that our Soldiers already use. Whether it's the latest phone or you name it, Soldiers continually adapt and upgrade every two years. But the Army is still stuck on the phone from four or five years ago. Why can't we get the same thing and the best that industry has to offer? We can, but our processes stop us.

I know there's a lot of work being done by the secretary of the Army and chief of staff of the Army to get after acquisition reform. When we fight as a joint force alongside the other services, we fight very well together. But we come back in the building [the Pentagon], and we're fighting each other over budget. We're stovepiped.

Why do we have three of the six largest air forces in the world? The Navy, Air Force, and Marine Corps all have fighter aircraft. Do we need that? The same with radios; we all have different radios. So I think our processes, if working from a joint perspective, can make us better, more efficient, and save money, while at the same time get the best possible equipment for our Soldiers in the future.

Sustainment will be key in the future fight. How do you see the flow of supplies into a theater in a contested environment?

I was looking at a quote from Gen. Dwight D. Eisenhower recently, which says, "You will not find it difficult to prove that battles, campaigns, and even wars have been won or lost primarily because of logistics."

As all the services continue to plan for future battles, sustainment is going to be at the forefront as they think about executing those battles. You're going to have to look at how to move equipment there—whether by pre-positioning or by getting more ships, vehicles, or aircraft to move it. We're limited by the number of trucks, ships, and aircraft that

Gen. John Campbell observes Afghan National Army commandos performing a mortar training exercise at Camp Morehead, Afghanistan, on Nov. 19, 2015. (Photo by Air Force Staff Sgt. Tony Coronado)

can move stuff and by the time and distance that it takes to get there.

In a perfect world, we would know exactly where we're going to fight ahead of time. But like we saw in Desert Storm and other operations, we need six to nine months to build up the force before we cross the line. In the world we live in today, we're not going to have that luxury. We have to get into a contested environment much quicker. But we shouldn't think it's going to be easy; it's always going to be very, very tough.

We have great combatant commanders that are looking at all the different theaters and figuring out where their hot spots are. Prior to Afghanistan, if you had said we'd be there for 16 years, nobody would've believed you—the same with Iraq. But I know those combatant commanders are now thinking about where we'll be in the future, and they'll plan accordingly to make sure we're set as we go in.

From your experiences, how can we work with our coalition partners to build capacity and better enable logistics?

We have the best logistics system in the world. We have the best logisticians, and we're the envy of every other country I've ever dealt with. As the International Security Assistance Force and Resolute Support commander, I had about 48 troop-supporting countries in Afghanistan that all looked to us for help. They didn't have the capabilities.

What we're trying to do now is help build their capacity. And there's a lot of ways to get after that, especially education. Bringing officers from other countries and tying them into our school system and all of our logistics courses can develop leaders that are able to do what we do.

In the end, it's about having the resources and the capabilities. Most countries don't spend enough on defense to be able to have those, so it's going to take time. NATO and other partners continue to get better and grow their capabilities, not only from a warfighting perspective but also from a sustainment perspective. We've got to continue to help them. Identifying our logisticians who have worked alongside coalition partners and leveraging that experience certainly helps.

Joint exercises with those coalition partners also grow their capacity. Some nations have particular skill sets in logistics that, I think, they do very well. We have to continue encouraging them to build upon that but, at the same time, look at the holistic picture of where they can go and sometimes provide them with the resources to get there. We had to do that in Afghanistan because some country would provide several hundred folks but no truck or water capability, no cooks able to provide hot chow, and no medics to provide health care. These are areas that we have to continue to look at.

Having been to Afghanistan many, many times, I've seen how much they want to continue building their fighting force. But they know they're only as good as what they build in the sustainment piece of it. We can't have what's happened in the past when we've provided them with vehicles. They drive them, they break, then they don't have the means to fix them, and we just continue to give them more. We need to get to the point where we show them how to do it, and they can feed thousands, so to speak. Education is key.

What was the greatest lesson you learned in the Army that you'd like to share with leaders and Soldiers?

Leadership makes a difference. You have to have accountability, and everyone has to be accountable for their own actions. And when you're involved in this crucible that we call combat, you can try to prepare yourself, but it's unlike anything you thought it could be. You want your decision-making ability to be split-second because you will have to make life or death calls in an instant. The way you get there is continually training and talking to leadership. For me, continuing to educate our young Soldiers is everything.

Leadership makes a difference. You have to have accountability, and everyone has to be accountable for their own actions.

The second thing is the relationships and trust that you build when you're a private joining a squad or a lieutenant joining a platoon. With the exception of maybe firefighters and police officers, our profession differs from others because Soldiers put their lives on the line and depend on that guy to their left or that gal to their right. And so this trust factor—trust in your fellow Soldiers, trust in your leadership—is really, really key. Leadership makes a difference.

Arpi Dilanian is a strategic analyst in the Army G-4's Logistics Initiatives Group. She holds a bachelor's degree from American University and a master's degree from Rensselaer Polytechnic Institute.

Matthew Howard is a strategic analyst in the Army G-4's Logistics Initiatives Group. He holds bachelor's and master's degrees from Georgetown University.

On the Road to Awesome

An Interview With Lt. Gen. Charles Luckey

■ By Arpi Dilanian and Matthew Howard

Lt. Gen. Charles D. Luckey, chief of the Army Reserve, met 597th Quartermaster Company Soldiers in San Juan, Puerto Rico, on Oct. 21, 2017. The Soldiers were there to provide laundry and shower services to refugees affected by Hurricanes Irma and Maria. (Photo by Spc. Anthony Martinez)

As the chief of the Army Reserve and commanding general of the U.S. Army Reserve Command, Lt. Gen. Charles Luckey leads a team of more than 200,000 Soldiers and civilians across all 50 states, U.S. territories, and more than 30 countries. During his three recent combat tours and a civilian career in law, he has continually led by example. Here are his thoughts on the role the Army Reserve plays in sustaining the force.

Ready Force X is enabling readiness. Can you elaborate on the concept and the impact it will it have on sustainment?

Ready Force X is a way for the Army Reserve to look at what our capabilities are, how quickly they are needed, and their current state of readiness. Given those parameters, what are the priorities and resourcing decisions? Moreover, what do we need to be doing right now to decrease the amount of time it would take to get those particular capabilities ready to go into the fight?

Look at any capability. I will pick one of my favorite notional units, an underwater mess kit repair battalion. Let's say we know we are going to need an underwater mess kit repair battalion at C+15 or C+30. I have to take a look at all the different places I have that type of formation. Is there one that's so ready to go that I can count on that formation to be able to generate that readiness? In some cases the answer may be yes, but in many cases, the answer is no.

Part of the reason is that America's Army Reserve recruits and retains Soldiers where they live and work. So I have to move force structure to those places, not try to move people to where units are. Let's say it takes three underwater mess kit repair units to make one battalion strong enough to be able to go through collective training, get the equipment it needs, and then deploy. We have to take a look at how much time it is going to take and how we can reduce that time from mobilization to deployment.

Are there resourcing decisions I should make so some formations have a higher percentage of Soldiers already there on a full-time basis? This might help some units sustain a higher level of readiness against a steady state. Do I need to look at moving equipment to those formations so they already have everything they need to go?

It is really about analyzing what we need to do to get these formations out the door. From there, it is putting procedures in place and prioritizing work so that the post-mobilization time is decreased.

We have identified hundreds of formations across the reserve force that fall into this pool needed to generate the required capabilities for the total Army. Some people think this is just a set group of forces that are at a higher state of readiness, but it is actually an intellectual forcing function for us. So Ready Force X is not a noun; it is really a verb.

Over 78 percent of the Army's sustainment units are in the Army Reserve and National Guard. How critical is the Army Reserve's readiness for winning on the expeditionary battlefield?

It is extraordinarily important. A significant amount of capability in the Reserve is what we call unique—unique being roughly defined as 70 percent or more of the Army's entire capacity within a particular standard requirements code resides predominantly in the Army Reserve. Many sustainment functions fall into that category.

Regardless of the theater of operations, it is really about the integral role America's Army Reserve plays in immediately enabling the Army to fight on any scale. Many conversations we are having in the Army focus on how much time certain Reserve forces need to be able to provide a high degree of readiness and capability to the warfighter. If there's not going to be time to mobi-

The chief of the Army Reserve discusses some factors the Army should consider in enabling the Reserve to sustain the force.

lize those capabilities before needing them, do we also then need to have a conversation about rebalancing some force structure?

I am more than happy to have that conversation, but it needs to be informed by assumptions. If it is assumed there will be an opportunity to mobilize at least some of these capabilities before a conflict starts, I think it is fine to keep them in the reserve components.

However, if it is assumed that we will not mobilize until a conflict is already started, then I would presume you want to set the theater before it becomes hot. If you know you need certain things to do so, and those things are in the reserve components, then you have to ask if we want to mobilize before we know whether or not there is a problem. I am not here to tell you what the answer is, but those are the conversations that should take place.

How does training need to evolve to ensure the total Army is integrated to meet short-notice or unpredictable requirements?

We are working hard inside the Army Reserve to push training to the next level. One example is a new training operation we initiated last spring called Cold Steel. It was essentially a crew-served weapons gunnery exercise at Fort McCoy, Wisconsin, that began in early March and extended for a little over two months. It was the largest crew-served weapons gunnery exercise in the history of the Army Reserve. Between 1908 and last spring, we had never done anything close to that.

This year, we are multiplying that level of effort by four. We are starting at Fort Hunter Liggett, California, and then we are doing it at Fort Knox [Kentucky], Fort McCoy, and Joint Base McGuire-Dix-Lakehurst, New Jersey. Part of this is to get a more rigorous, more intense training experience for more of our Soldiers. However, at the same time, we are increasing the capacity of the Army Reserve to train itself and to reinvigorate core competencies—training to standard and knowing what right looks like. Ultimately, we are working to sustain that level of readiness across the force in a more efficient and effective way. And we are going to continue to up our game when it comes to getting after combat readiness, capability, and lethality.

We are also going to a different construct when it comes to how we train from a sustainment perspective. We are teaming very closely with both the active component and the National Guard to have opportunities to train together as a total Army team. Whether it is at the National Training Center, Joint Readiness Training Center, or other places, we are making more of the enabling formations integral parts of that training experience.

We are also making sure certain types of reserve formations are supporting other combat arms formations, so they are getting more realistic and demanding training. We are on the "road to awesome" when it comes to getting better at how we train.

What advice do you have for reservists on balancing civilian employment with their military service?

Our responsibility inside the Army Reserve is fundamentally to be ready enough to be relevant, but not so ready that our Soldiers cannot keep good, meaningful civilian jobs and maintain some semblance of healthy, blissfully happy family lives. That can be a challenge, and I do not want to tell you that it is always easy.

I spent years in traditional troop program unit formations as an Army Reserve Soldier. There were times when, weekend after weekend, I wasn't doing something that somebody else thought I should; but then there were weeks and years away from my job. Those are choices that we make. We have to balance all three aspects of our lives: generating the capabilities the Army requires, keeping our civilian employers happy to the point where we still have jobs, and keeping our families happy and sustaining.

My responsibility as the leader of this team is making sure I am getting the best possible ways to support families and alleviate burdens so they are more willing and able to support their Soldiers. This is America's Army Reserve: 195,000 Soldiers across 20 time zones and with 350,000 family members. Most of them—92 percent—have civilian jobs, primarily in the private sector.

I am also trying to influence those employers. If you are sharing the best talent in your company with me, then we are now partners in making sure the national security fabric of the United States is being sustained. That is a big deal. They are probably taking some risks to their bottom line by doing that, and to me, that is more than talking. That is doing.

So I try to honor that sharing arrangement, that partnership, by not taking those Soldiers for longer than we need them. However, by the same token, if we need them to support and defend the Constitution of the United States of America against all enemies foreign and domestic, we need them.

I also make sure I am putting pressure on the nation to recognize that if we want to continue this way of doing business, then part of the deal is to share this great talent. Less than one percent of folks in America serve in uniform. So this is part of how we bring the capability to the nation for a massive discount as opposed to paying for a full-time force across the board.

How does the Army Reserve attract and retain talent?

The Army Reserve has a unique opportunity, and therefore a unique obligation, to be a screening force for the Army and the Department of Defense. We have to make sure we are tapping into our linkage with private-sector America and leveraging Sol-

Lt. Gen. Charles Luckey is the chief of the Army Reserve and commanding general of the U.S. Army Reserve Command.

diers who are working everywhere.

We have Soldiers whose day jobs are at Google, SpaceX, or Tesla. They are working on cutting-edge technologies, like quantum computing, cyber technology, and artificial intelligence. They are out there, so we are moving force structure. It does not cost anything because I am not moving anybody; we are just moving structure so we can go out and capture this talent.

Say there's a Soldier who's been trained and paid by the Army to learn a unique skill, such as cyber security. The Soldier goes to an Army cyber brigade, and they serve their time. After five or six years, they may decide to leave active duty and go work in the private sector, taking the skills they have learned and leveraging them to potentially make more money.

At that point, they will move someplace, so we are anticipating where they are going to move. We put force structure in places like Palo Alto or Mountain View, California, or Cambridge, Massachusetts, and that is where I catch them. We are able to keep them on the team. That, I would say, is the DNA of the Army Reserve.

The Reserve started in 1908 with a very simple idea: get the best medical talent in America to be able to build the capacity of the Army very dramatically, very quickly, but only when it is needed. By keeping that talent at a very high state of readiness, you could leverage it and put it on the battlefield without having to pay for it all the time. So we brought doctors into the Army when we needed them, doctors who had been working in emergency rooms all over America, patching up people who had been knifed and shot.

All we did was put a uniform on them, give them a haircut, make sure they could do a few situps, give them a weapon, let them at least learn how to not shoot themselves or their buddies, and we called them Army doctors! I mean, no offense to the Army medical community, but it was brilliant! We brought in people who had hundreds of thousands of dollars of training invested in them that we did not pay for.

There are other places where we can do this: cyber, artificial intelligence, and other digital domains. I think the Army Reserve has a unique ability to leverage that talent, bring it in, and keep it in the Army. We are already doing it.

What is the single biggest thing the Army Reserve needs to do right now?

Keep pounding. Let me put it this way, when I first started as the leader of this team a little over a year and a half ago, I had gone down to Guantanamo Bay and over to Puerto Rico. We were flying back, and one of my senior leaders said, "Hey boss, on this road to awesome, how are we going to know when we get to awesome?"

I am like, "Dude, you do not get to awesome; it is out there! You get awesomer every day, but you do not actually get there because it keeps moving!"

The future keeps evolving, and all kinds of things are driving that very high velocity of change. The biggest thing I am pushing hard on across every aspect of what we are doing is trying to sustain relentlessly a shift in culture.

The Army Reserve has to understand that what we have been doing for the past 16 years does not work in the current contingency surge model. The old progressive readiness model with multiple-year iterations and a rotational model—where one unit is supposed to be ready now, next year it is another unit, and the year after is yet another unit—that does not work. So the ethos of the Army Reserve has to change.

This is a "fight fast" force. You will not hear me say "fight tonight," other than to say, "I do not say fight tonight." My point is the active component is supposed to fight tonight. I spent years in the 82nd Airborne Division; I spent time in the special operations forces. I understand "fight tonight." We are not your "fight tonight" force. However, we will fight fast.

So this team needs to embrace the culture of being able to fight fast, of being ready. When I talk about combat readiness, capability, and lethality, I am talking about a force that fundamentally didn't see itself that way five years ago. Back then, the motto was "A life-saving, life-sustaining force for the nation." However, at the risk of being brutally honest, that is not our core competency.

You have an Army to win the nation's wars. So being ready for combat has to be fundamental to what America's Army Reserve is doing to build capability for the Army. We are getting there.

Arpi Dilanian is a strategic analyst in the Army G-4's Logistics Initiatives Group. She holds a bachelor's degree from American University and a master's degree from Rensselaer Polytechnic Institute.

Matthew Howard is a strategic analyst in the Army G-4's Logistics Initiatives Group. He holds bachelor's and master's degrees from Georgetown University.

Forgotten Basics That Enable Decisive Action

■ By Maj. Gen. Doug Chalmers and Maj. Craig A. Falk

Soldiers assigned to the 1st Battalion, 38th Infantry Regiment, 1st Stryker Brigade Combat Team, scan the area for enemy threats during a National Training Center rotation at Fort Irwin, Calif., on Jan. 15, 2018. Decisive action training exercises at the center help units to remain versatile, responsive, and available for contingencies. (Photo by Spc. Joseph DeLuco)

To support decisive action battles, logisticians will need to mitigate risk at the operational level by relearning the principles of anticipation, improvisation, and survivability.

The quote from Field Marshall William Slim, "Hit the other fellow as quick as you can, as hard as you can, where it hurts him the most, when he ain't looking," captures the timeless truth of decisive action: speed and mass win battles. It also infers the need to be able to hit again and again and again, if required, to secure the win.

This is important to note because history indicates that most large-scale campaigns flow between the decisive and attritional phases. The victor normally is the side that has the ability to make those transitions quickly and sustain them.

The Decisive Action Fight

The industrial age of warfare brought armies of scale onto the field. They used immense amounts of materiel that had to be carried over long supply networks from a nation's industrial base.

Today we are at the intersection of the industrial age and the information age of warfare. New technologies like additive manufacturing, enterprise resource planning systems, and alternative sources of operational energy may well reduce our reliance on those supply networks and far-away industrial bases, but the need for mass in the right place at the right time is unlikely to change.

Over the past 15 years, the Army has been able to fight its wars in well-established theaters supplied from a defensive or stability operations posture using large stockpiles that are reminiscent of the old magazine system. Maneuver commanders were rarely logistically constrained, and logisticians took little risk.

Years ago, the Army distilled its hard earned experience of decisive action from World Wars I and II and the Korean War and developed eight principles of sustainment. Because of a lack of punishment by a near peer, our recent experiences have subconsciously reduced the importance of three of those hard-earned principles: anticipation, improvisation, and survivability.

The National Training Center and the Joint Readiness Training Center do an outstanding job of teaching and providing experience for these principles at the brigade level. But at the division and operational levels, experience in anticipation, improvisation, and survivability has atrophied. Sustainment officers at these levels must relearn these three principles of sustainment so that they can better embrace risk.

Taking risks with logistics is a key part of being decisive. The history books are full of armies that were "tidy" but late. This does not mean commanders should heedlessly gamble on the success of an operation; rather, they should be willing to accept risk after properly understanding and mitigating it. To do so, the relationship between the maneuver commander and the logisticians needs to be very close and very honest.

The logistics engine determines the pace (freedom of action), distance (operational reach), and permanence (endurance) at which an army can operate. Following the initial establishment of operations in Iraq and Afghanistan, the Army fought from a defensive or stability posture. This posture allowed for the great build-up of supplies at places like Logistics Support Area (LSA) Anaconda in Balad, Iraq.

Such massive LSAs had every national stock number imaginable and far exceeded the intent of nonpermanent contingency basing. The LSAs negated or reduced much of the concern over the distance of our lines of communication or the longevity of operations.

From these military superstores, we could effectively support multiple requirements for multiple missions with little concern about disruption to the established operational logistics disposition. They also allowed the relationship between the maneuver commanders and their logisticians to weaken.

In hindsight, this is unsurprising. With such large quantities on hand, little thought needed to be given to

anticipating or understanding the maneuver commander's next move. Any operation could be supported.

Anticipation

The foundation of unified land operations is built on decisive action, mission command, and seizing, retaining, and exploiting the initiative. Anticipation is the ability to foresee operational requirements and initiate actions that satisfy a response without waiting for an operation order or fragmentary order. It is about achieving the ability to attack at just the right time and place.

Maneuver commanders set the conditions for agility and rapid action that produce definitive results when they keep their logisticians close and empower them to anticipate. This is critical because logisticians need more lead than anyone else to ensure that they are able to support a commander's decision.

Empowering logisticians can be done through detailed planning and carefully crafted friendly forces information requirements (FFIRs). But more importantly, it demands a close relationship between the maneuver commander and his or her senior logistician. The maneuver commander must understand the FFIRs and develop an understanding, through the senior logistician, of the force's culminating point.

The logistics commander must create his or her own decision points, which must be carefully nested within the maneuver commander's decision points. This nesting enables decisions about resources to be made at the right time to accomplish the key sustainment tasks required to set the right conditions for decisive action.

One of the best historical examples of a close relationship between a commander and logistician that enabled anticipation occurred in World War II when Lt. Gen. George S. Patton's Third Army logisticians anticipated his decision points and started setting conditions for them. His staff recognized the need to change their axis of advance to relieve pressure on the surrounded 101st Airborne Division at Bastogne, Belgium, during the Battle of the Bulge.

This anticipation enabled Patton's army to shift within such a quick timeline that the idea was laughed at by other senior Allied officers when it was first briefed to Gen. Dwight D. Eisenhower. But Patton was confident, and he knew his logisticians had set the conditions to facilitate this decision through reallocation of resources and a little improvisation.

Improvisation

Following the initial invasions of Afghanistan and Iraq, the lines of communication and LSAs in those campaigns became fully established and stayed that way for more than a decade. Support units traditionally fell in on a well-developed, well-used, and refined concept of support.

Sources of supply were fully established, and leaders were able to develop schedules to use limited strategic transportation assets efficiently. Occasionally the logistics posture was moderately disrupted by natural disasters, but never enough to necessitate a change in campaign direction or the development of improvised solutions at the operational level.

Improvisation is the ability to adapt sustainment operations to unexpected situations or circumstances affecting a mission. It includes contracting, creating, inventing, arranging, or fabricating what is needed from what is available. It will be essential in any future peer-to-peer fight as the Army builds mass at speed in a contested environment.

Since 2014, a broad coalition of nations has worked together to de-

Soldiers assigned to the 1st Battalion, 6th Infantry Regiment, 2nd Armored Brigade Combat Team, 1st Armored Division, conduct maintenance during a rotation at the National Training Center on Aug. 20, 2017. (Photo by Pfc. Carlos Cameron)

feat the Islamic State group. More than 70 countries participate in the operation while the Iraqi military and Syrian Democratic Forces take the lead on the ground.

This situation presents numerous sustainment challenges. The Iraqis do not have a completely developed sustainment network, and the Syrian Democratic Forces coalesced from much smaller, local groups.

In order to fill these gaps, coalition logisticians have improvised solutions, frequently leveraging operational contract support to enable partners to build mass at speed. These solutions bought back time and resources for the commander and allowed the coalition to take the fight to the Islamic State group earlier, faster, and harder.

Decisive action is full of Carl von Clausewitz's "fog of war," especially during the initial phases of any campaign or during high-operating tempo periods or phases. During decisive action, the operational logistician is asked to find fast and effective solutions to evolving and unforeseen requirements.

Quick estimates must be made to determine what can be brought and what can be purchased or contracted locally. The sustainment commander must apply operational art to visualize complex operations and understand what is possible at all levels from all potential resources. The added benefit of thinking laterally and locally is that it provides resilience by adding depth and survivability to the concept of sustainment.

Survivability

In recent years, at the operational level, there has been marginal concern over enemy interference with our sustainment concept. We have used the same nodes for nearly 17 years on a consistent schedule and have become comfortable as a result. Survivability became a principle through hard, bitter experience as our previous adversaries would always go after our logistics framework.

Survivability touches all aspects of protecting personnel, weapons, supplies, and routes. It demands dispersion and redundancy planning,

Soldiers assigned to the 1st Battalion, 6th Infantry Regiment, 2nd Armored Brigade Combat Team, 1st Armored Division, conduct a sustainment meeting during a rotation at the National Training Center at Fort Irwin, Calif., on Aug. 20, 2017. (Photo by Pfc. Carlos Cameron)

as stocks will be lost and routes and modes will be denied. It also requires greater focus on our deception activities.

Operational logistics moves telegraph the capability and intent of friendly forces to the enemy; after all, our near-peer adversary's priority intelligence requirements will often be our FFIRs.

During the Gulf War, Gen. Norman Schwarzkopf refused to allow senior logistician Maj. Gen. William "Gus" Pagonis to shift sustainment assets into the western desert when he wanted. Schwarzkopf knew if this happened too early the enemy would guess the operational concept and have time to reposition its forces to counter the now famous "left hook."

Survivability of an operational logistics footprint is therefore essential to maintaining our endurance during decisive action. The next adversary's ability to fight in depth and across multiple domains will exceed the experience gained in the past 16 years. We often take for granted our air supremacy. We should not.

The deputy assistant secretary of defense for program support, Gary Motsek, believes logisticians will have to operate from multiple smaller footprints to conceal and confuse the enemy's ability to attack sustainment assets. Logisticians may need to rely on the use of redundant sustainment capabilities, including multiple nodes, modes, routes, and alternate support plans. This redundancy mitigates risk by presenting multiple logistics assets for the enemy to target.

Regardless of what action is taken, the survivability principle forces logisticians to understand the risk presented by the operational environment and the enemy so that we can take proper mitigating steps and accept the risk.

In April 1982, Argentina invaded and occupied the British Falkland Islands. The Argentines believed the British would respond diplomatically because a military response would be too difficult since the Falkland Islands are in a very austere region more than 8,000 miles away from the United Kingdom.

The world believed that Prime Minister Margaret Thatcher was taking a gamble by ordering military intervention, but it was a calculated risk. British logisticians improvised a solution by using civilian merchant ships to supplement the military ships to transport the men and materiel required for the campaign.

The logisticians remained integrated in tactical planning as the task force sailed to the South Atlantic. This integration led them to reorganize the supplies on ships so they could be unloaded in the order they were needed during the refuel stop at Ascension Island.

Not everything went well for the British during the campaign. The Argentine air force proved very capable and prevented air superiority from being established. This led to a number of ships, some carrying critical supplies and helicopters, being sunk or destroyed. The loss of these supplies and capabilities altered the logistics plans, which in turn altered the flow of the campaign.

Because the logisticians were fully integrated into the campaign's design and execution, these losses were absorbed and plans were adjusted without any loss in tempo, enabling the task force to continue to hit the enemy hard and fast.

The Argentines believed it would take at least six months for British troops just to reach the Falklands, but the British won the war in less than 75 days largely because of the logisticians. They had followed Field Marshall Slim's maxim by delivering just enough mass at speed.

But, as Maj. Gen. John Jeremy Moore, the British land forces commander, put it, "It was a very close-run thing." Morale, training, discipline, and logisticians who were trusted by commanders to manage finite resources made the difference.

In order to properly support tomorrow's decisive action battlefield, logisticians will need to embrace and mitigate risk at the operational level. This can be achieved in part by relearning the principles of anticipation, improvisation, and survivability.

Sixteen years of supporting a well-developed theater has left these principles atrophied and often ignored by both maneuver commanders and logisticians. Bringing these principles back will help us embrace and mitigate sustainment risk, not just accept its presence. Getting this right will increase the speed with which we win the next conflict, saving blood and treasure.

Survivability touches all aspects of protecting personnel, weapons, supplies, and routes. It demands dispersion and redundancy planning, as stocks will be lost and routes and modes will be denied.

Maj. Gen. Doug Chalmers is a British Army officer and the deputy commanding general for support for III Corps and Fort Hood, Texas. He is a graduate of the U.S. Army Ranger School, Command and General Staff College, and School of Advanced Military Studies.

Maj. Craig A. Falk is part of the CJ-4 cell of Combined Joint Task Force–Operation Inherent Resolve. He has a bachelor's degree from Eastern Kentucky University and an MBA from the College of William and Mary. He is a graduate of the Joint Logistics Course and Theater Sustainment Planners Course.

The Right Questions for Sustainers to Ask and Answer on the Battlefield

By Brig. Gen. Jeffery D. Broadwater and Lt. Col. Daniel Misigoy

Mechanics defend a brigade support area during a live-fire exercise at the National Training Center at Fort Irwin, Calif., on Sept. 22, 2017.

By answering the right questions, sustainers can provide maneuver forces with the operational reach, prolonged endurance, and freedom of action needed for success on the battlefield.

Sustainment enables Army forces to seize, retain, and exploit the initiative. It provides the operational reach, prolonged endurance, freedom of action, and operational tempo to win on the battlefield. It also enables forces to fight farther away and for longer periods of time and to rapidly execute or transition between a variety of operations.

Most importantly, sustainment enables the commander to determine the velocity of the fight based on how rapidly forces can maneuver. A well-sustained force can move faster than its enemy to seize and exploit a position of relative advantage, consolidate gains, transition, and then continue to create and exploit opportunities to achieve the commander's end state.

Sustainment on the Battlefield

The planning, preparation, and execution of sustainment to set conditions for the commander is no small task. It requires sustainers (and all leaders, since every leader in the Army must consider sustainment) to understand the operational reach of their formations and how to extend it.

Sustainment on the battlefield is complex and requires mentally agility and critical thinking to visualize, understand, and anticipate future operations and requirements. Sustainers on the battlefield must anticipate the actions of the supported forces in front of them, the sustainment enterprise behind them, and the enemy.

Much like targeting, the planning and execution of sustainment is a cyclic process. Army Techniques Publication 4-90, Brigade Support Battalion, and the Center for Army Lessons Learned article "Sustainment in Decisive Action," in the August 2017 *CALL Newsletter*, both describe key components of sustainment planning: sustainment estimates, sustainment reporting (for logistics statuses, personnel, and medical situations), the sustainment common operational picture, and the sustainment synchronization meeting.

At the National Training Center (NTC) at Fort Irwin, California, battalion and brigade staffs execute these components of the sustainment process to extend operational reach and manage the transitions between operations.

Points of Friction

Sustainment subject matter experts and staffs know these components and often have standard operating procedures in place to execute them. They know what they need to do to sustain forces, but they struggle to apply these processes when the pace of operations increases and the friction and fog of war intervene.

Specifically, sustainers struggle to reconcile the daily battle rhythm with the operational timeline. They establish daily battle rhythm times for sustainment reports, sustainment synchronization meetings, and maintenance meetings, but their reports, if submitted at all, are late and inaccurate. Additionally, the meetings are abbreviated, canceled, or poorly attended.

This friction occurs because a unit may be moving or in contact when reports are due or meetings are scheduled. The timing of reports and meetings based on battle rhythm may be too late to make informed decisions. Because of this, sustainment units forgo reports and meetings at their own peril.

The Right Questions

A foundational assumption of Multi-Domain Battle is that all domains are contested. The enemy will jam communications or use our electromagnetic signature to rapidly target and destroy our forces. It will use everything from unmanned aerial systems to cell phones to accurately locate and destroy sustainment nodes.

The enemy will attack and destroy sustainment nodes with long-range

rocket and artillery systems, fixed- and rotary-wing aircraft, or raids by ground. Enemy forces will use chemical munitions to fix or disrupt forces, deny lines of communication, and contaminate supplies, rendering them unusable.

Forward support companies (FSCs), brigade support battalions, and combat sustainment support battalions (CSSBs) are more vulnerable when static. They will need to relocate more often.

Sustainment nodes will need to be more dispersed and well-hidden, and lines of communication will need to be extended to avoid long-range munitions. Communications and reporting may be degraded to the point that sustainers must anticipate the maneuver force's next move and operate based on the commander's intent.

Sustainers must ask and answer the right questions in the operations process to assist the commander in visualizing the operational reach and endurance of the task force, where the culminating points are and why, and what risks are associated with the operational approach and tempo.

To provide the commander with the information needed to direct priorities and accept or mitigate risk in the sustainment of the forces, sustainers should ask these questions:

- ☐ What decisions does the maneuver task force commander or the senior sustainment commander at echelon need to make?
- ☐ Does the sustainment estimate and sustainment common operational picture assist in understanding and visualizing the battlefield to enable decision-making?
- ☐ When the data from sustainment reports are combined with estimates and the sustainment common operational picture, what information requirements are answered and what decisions are driven?
- ☐ Will the battalion task force cross the line of departure with a complete basic load and full fuel tanks?
- ☐ When will the FSC refuel tanks and infantry fighting vehicles (at half a tank or quarter of a tank)?
- ☐ Where is the probable line of contact?
- ☐ How do we conduct resupply to ensure tank and mechanized infantry companies are not at risk of running out of supplies during an attack and follow-on exploitation?
- ☐ Where do the companies, battalions, and brigade position bulk water assets to rapidly resupply the individual Soldiers' hydration systems and execute chemical decontamination operations?
- ☐ When does a company, battalion, or brigade need to take an operational pause to conduct maintenance operations and for how long?
- ☐ Does the parts requisition process support rapidly passing requisitions through the ZPARK and release strategy to get the parts to the mechanic in time to maintain the tempo?
- ☐ Do the artillery, engineer, and maneuver battalions have the right types and quantities of munitions to conduct a combined arms breach?

These questions are not simple. Many are just the first in a series of questions that sustainers must constantly ask and answer to sustain continual combat operations.

Ten times a year at NTC, brigade combat teams (BCT) supported by CSSBs fight a ruthless, thinking enemy across desert, mountainous, and urban terrain for 10 days followed by a three-day brigade live-fire exercise.

Within 50 kilometers, the BCTs execute movement to contact, defense, combined arms breach, and deliberate attacks into urban and desert terrain. The 11th Cavalry Regiment expertly replicates a near-peer adversary and insurgent network with all of the capabilities found in Multi-Domain Battle.

The enemy looks for unit trains and support areas from the air and ground. The brigade support area (BSA) could be attacked by dismounted insurgents from the west and enemy armored vehicles from the east while its communications are being jammed across the brigade area of operation. Hours later, the BSA could be engaged by fixed-wing aircraft, rocket artillery, or chemical munitions.

Throughout this contact, the CSSB is pushing supplies to the BSA, casualties are being evacuated to medical facilities, the distribution company is conducting a logistics release point to resupply three FSCs, and the BCT is transitioning from defensive to offensive operations.

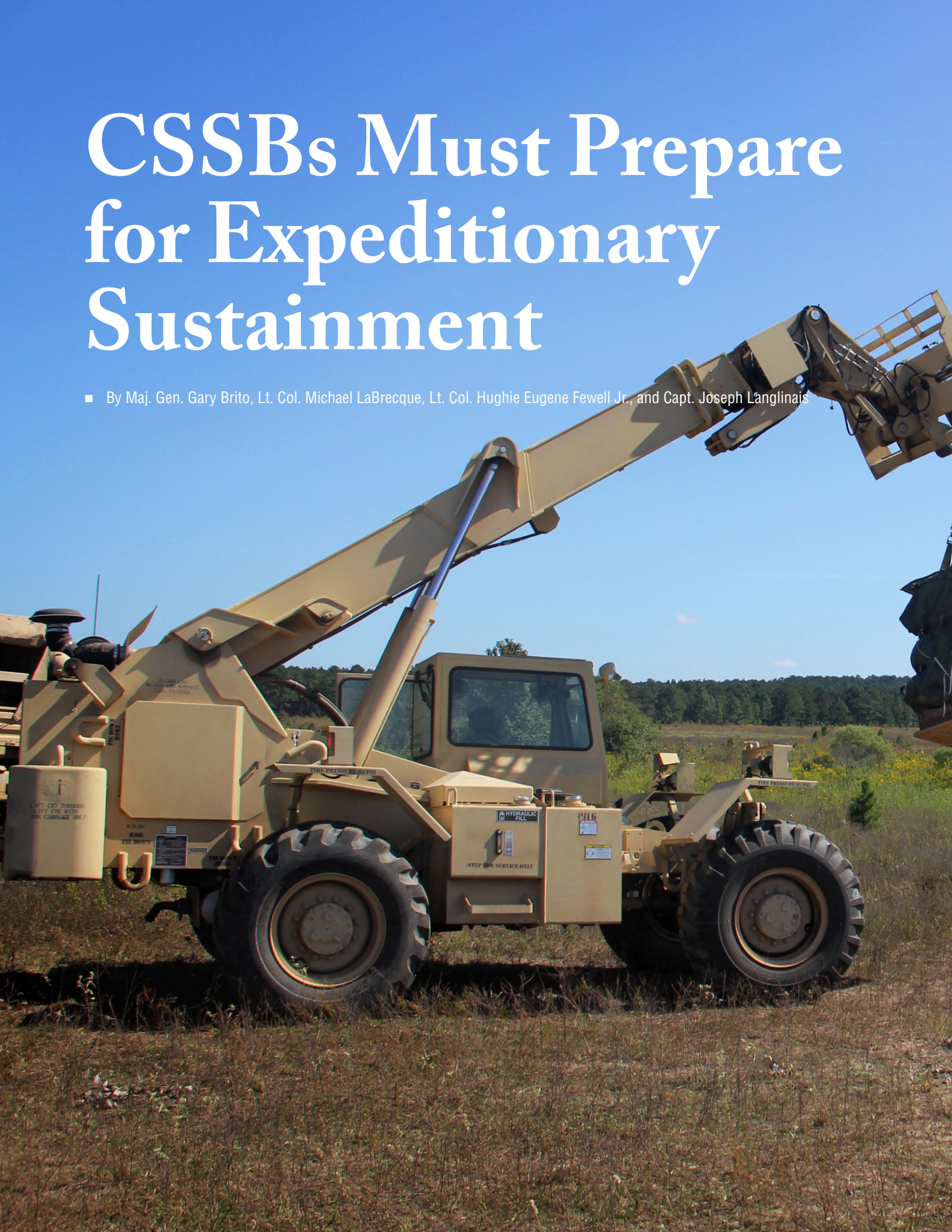
Through it all, aggressive, agile, and adaptive sustainers are cutting through the fog and friction of war by creating an understanding of current and future operations. This understanding assists the commander in visualizing the BCT's operational reach and ability to seize and exploit the initiative while protecting support areas, forward logistics elements, and convoys.

Brig. Gen. Jeffery D. Broadwater is the commanding general of the NTC at Fort Irwin, California. He has a bachelor's degree in mathematics from the University of Kentucky, a master's degree in applied mathematics from the Naval Postgraduate School, and a master's degree in national security and strategic studies from the National Defense University.

Lt. Col. Daniel Misigoy is the senior sustainment trainer at the NTC. He has a bachelor's degree in biomedical engineering from Boston University and a master's degree in strategic intelligence from the National Defense Intelligence College.

CSSBs Must Prepare for Expeditionary Sustainment

■ By Maj. Gen. Gary Brito, Lt. Col. Michael LaBrecque, Lt. Col. Hughie Eugene Fewell Jr., and Capt. Joseph Langlinais



Soldiers from the 189th Combat Sustainment Support Battalion prepare aerial resupply for onward distribution to units at the Joint Readiness Training Center at Fort Polk, La., in October 2017. (Photo by Gunther Wagner)

Combat sustainment support battalions must integrate subordinate units and follow a deliberate training path to prepare for a training center rotation.

At the Joint Readiness Training Center (JRTC) at Fort Polk, Louisiana, the role of a combat sustainment support battalion (CSSB) within the decisive action training environment (DATE) continues to evolve. Previously, CSSBs operated from relatively secure logistics bases. Now the units deploy forward into the training area, which shortens the lines of communication and provides more responsive sustainment to brigade combat teams (BCTs).

The change to the way CSSBs provide support aligns with the Multi-Domain Battle concept. In Multi-Domain Battle, near-peer adversaries have the ability to target and interdict friendly forces anywhere.

This paradigm shift has thrust the CSSB into a competitive environment where it must balance force protection and sustainment. This shift also highlights the CSSB's significant challenges, which include the modular nature of the battalion, the associated issues of incorporating new formations, and the ability to synchronize warfighting functions.

In order to overcome these challenges and provide effective and timely sustainment, the CSSB must prepare for its DATE rotation by focusing on force integration and home-station training.

Integration Challenges

The CSSB's mission is to provide mission command of attached units and to synchronize and control the execution of logistics operations. Approximately 73 percent of all echelons-above-brigade sustainment formations now reside in the Army National Guard and the Army Reserve.

Accordingly, most CSSBs supporting BCTs during DATE rotations are multicomponent. This configuration complies with the Department of Defense Directive 1200.17, Managing the Reserve Components as an Operational Force, which requires the Army Reserve and National Guard to be managed as operational forces in order to maintain readiness with increasingly scarce resources during an era of continual conflict.

While most BCTs will train, deploy, and fight as a cohesive element, CSSBs normally do not benefit from this level of preparation. Often, CSSBs and their subordinate elements arrive at JRTC with varying degrees of readiness, lacking a common tactical or planning standard operating procedure (SOP), and possessing varying generations of mission command systems (MCSs). These conditions coalesce to create significant challenges in providing timely sustainment.

To overcome these challenges, the CSSB must aggressively prepare for training rotations. Upon notification of an upcoming training rotation, the CSSB headquarters must engage sustainment rotational planners to identify subordinate formations that will fulfill force requirements in support of the rotation.

The CSSB must coordinate with these elements immediately to begin preparations and create shared understanding of reporting requirements and methods, unit systems, and SOPs. Units can accomplish this coordination through teleconferences, video teleconferences, and virtual and constructive training at home-station mission training centers. Despite having a year to prepare, both Army Reserve and National Guard elements will be challenged to follow these recommendations because of the limited number of training days leading to the rotation.

Additionally, CSSBs and subordinate formations should coordinate with the supported BCT to attend its leader training program (LTP) approximately three months before their rotation. This program focuses on mission command and the associated elements of planning, coordinating, integrating, synchronizing, and executing combat operations.

The LTP will refine the CSSB's military decisionmaking process, validate its planning SOPs, focus its information products, and solidify

a home-station battle staff training program. Ultimately, close collaboration with both the LTP coaches and the BCT will allow the CSSB and the BCT to create a shared understanding of the BCT's efforts, the CSSB's challenges, phases of the operation, transitions, the sustainment concept, and the threats the units will face at JRTC.

MCS and Signal Support

Because of the CSSB headquarters' organization and authorized equipment, the unit relies on external formations to provide administrative, medical, and signal network support. The CSSB is required to integrate these capabilities, synchronize the seven warfighting functions, and operate under austere conditions, which creates a significant challenge. In order to be successful, the CSSB must develop a training path to incorporate key enablers and build proficiency in both individual and collective tasks before the training rotation.

The CSSB often relies on either the sustainment brigade's signal network company or an expeditionary signal unit for upper tactical internet (UTI) capability. In addition to UTI challenges, many CSSBs struggle with effectively employing systems such as the Command Post of the Future, Joint Capabilities Release (JCR), JCR Logistics (JCR–Log), and Joint Battle Command–Platform (JBC–P).

Varying generations of these systems are still in use, further complicating mission command operations because of their incompatibility with JRTC's pre-positioned vehicle fleet. Additionally, units lacking home-station experience in establishing expeditionary command posts often struggle to conduct mission command during JRTC rotations.

To effectively prepare for these challenges, each CSSB must develop a training path to ensure organizational proficiency with MCSs at echelon. With limited JCR, JCR–Log, and JBC–P systems, Soldiers must be proficient in FM radio communications in order to communicate effectively during convoy operations and while operating in the vicinity of a logistics base.

Units should develop and execute a radio telephone operator course focused on junior leaders and incorporate the course into individual training plans. JRTC observer-coach/trainers routinely observe convoys with one JCR system in the convoy commander's vehicle and no communications capability in other vehicles, despite available radios and appropriate mounting systems.

Additionally, the CSSB should coordinate CPOF, JCR, and JBC–P training for battalion-level staff elements and, whenever possible, company-level leaders. The unit should integrate these systems into a battalion-level tactical operations exercise in order to validate proficiency and knowledge management procedures.

The CSSB should also incorporate signal network support into an externally evaluated battalion-level certification training exercise prior to the rotation in order to exercise UTI systems. This step will improve situational awareness of the CSSB as it operates across the division and brigade areas of operation.

Protection Considerations

Army Training Publication 4-93.1, Combat Sustainment Support Battalion, says that a CSSB is capable of defending itself against a level I threat, but it relies on external units for protection against threat levels II and III. Prior to a JRTC rotation, the CSSB should execute a collective training event focusing on occupying a logistics base and providing area defense.

In order to build proficiency, CSSBs should validate quartering party and site occupation SOPs and rehearse these activities at home station. CSSBs should develop a training path focused on individual qualification and team proficiency with crew-served weapons. They should also conduct a series of leader professional development events focused on area defense operations including engagement area development.

This should be followed by applicable collective training that culminates with a battalion-level event in which the CSSB occupies a site, establishes a base defense operations center, and constructs individual and crew-served fighting positions and obstacles to validate proficiency. These efforts will ensure the survivability of both personnel and key commodities while providing critical support to maneuver elements during a combat training center rotation.

The CSSB faces many unique challenges in supporting maneuver elements during combat training center rotations. Many of these issues relate to force design, but the CSSB can mitigate these problems and associated risks by aggressively training and working to incorporate external units and resources prior to arrival at JRTC. This deliberate approach will build a responsive and adaptive sustainment organization capable of ensuring the success of supported maneuver formations.

Maj. Gen. Gary Brito is the commanding general of JRTC and Fort Polk.

Lt. Col. Michael LaBrecque is the senior logistics trainer at JRTC. He holds a master's degree in administration from Central Michigan University and a bachelor's degree in civil engineering from the United States Military Academy.

Lt. Col. Hughie Eugene Fewell Jr. is the senior trainer for CSSBs at JRTC. He holds a bachelor's degree in political science from Tuskegee University and is nearing completion of a master's degree in security management from Webster University.

Capt. Joseph Langlinais is a sustainment observer-coach/trainer at JRTC. He holds a bachelor's degree in organizational development and is nearing completion of a master's degree in organizational development from the University of the Incarnate Word.

Sgt. Crew Gill, a military police officer assigned to the 3rd Expeditionary Sustainment Command, firefighters from the Fire Department of the City of New York, and a Red Cross member help unload meals ready-to-eat from a military flatbed on Oct. 2, 2017, in Vieques, Puerto Rico. (Photo by Sgt. 1st Class Donna Davis)

Mission Command in a DSCA Event

By Brig. Gen. Christopher Mohan, Col. Patrick E. Taylor, Maj. Greg Darden, and Maj. Tammy Johnson

During the 2017 hurricane season, U.S. Army North (ARNORTH) directed the 3rd Expeditionary Sustainment Command (ESC) headquarters to have mission command over sustainment operations for the relief efforts following three devastating hurricanes: Harvey in Texas, Irma in Florida, and Maria in Puerto Rico. Unlike offensive, defensive, and stability tasks in decisive action, sustainment is the main effort during defense support of civil authorities (DSCA) events.

Prior to the hurricane season, the 3rd ESC participated in ARNORTH training exercises to prepare for DSCA operations. The headquarters developed a scaled operational approach for DSCA support, which allowed the 3rd ESC to extend its operational reach with a minimal footprint. This scaled approach ranged from employing one eight-Soldier sustainment assessment team (SAT) to using the entire ESC staff.

The plan to support ARNORTH was tested during the previous hurricane season, which had consecutive devastating hurricanes that required a unified government response and the ESC's full complement of distributed mission command capabilities.

The ESC's Assignment

The 3rd ESC is assigned to the U.S. Northern Command and is under the operational control of ARNORTH. When deployed, the 3rd ESC is the operational sustainment headquarters for ARNORTH during all DSCA operations in a designated joint operations area (JOA). The ESC's mission is to provide mission command for all sustainment operations in support of Title 10 forces operating in the JOA. The command was the first active duty ESC to be given this mission.

Previously, ARNORTH relied on an active duty sustainment brigade to conduct this mission. That brigade reported directly to the theater sustainment command. The 3rd ESC's unique command relationship with ARNORTH required it to provide Defense Readiness Reporting System–Army information and also a training brief to the commander.

Training Plan and Exercises

The 3rd ESC's assignment to the U.S. Northern Command presented a new mission task, and the ESC's

The 3rd Expeditionary Sustainment Command deployed as the sustainment headquarters for defense support of civil authorities events during the relief efforts for Hurricanes Harvey, Irma, and Maria.

leaders quickly realized their training plan was focused solely on offensive and defensive operations. Having to conduct mission command during a DSCA event required relationships with other services and government organizations.

ARNORTH conducts several exercises each year that test its response to a request to support civil authorities. To better understand the mission set, the 3rd ESC revamped its training plan and incorporated DSCA exercises into its long-range training plan.

The modified training plan required the command to assume some risk when XVIII Airborne Corps exercises overlapped with ARNORTH exercises. To mitigate risk, the ESC included the 4th Infantry Division Sustainment Brigade into its training plan since it was also under the operational control of ARNORTH.

Mission Command Packages

The 3rd ESC knew it could conduct its mission almost flawlessly, but it also knew that every DSCA event was not the same. The headquarters had to be flexible enough to respond quickly but still have endurance to support a long-term event.

The ESC uses a scalable approach to conduct mission command. Its mission command packages are the SATs. These teams are light; they rely on rental cars for transportation and the defense coordinating officer (DCO) for lodging at the support site. DCOs liaise with federal, state, and local agencies and coordinate DSCA within their assigned regions. The SATs advise the regional DCO on military capability as it pertains to logistics.

Each SAT is made up of Soldiers from the support operations (SPO) branch and a communications specialist from the G-6 section equipped with a Broadband Global Area Network terminal and a satellite phone. One person on the team is a government purchase card holder, another a member of the operational contract support team, and another a mobility representative. The officer-in-charge is typically a SPO planner.

The team is also augmented with human resources personnel to conduct in-processing of personnel entering the JOA. The SATs have personnel from the 3rd ESC SPO Human Resources Operations Branch to oversee this process.

The SATs are essentially the 3rd ESC's "eyes forward" and become the forward command post. The ESC maintains three teams and uses a red, amber, green training cycle to ensure they are deployable at all times. Assigned sustainment units report information directly to the 3rd ESC's main command post at Fort Bragg, North Carolina, but liaise with the forward headquarters.

If the response requires a more robust headquarters, the ESC can deploy its tactical command post (TAC). The TAC consists of 32 Soldiers and is augmented with a communications package from a supporting signal brigade.

This element is manned by members of the ESC staff and SPO to provide mission command for sustainment elements forward. When operational, the TAC is the forward headquarters, and sustainment units in the JOA report directly to it.

During the 2017 hurricane season, the 3rd ESC deployed in support of civil authorities to Hurricanes Harvey, Irma, and Maria as the sustainment headquarters in the designated JOA. Each response required a different mission command package, but the 3rd ESC was postured to respond quickly and have the flexibility to surge if needed.

Hurricane Harvey

The ESC initially deployed one SAT to link with the DCO and begin the reception, staging, onward movement, and integration (RSOI) process at Joint Base San Antonio, Texas. As more sustainment units entered the JOA, the ESC realized a more robust command post was required to provide mission command

for sustainment operations.

The ESC deployed its TAC to Texas and set up operations at Joint Base San Antonio. The TAC immediately tied in with the ARNORTH staff and with the Federal Emergency Management Agency (FEMA). The SAT continued with its RSOI mission, and the TAC assumed mission command of sustainment operations in support of Title 10 forces operating in the JOA.

The TAC began to collect logistics status reports and develop requirements. Using the Defense Logistics Agency and other strategic enablers, the TAC began sustaining Title 10 units. Once the Texas National Guard mobilized enough assets to assume the mission, the 3rd ESC personnel redeployed to Fort Bragg and conducted an after action review (AAR).

Hurricane Irma

Almost as soon as the 3rd ESC packed up its gear and conducted the AAR for Harvey, another hurricane moved toward the mainland with Florida in its crosshairs. The AAR revealed that the ESC was slow to deploy initial capability during Hurricane Harvey. ARNORTH had sent an advanced echelon (ADVON) to Florida to coordinate with the DCO prior to the hurricane's landfall. The ESC followed suit and immediately deployed two SATs.

Both SATs linked up with the ARNORTH ADVON and the DCO and eventually were split between Jacksonville and Orlando. The SATs' primary task was to conduct site surveys and execute RSOI of Title 10 forces coming into the JOA. The Florida National Guard responded quickly, and the requirement for Title 10 capability was significantly reduced.

The SATs used their government purchase cards and provided sustainment support to the Title 10 forces that mobilized to support the response. The SATs managed the flow of sustainment into the JOA, and the main command post at Fort Bragg conducted mission command from the headquarters.

Communications were essential. Using a Broadband Global Area Network terminal and cell phones, the ESC maintained situational awareness between Fort Bragg and the teams in Florida. The ESC provided nightly updates to the ARNORTH commander in Texas. When the Florida National Guard mobilized and assumed the mission, both SATs redeployed to Fort Bragg.

Hurricane Maria

Hurricane Maria proved to be the most devastating storm of the hurricane season. After Maria made landfall in Puerto Rico, the commonwealth's governor asked for federal assistance. FEMA was immediately dispatched to the island, and the Department of Defense (DOD) was asked to provide support.

The 3rd ESC's initial support package consisted of three SATs and an ADVON. The SATs immediately established RSOI operations for all Title 10 units, and the ADVON established the TAC headquarters alongside FEMA and ARNORTH. Once the headquarters was established, the commanding general and personnel from across the ESC staff deployed and began operations.

As the mission expanded, the 3rd ESC command post grew to twice the size of the original TAC configuration. Leveraging the main command post at Fort Bragg, the 3rd ESC built in flexibility to prolong its endurance. At the height of the DOD support, the 3rd ESC's task organization included an active duty sustainment brigade, a medical brigade, a combat support hospital, and other sustainment units and organizations.

Because Puerto Rico is an island, managing the supply chain and synchronizing distribution assets was critical. Competition for distribution assets required the ESC to continually synchronize DOD, FEMA, and Army Corps of Engineers cargo movements. Both air and sea ports were challenging because the ESC was in constant competition with nongovernmental organizations and commercial enterprises.

Communications were the ESC's most significant challenge to mission command. With little to no commercial communication infrastructure, the ESC had to rely on tactical communications assets. As the size of the response grew, competition for bandwidth stressed the ESC's ability to communicate effectively with subordinate units across the island.

DSCA is considerably different than other decisive action tasks. The 3rd ESC's ability to quickly identify key tasks and adjust its training plan was critical to its success during the 2017 hurricane season. Scalable and flexible distributed mission command capability was essential to prolong endurance and extend the unit's operational reach.

Brig. Gen. Christopher Mohan is the commander of the 3rd ESC. He holds a bachelor's degree in criminal justice, a master's degree in national security and strategic studies from the Naval War College, and a master's degree in military strategy from the Army War College.

Col. Patrick E. Taylor is the 3rd ESC support operations officer. He holds a bachelor's degree in human resources management from East Carolina University and a master's degree in military art and science from the Air Command and Staff College.

Maj. Greg Darden is the 16th Military Police Brigade S-4. He holds a bachelor's degree from the University of Tennessee and a master's degree in emergency and disaster management from American Public University.

Maj. Tammy Johnson is the 3rd ESC G-4. She holds a bachelor's degree in animal husbandry from Iowa State University and a master's degree in supply chain management from the University of Kansas.

Multinational Sustainment Is Essential to the Next Fight

By Col. Curtis A. Buzzard and Lt. Col. Steven M. Dowgielewicz Jr.

The commander of A Company, 615th Aviation Support Battalion, confirms a route with the convoy commander from the Polish 2nd Transportation Company during Allied Spirit VIII held early this year in Hohenfels, Germany.

The Multi-Domain Battle environment requires the Army to operate as part of joint, multinational force down to the tactical level. This force will require integrated multinational sustainment of forces.

In a 1948 speech to the National War College, Gen. Dwight D. Eisenhower said that when it came to building a multinational alliance, "one of our great problems was what to do about the matter of administration, and particularly about administration as it applies to supply."

Undoubtedly, the effects of our past 16 years of conflict have conditioned leaders to have a very different understanding of how sustainment operations are executed. For the most part, units were based in large forward operating bases, stockpiled large amounts of supplies, managed a relatively small number of commodities (for example, small-arms ammunition and not tank rounds), had low casualty rates, and did not have to defend rear areas. U.S. allies enjoyed air superiority, uninterrupted communications, and a relatively slow operating tempo.

Fighting a near-peer adversary requires a much different approach, and units of all warfighting functions are challenged in meeting the demands of the European Multi-Domain Battle operational environment.

According to Field Manual 3-0, Operations, conducting large-scale combat operations presents the greatest overall challenge for the Army. The Army must prepare for the challenge of operating against near-peer adversaries that leverage multi-domain, anti-access/area-denial capabilities and contest all domains.

Recognizing current operational and strategic realities, the Army will need to operate as part of a joint, multinational force at every level of command, even the tactical level. At the Joint Multinational Readiness Center (JMRC) in Hohenfels, Germany, this is how we train. JMRC brings together multiple nations' militaries to train with U.S. forces. Unlike other combat training centers, JMRC's focus is multinational operations at the tactical level.

A multinational force faces the challenge of multinational sustainment operations. Field Manual 3-16, The Army in Multinational Operations, notes that failing to account for the differences in the ways our allies and partners sustain their forces affects logistics support to multinational forces. This article discusses the importance of coordinating sustainment operations and provides observed trends and best practices concerning expeditionary logistics challenges in multinational operations.

U.S. and Partner Preparedness

U.S. units are resourced and trained to independently deploy expeditionary forces around the globe and sustain themselves in a prolonged conflict. Many of our allies and partners are not. A coordinated sustainment effort is required to ensure unity of effort to complement allied and partner nations' capabilities and minimize their differences and challenges.

JMRC exercises are designed to replicate operational realities, which highlight the doctrinal, equipment, and procedural differences in logistics and sustainment operations and allow units to develop and reinforce best practices.

The scenario for these exercises is built upon the NATO Article 5 principle of collective defense—an attack against one NATO member is an attack against all. This operational environment blends live, virtual, and constructive components to replicate an adaptive, near-peer adversary that employs a mix of traditional, unconventional, and hybrid strategies. This training environment allows JMRC to ensure rotational training units operate in an intense, complex, and realistic environment.

Replicating highly adaptive enemies in a dynamic, ever-changing environment creates the necessary conditions for units to improve while learning to operate at the threshold of failure.

To help units understand multinational logistics and sustainment, JMRC incorporates units into an integrated multinational task force, which includes a higher headquarters, adjacent units, and unified action partners. Consider a training exercise

involving the French NATO Rapid Reaction Corps Headquarters with four multinational subordinate brigades: a Polish mechanized brigade, a Lithuanian mechanized brigade, the 173rd Airborne Brigade, and the French and U.K. Airborne Combined Joint Expeditionary Force.

During the exercise, sustainment comes from the 2nd Cavalry Regiment (CR) Regimental Support Squadron (RSS), the 173rd Brigade Support Battalion (BSB), a Polish BSB, and the combined U.K. and French Combat Service Support Group. Given this task organization, interoperability is clearly a challenge.

Sustainment rapidly becomes the critical warfighting function as exercise participants are required to coordinate their efforts. Given theater requirements and the tactical scenario, there is no option to manage sustainment independently.

NATO Allied Joint Publication-01 states, "The effectiveness of Allied forces in peace, crisis or in conflict depends on the ability of the forces provided to operate together coherently, effectively and efficiently."

The replicated reality at the JMRC makes multinational sustainment challenges apparent. These challenges include a common understanding of the services to be provided, language barriers, units of measurement, and differences in classes of supply and reporting formats.

Logistics Versus Sustainment

A common understanding is the starting point for effective multinational operations. The difference in meaning between logistics and sustainment in the U.S. Army is very clear. Army Doctrine Publication 4-0, Sustainment, defines logistics as "planning and executing the movement and support of forces." It does not include personnel services or health service support. The publication describes sustainment as "the provision of logistics, personnel services, and health service support necessary to maintain operations until successful mission completion."

Within NATO, logistics is defined as the science of planning and carrying out the movement and maintenance of forces, to include medical and health service support but not personnel services. When a U.S. organization is tasked with sustainment, personnel services are included and do not have to be added as a caveat. If that same organization were tasked to execute logistics, it would not plan for medical and health service support without a common understanding of what is meant by the term logistics.

Language Barriers

Sometimes the challenge is more than just the definition. Although the primary language of NATO is English, only three of the 29 NATO countries use English as their primary language. Many NATO countries have personnel, especially at the senior levels, who speak English or have attended U.S. military schools. However, more junior personnel tend to use only their native languages.

In a multinational environment, Soldiers who speak other languages can be powerful enablers. During Swift Response 2017, the 173rd BSB quickly identified a Soldier who could speak Italian and another who could speak Dutch and placed them at the critical logistics nodes. This significantly improved the sustainment process.

Units of Measurement

Another challenge is the different methods used to compute requirements. U.S. forces use gallons and pounds, but only two other countries do the same: Myanmar and Liberia. Further complicating requirements calculations is the fact that there are two different liquid gallon measurements. The United Kingdom uses an imperial gallon, which is equal to .83 U.S. liquid gallons.

To prevent confusion during resupply planning and execution, a common unit of measurement must be identified. During Allied Spirit VII, the 2nd CR RSS was the lead sustainment unit for a Lithuanian infantry brigade. During the brigade's joint and combined academics program, a pre-rotation weeklong development session, the RSS required all logisticians to follow NATO doctrine and use the metric system for logistics.

The human dimension of interoperability was easy to achieve, but it

A Soldier from the 82nd Engineer Brigade, 1st Infantry Division, assists Polish soldiers of the 12th Mechanized Division with using a M984 wrecker during exercise Allied Spirit VIII at the Joint Multinational Readiness Center in Hohenfels, Germany, on Jan. 19, 2018. (Photo by Spc. Randy Wren)

was the technical aspect that caused challenges. For example, U.S. tankers measure fuel in gallons, and the Logistics Estimation Workbook and other planning tools use gallons.

With a nonstandard unit of measurement, a fuel request may be converted between metric and imperial gallons four or more times as it moves from the forward support company back to a Defense Logistics Agency country contract. Repeated conversions will result in volume discrepancies, which can affect operations. Planners must determine differences in methods used to compute requirements and ensure units account for them.

Classes of Supply

U.S. Soldiers are taught 10 classes of supply early in their careers. No matter their military occupational specialty, Soldiers know a class I request brings food and class IX request brings repair parts. NATO operates with five classes of supply, and while this system is somewhat linked with the U.S. system, there are significant disconnects. There is no Rosetta stone for translating between the two systems. Instead, a common understanding must be agreed upon prior to a NATO operation.

Another challenge is how the classes of supply are understood by each country. U.S. Soldiers know to request class IV (construction and barrier materials) prior to going into defense in order to build obstacles using preconfigured loads that are based on obstacle size and depth. During an Allied Spirit rotation, one nation prioritized the use of natural materials as obstacles instead of transporting wire and pickets forward.

Before first contact with the enemy, the multinational force must be in agreement on the definitions of classes of supply in published orders.

Reporting Formats

A survey of Army brigade combat teams would produce many different standards for logistics status reports and logistics estimates. The only common requirement for logistics reports and estimates is to be short, simple, and easy to transmit in a degraded communications environment.

Under a NATO task organization, reporting is based on standardized reports resident in the Logistics Functional Area Services (LOGFAS) system. There are four primary reports: the logistics assessment report (what you have), the move assessment report (route and node information), the logistics assistance request (what you need), and the medical assessment report (current capacity and status).

There is also a logistics assistance response, which is a form that is returned to the requesting unit to let it know what it will receive. Although NATO relies on LOGFAS, the system has not been adopted by the U.S. Army. From the U.S. perspective, these reports are cumbersome because of their length and required connectivity to LOGFAS or email.

At the JMRC, units have worked around differing formats in several

An allied resupply convoy of Polish and U.S. vehicles transport equipment from the brigade support area to the aviation battalion at the Joint Multinational Readiness Center in Hohenfels, Germany, during Allied Spirit VIII.

ways. During Allied Spirit VII, the 2nd CR RSS provided the Lithuanian brigade S-4 with its home-station format for logistics reporting and estimates. Most of the elements within the brigade were able to use the reports.

The logistics status report had all required U.S. munitions listed in addition to many NATO munitions. However, the RSS did not account for Italian, non-NATO, field artillery munitions. Those munitions were added in the comments block at the end of the form but were ultimately overlooked. After 24 hours of fire missions, the shortcoming in tracking these munitions was discovered and rectified.

During Allied Spirit VIII, the Polish 12th Mechanized Brigade S-4 initially wanted to use the NATO format for reporting, but its subordinate U.S. units had never seen the reports and did not understand how to use them. The brigade S-4 created a hybrid report that requested only information specific to the brigade task organization in order to simplify the process. Identifying friction points early helped achieve logistics efficiencies and provided greater flexibility and adaptability for the multinational force.

Current operational and strategic realities require tactical-level NATO interoperability; the United States cannot always be relied upon as lead nation for sustainment. Unity of effort is essential to increase flexibility, adaptability, and agility in support of multinational operations. Common logistics support and standardization across NATO has the potential to be much more efficient, but nations must agree to the standards, make interoperability a priority, and program the funds required to make it a reality.

There is no question that the next fight will be a multinational one. The question is whether the NATO logistics architecture will be able to sustain it.

At the JMRC, NATO units train the way they will fight in the future. The hope is that lessons learned here will help account for the differences in the way the United States, its allies, and partners sustain their forces to ensure a more coordinated and unified effort in multinational operations.

Col. Curtis A. Buzzard is the commander of the JMRC Operations Group. He is a graduate of the United States Military Academy and holds master's degrees in public affairs from Harvard University and in military studies from the Marine Corps University. He is a graduate of the Marine Corps Command and Staff College and was a fellow at the Center for Strategic and International Studies.

Lt. Col. Steven M. Dowgielewicz Jr. is the senior sustainment trainer at the JMRC. He is a graduate of Clarkson University and holds a master's degree in health science from Trident University. He is a graduate of the Army Command and General Staff College and the Joint and Combined Warfighting School.


DAILEY
RANGER

Armies That Sustain Themselves Will Win

An Interview With Sgt. Maj. of the Army Daniel Dailey

■ By Sgt. Maj. Edward A. Bell

Sgt. Maj. of the Army Daniel A. Dailey attends a cake cutting ceremony for the Army's 242nd birthday on June 14, 2017. (Photo by Daniel Torok)

The Army's senior enlisted Soldier discusses vital topics concerning Army logisticians.

Since the start of his career in 1989, the 15th Sgt. Maj. of the Army Daniel A. Dailey has been earning a reputation for taking care of Soldiers. His career includes every enlisted leadership position in the mechanized infantry. I recently sat down with him to get his impressions of the Army's sustainment professionals and to find out what advice he has for future logisticians.

You've worked alongside logisticians throughout your career. What are your insights on the importance of the sustainment community?

I never had true appreciation for sustainment until I became a senior logistician inside my brigade combat team's headquarters and headquarters company. I quickly realized that fuel, water, and chow will bring an organization to its knees within hours if they are not replenished.

The level of importance, and the art that is involved in sustaining, became clear after my seventh consecutive night without sleep and going 300 miles in the wrong direction to get water just so my warfighters were fed and hydrated. My young men could fight for days, but they couldn't do so without sustainment.

Every great leader throughout modern history has said armies that sustain themselves are armies that will win wars. Napoleon was famous for it. All the great leaders that appreciated that concept became victorious, because ultimately that's what it comes down to.

In World War II, our first objective was to go after the long-term sustainment capabilities of our enemies: factories, production systems, all those things. If you can destroy the supply chain of your potential adversary, it's just a matter of time before they are defeated.

From your visits to Soldiers around the world, what is your assessment of sustainment professionals?

I am in awe every single day of the professionals in our sustainment enterprise. I recently visited the Natick Soldier Systems Center, and a gentleman sitting next to me told me he knew the status of every piece of Army equipment for which he was the program manager. So I said, "Oh really? How?"

He showed me how, and I was amazed. It was a level of surgical expertise that is unheard of in any organization. It would be like someone running 24-hour surveillance of every vehicle on the road and calling you when they know your fan belt is going to break. Just imagine!

That's why we have the greatest sustainment force in the world and hence the greatest combat formation in the world. You have this depth of infrastructure that most Soldiers are unaware of that keeps them going every single day. Every time I see it I am amazed at the scale and complexity of how it works and at its flexibility.

You hear the old analogy, "It takes a long time to turn around a battleship." Our sustainment community is probably the biggest battleship out there. We sustain not just the Army, but we're also the sustainment backbone for all of the Department of Defense. It's amazing how nimble that sustainment battleship is.

As you engage Soldiers, what's on their minds in terms of future sustainment needs?

Soldiers want the newest thing, the latest and greatest. Today they are very used to getting that, so they're always waiting for it. I call it the intangible confidence within the system—knowing that when you ask for something, you're going to get a better product.

What we have to do is manage expectations. Soldiers have to know that they're heard and that their requirements translate from the end user to the program manager. That voice then translates to development or investment into some type

of technology to meet that requirement in the field. And we have really improved on this over the course of the 30 years that I've been in the Army.

I often ask Soldiers why they fight. There's a whole bunch of reasons, but one big one: because the Army takes care of people. Soldiers know they're going to get evacuated if they get injured. They know this nation is going to provide them with the best equipment available and that the American people are going to work feverishly to put capabilities in Soldiers' hands that exceed those of potential enemies.

Armies I've worked with throughout the world don't have the same ability to say those things. I've been asked, in amazement, by our allies about the commitment of the American Soldier. And I tell them it's not one thing; it's a whole bunch of things collectively that make these young men and women do what they do every single day.

That's why we have to work so hard to give them the tools necessary to be able to fight and win and to have confidence in themselves. I want very confident, competent, capable Soldiers. Give me a couple of those, and we can do pretty much anything.

Do you have any advice for developing future leaders in logistics?

Never underestimate the value of training and educating our Soldiers. Allow them to take a pause from what they're doing on a day-to-day basis for opportunities to grow. We are a busy Army, and the mission is always first. But we are an organization made up of people, and we will only be as good as the amount of time and energy we put into our people.

We stress the sustainment community every single day. In Iraq or Afghanistan, it's hard to let that one Soldier go take that broadening assignment or professional development opportunity. It's especially hard for those who are rowing hard, your lead rowers in the front of the boat who are rowing every day. We can't be blinded by that.

So I think this is one area we can do better. The mission is critical; we've got to make missions happen. But no one is more important than the institution itself. By not letting that individual go, believe it or not,

Sgt. Maj. of the Army Daniel A. Dailey calls the mother of Pfc. Brandon Shartzer, a wheeled vehicle mechanic with the 82nd Brigade Engineer Battalion, 2nd Armored Brigade Combat Team, 1st Infantry Division, to wish her a happy birthday from Boleslawiec, Poland, on Dec. 16, 2017. (Photo by Spc. Hubert D. Delany)

you're actually sacrificing the rest of the institution.

The noncommissioned officer (NCO) corps is the backbone of the Army. What role will it continue to play in building readiness for the expeditionary environment of the future?

Readiness is the one thing you hear the chief of staff of the Army mention every single time he speaks. Our job is to deter our adversaries. If we can't deter them, we will defeat them—but we're not going to let that happen in the homeland. That's why you'll hear me say we don't play home games.

The last time the United States played a home game was in World War II. It was the invasion of the Aleutian Islands by the Japanese, and we gave up some of the home territory. We cannot, and will not, allow that to happen on this soil again. We no longer have the greatest competitive edge in the world, so we have to be ready enough to deter anyone from ever thinking about it.

Our NCOs have been essential as we have transitioned from the environments of the past 16 years to the even more complex environment of today. Their power and authorities have increased throughout time because of the decentralized nature of the current battlefield.

Back in colonial times, the battlefield was linear. It was very close, and Soldiers had visual contact with their officers. But as you progress [in time] and get through places like World War II, there is a huge battlefield. It's very complex and fast-paced, and now our NCOs have to be competent and able to receive and translate orders from officers and then go out and conduct decentralized operations.

This is the case even more so today. You see those NCOs out by themselves at the tip of the spear in places like Iraq and Afghanistan. The level of responsibility and risk we place on our NCOs will only continue to increase in the future.

As the senior enlisted Soldier, what keeps you up at night?

I pride myself on the fact that I sleep pretty soundly. I go to bed without guilt because I do physical training every morning! But I do worry about things. I worry about not having the best NCO corps in the world. We say we are the best all the time, and I firmly believe that we are. But I think we have to take our blinders off and humble ourselves sometimes. There's a reason we got here, and there's a path to how we stay here. We have to be careful that we're not taking that for granted.

Nondeployable Soldiers worry me. I want to take care of Soldiers, and I think that once we hurt them, we own them for the rest of their lives. It's tough to look a Soldier in the eye and say, "You can't stay." But we have to do it if it's the right thing for the institution.

Soldiers have to realize that the institution is bigger than they are individually. When it's time for me to leave, when I can't do the mission anymore, and when I can't meet basic requirements to be a Soldier, I need to be able to look myself in the mirror and say, "Okay, it's time to let someone else do this job."

It's the balance of three things: knowledge, skills, and ability. I can have all the knowledge in the world, but if I don't have the ability or the skills to put it into application, it doesn't mean anything to the institution. I'm just another burden to it.

I also worry about getting the

Sgt. Maj. of the Army Daniel A. Dailey speaks to students attending the Sergeants Major Academy during the 2016 International Training and Leader Development Symposium at Fort Bliss, Texas, on April 13, 2016. (Photo by Sgt. James Avery)

support we need to be able to do the missions we're doing around the world. It's a fight we have every single day, but it's a balance. It's about what we truly need, not asking for too much, preserving the resources we have, and utilizing them to the maximum extent to train our Soldiers and fight and win.

I'm not one who is willing to ask for more unless we absolutely need it. Sometimes we are very good at asking for stuff and are not as good at using it. We have to be careful of that.

We own the hearts and minds of the American people, and they will do anything they can to make sure we have the tools necessary. They trust that the tools we are asking for are the ones we really need, and we have to be confident that we're doing that.

Sustaining the fight does not occur solely on the battlefield. How critical is family readiness for the Army's success?

It's very critical. I'm a Soldier, and I have a family. When Soldiers are in combat, I want them focused on keeping themselves and their buddies alive. I don't want them focused on the needs of their family. I don't mean that in a selfish way. It's not that they shouldn't be focused on their families' needs; they just shouldn't have to be.

We need to provide our families with adequate care and services to sustain the requirements for their Soldiers to do this job every day. No matter how you write it, when you multiply the cost of doing that by the number of families we have, it's going to be a big number. But I can tell you right now, it's well worth it.

Families are readiness. American Soldiers will give their lives—and families in America will accept the fact that they did—if they know their families are taken care of. If you remove any one of those elements, the same level of trust and confidence will not come from the Soldier or the American people.

Relationships with the community and the nation as a whole are vital. How can we strengthen these relationships?

I think we are doing a much better job at this. When we entered into the past 16 years of war, we stayed on installations and closed our gates because of security requirements. We were very cautious about who we talked to and fell into this behavior almost indirectly.

Every Soldier is an ambassador, and I remind them of that all the time. Inside or outside our gates, they should be upholding the standards of what is expected of them by the people of the United States.

But we have to let the American people know these are our hometowns. My son didn't grow up in Palmerton, Pennsylvania, where I was raised. He grew up in Fort Carson, Colorado, and Fort Stewart, Georgia. Those were our communities. So we've got to sustain those relationships so there's a true understanding and appreciation of our Soldiers in those communities. Many of those communities survive simply because our Soldiers are there.

Every time I travel, I notice there's an investment I make with Soldiers during the day; my night job is investment in the community. So I find councils or civilian leaders and remind them of the importance of collaboration.

This needs to be done at all levels. Every Soldier is an ambassador, and I remind them of that all the time. Inside or outside our gates, they should be upholding the standards of what is expected of them by the people of the United States.

And you don't even have to define that for a Soldier; as soon as you say that sentence, it's clearly understood what their behavior should be. It's everybody's job to maintain those relationships, and it has a humongous impact.

What's the number one thing the Army can provide Soldiers to prepare them for future conflicts?

Leadership. It's the only variable in the Army. We do a really good job of making sure like organizations have the same amount of people and equipment all the way down to copy machines, computers, and rifles. Everything's the same. We send Soldiers to organizations at random. There are some units in the Army that think they have all the best Soldiers in the world, that we hand-selected every one of them. That is completely untrue. They're completely random from the entire population of the United States. The only dynamic that's different from one organization to another is the leader.

So when you have an environment that has the same number of knobs; the same number of rifles, trucks, and Humvees; the same number of copy machines and bathrooms; and the same number of buildings, barracks, and all those other things invest in the one dynamic that makes a difference. And that's leadership.

Sgt. Maj. Edward A. Bell is the sergeant major for the Office of the Deputy Chief of Staff, G-4. He has an associate's degree in management from Summit University, a bachelor's degree in business administration from Touro University, and an executive leadership certificate from the University of Kansas School of Business.

First Lt. Walter Snook from A Troop, 1st Squadron, 91st Cavalry Regiment, 173rd Airborne Brigade, meets with military police escorts from the Estonian Defence Forces at the Latvia-Estonia border as part of the movement operation Able Falcon on June 3, 2015, during Atlantic Resolve. (Photo by Staff Sgt. Brooks Fletcher)

USAREUR Supports Soldiers Through ACSA Orders

U.S. Army Europe used acquisition and cross-servicing agreement orders during Atlantic Resolve to support forces throughout the region without having to move piles of tactical equipment or build lasting infrastructure.

■ By Lt. Col. Ned C. Holt

Army units based in the continental United States do not use acquisition and cross-servicing agreement (ACSA) orders; however, when units train in a foreign country, these orders are a valuable and often overlooked means of support. U.S. Army Europe (USAREUR) units participating in Atlantic Resolve used ACSA orders in ways that had not been seen before and, in turn, learned valuable lessons that can be applied to different theaters.

According to Title 10 of the U.S. Code, ACSA orders are designed to allow the acquisition, sale, or exchange of logistics support, supplies, and services between the U.S. military and nations that have a defense alliance with the United States. The orders give the military the flexibility to share common-user logistics among nations in order to minimize expenses and reduce the need for independent supply infrastructures.

Outside the United States, ACSA orders are one of the most responsive ways to obtain support for U.S. forces. However, knowledge of the rules

and procedures for ACSA orders is limited at the tactical level because these orders can be used only when dealing with a foreign military.

Atlantic Resolve Life Support

USAREUR leaned heavily on ACSA orders when it sent forces to Estonia, Latvia, Lithuania, and Poland in support of Atlantic Resolve in April 2014. An airborne infantry battalion task force from the 173rd Airborne Brigade deployed to the region in 72 hours.

This rapid movement was made possible, and was unique, because USAREUR used host-nation support to provide basic life support instead of building, bringing, or contracting its own. The decision to leverage host nations for most base life support functions allowed the unit to leave its organic and theater support assets at home station.

By design and doctrine, an infantry battalion receives logistics support from its forward support company and reinforcing support from its brigade support battalion. Infantry battalions are not normally spread out across 500 kilometers, four countries, and several international boundaries as they are during Atlantic Resolve. The three factors of distance, borders, and the stretching of support assets made consolidated field feeding, maintenance, life support, and associated logistics tasks difficult.

Using a host nation to provide almost all base life support is a bold move; there was no modern precedent for garrisoning U.S. forces in allied countries for extended periods of time without building bases and infrastructure. In post-World War II Germany and Japan and after the Korean War, the United States built bases and then fed, secured, and took care of its Soldiers.

Recent U.S. operational experiences in the Balkans, Iraq, and Afghanistan began with the United States establishing its own bases, living in tents or borrowed or occupied buildings, and then designing a temporary or permanent solution. At almost no point during these diverse operations was a host nation called on to house or feed U.S. Soldiers for any measurable length of time on their own posts.

Using the ACSA order process for prolonged periods of time to house and sustain U.S. Soldiers is different from the norm. Soldiers in Atlantic Resolve even lived and dined in existing host-nation military barracks. This paid off because USAREUR was able to quickly and relatively inexpensively support multiple operations without deploying most of the unit's support assets. Maximizing host-nation support allowed USAREUR to use its strategic enabling units and equipment for other operations.

This is not to say that the experience was without problems. Because of the expedient nature of the Atlantic Resolve deployment, many U.S. Soldiers were housed in open bay barracks built for initial-entry training, in hastily converted offices, or in abandoned buildings. Limited personal space was not the only problem: the meals and meal cycles in the host-nation dining facilities were radically different from those in U.S. dining facilities.

Adjusting to these new norms took patience from both U.S. and host-nation forces. It also required carefully negotiated improvements and changes to ensure a reasonable equilibrium was achieved between a deployed environment and a steady-state operation.

A Managing Department

As the implementation of this new support plan went forward, the need for one department to manage the process became quite apparent. Negotiating support and establishing standard practices are beyond the purview of an infantry battalion (especially one spread out over four countries).

With most of the 173rd Airborne Brigade in Italy and focused on other missions, the USAREUR staff was left to manage all host-nation support and ACSA orders for Atlantic Resolve. Both the USAREUR G-8 International Agreements section and the G-4 Plans, Operations, and Exercises Branch were extremely familiar with ACSA orders and had been using them to support 40 to 50 exercises throughout Europe each year.

However, they had never used ACSA orders long-term to provide all logistics support, supplies, and services to U.S. Soldiers in the USAREUR area of responsibility, and no specific department managed the process. After several months of supporting Atlantic Resolve ACSA orders through an ad hoc manner, the USAREUR G-4 directed the Multi-national and Interagency Branch of the G-4 Plans, Operations, and Exercises Branch to assume control of all host-nation support and ACSA orders for Atlantic Resolve.

Using a single department to handle all ACSA orders for Atlantic Resolve had multiple benefits for USAREUR, Atlantic Resolve rotational units, and the host nations, including flattening and streamlining all facets of host-nation support.

For the USAREUR G-3, G-4, and G-8, it facilitated the creation of more inclusive ACSA orders that supported multiple operations in the same country. It also provided the command with a one-stop shop to quickly implement changes, resolve conflicts, and act as an honest broker between Atlantic Resolve rotational units and the host nations.

U.S. units participating in Atlantic Resolve had one department to advocate on their behalf to improve base life support. With one department managing all host-nation support, USAREUR G-3 and G-4 planners could quickly spot trends or issues and synchronize efforts across the command.

The streamlined organization benefited the host nations because it limited the number of U.S. logistics planners, legal advisers, budget officers, and decisions-makers that they had to work with. Most important-

ly to the host nations, the payment timeline for ACSA orders dropped from more than four months to less than two weeks.

Statement of Requirements

An ACSA order form contains nothing but the information regarding the cost of trading or providing services. Although the language in an ACSA order is useful to budget and contracting officers, it provides very little information to a deployed company commander or first sergeant on how to operate in a forward environment for six months. To close the gap between what is on an ACSA order and the various challenges of a deployed environment, USAREUR units used a statement of requirements (SOR).

An SOR provides the flexibility to address issues that are not included in an ACSA order and is very similar to a memorandum of agreement. Like a memorandum of agreement, it has no defined format; therefore, it can be designed to fit almost any situation.

Although an SOR is not a legally binding document, units deployed in support of Atlantic Resolve found it extremely useful because it sets the ground rules for a variety of items and situations that are not usually contained in an ACSA order, such as the following:

- ☐ Procedures in the event of an accident, fire, or hazardous materials spill.
- ☐ A mechanism to resolve military-to-military disputes with points of contact and 24-hour emergency services information.
- ☐ Procedures for casualty evacuation to a host-nation hospital.
- ☐ Storage and maintenance facility rights on host-nation bases.
- ☐ The use of host-nation logistics support assets (cranes and forklifts) and transportation services.
- ☐ Meal hours and protocols for requesting meals for training exercises.

It is easy to see the usefulness of an SOR, and its importance cannot be overstated. More than anything, a well-done SOR is a road map to cooperation between two nations' militaries. Because it clearly articulates the type of support to be rendered,

Personnel from the Latvian National Armed Forces, U.S. Army, and U.S. Air Force conduct joint airborne training operations at Lielvarde Air Base, Latvia, on June 15, 2015. Service members were deployed to Latvia and participated in the training as part of Saber Strike 2015 and subsequently Atlantic Resolve, an ongoing, multinational partnership focused on joint training and security cooperation between U.S. forces and NATO allies. (Photo by Staff Sgt. Brooks Fletcher)

the periods of performance, location, prices, and points of contact, a well-written SOR can sort out 95 percent of the issues a unit could possibly encounter.

ACSA Order Benefits

One of the primary benefits of an ACSA order over a contract is the timeliness of the solution. An ACSA order can be approved in three to five days, while contingency contracting can easily take 15 to 20 days. Contracts take longer because of mandatory bidding and approval timelines set out in the Federal Acquisition Regulations; ACSA orders are not subject to those regulations.

ACSA orders are governed by the terms of the country-to-country ACSA agreement. In order to ensure that the U.S. government gets a fair price and to eliminate potential fraud, the USAREUR ACSA order standard operating procedures require that all ACSA orders over a specified dollar threshold be routed through the 409th Contracting Support Brigade. The G-8 is the approving authority for all ACSA orders. Even with these steps, ACSA orders can be accomplished more quickly than a contract can.

Probably the least known benefit of using ACSA orders instead of contracting for life support and meals in the Baltic States is the cost. Contracting for support in a foreign nation can easily cost three times more than using the host nation to provide the same support through an ACSA order.

This is primarily due to the economy of scale. Using contractors and using the host-nation military for food service, for example, cost relatively the same, but the host-nation military already has an existing infrastructure to support the procurement, storage, production, and dissemination of meals. A contractor has to establish all of these systems and make a profit, while the host nation already has dining facility infrastructure in place.

ACSA rules prevent the parties involved from making a profit. The rules also require the military that is selling a service or commodity to charge the United States the same price it charges for its own personnel. This means that if the Estonian army charges one of its own soldiers 2.98 euros for breakfast, it can charge a U.S. Soldier no more than 2.98 euros for the same breakfast.

Coordination

Although the Baltic States all have advanced economies, they are relatively small countries and their contracting base is limited in size and scope. Before there was a consolidated department handling host-nation support, the host nation and the U.S. Army were competing for the same heavy equipment transporter assets, chemical latrines, shower containers, and field-feeding services.

In effect, the U.S. and host-nation armed forces were bidding for identical services with the same companies. Having one entity responsible for coordinating all support gives the host nation the ability to lock in assets for future requirements without the fear of being outbid, and it ensures continuity of support.

Two components critical to the success of wide-ranging, long-term ACSA orders are constant communication and having multiple venues to address the inherent challenges associated with military forces sharing the same space and resources for extended periods of time. The USAREUR staff realized these were relatively small issues, such as the amount of protein in breakfast meals, how to bill for lost keys or broken windows, and the timeliness of payments.

At both the tactical and operational levels, regularly scheduled meetings, coordination elements, and other mechanisms were put in place. These mechanisms ensured each party understood the governing rules of host-nation support agreements and that communications were flattened.

During the Headquarters, Department of the Army, G-3/5/7 Baltic States Staff Talks held in Vilnius, Lithuania, in July 2015, the nations in attendance broached the topic of establishing a common set of roles and responsibilities.

The USAREUR G-4 took the lead in conducting an international agreements and ACSA orders training and education program across all four nations to ensure a common understanding of the roles and responsibilities at every level. Well over 300 senior members of the Baltic States' civilian and military commands attended these training and information conferences, and the results provided direct benefits to all parties involved in Atlantic Resolve.

ACSA orders are powerful tools that can enhance the operational effectiveness of a commander, reduce expenses, and provide greater flexibility than bringing or contracting for supplies and equipment. However, they can be used only when dealing with the armed forces of a foreign nation, and the business rules of ACSA orders are not readily understood across the Army. If a unit is going to train with another nation, learning about the process before the planning begins can alleviate most concerns and reduce friction that may occur during the operation.

USAREUR's experience with ACSA orders during Atlantic Resolve was a positive example because it was able to quickly respond and deploy forces throughout the region without moving piles of tactical equipment or building permanent or lasting infrastructure. Using ACSA orders to house, feed, and secure U.S. forces could be the wave of the future when deploying forces to forward locations.

Lt. Col. Ned C. Holt is the commander of the 7th Group Support Battalion, 7th Special Forces Group (Airborne), at Eglin Air Force Base, Florida. He has bachelor's degrees in history and political science from Louisiana State University and a master's degree in diplomacy from Hawaii Pacific University.

Heavy equipment transporters stage at the Port of Klaipeda, Lithuania, in preparation to load a combined arms battalion of heavy tracked vehicles on June 12, 2017. The 32nd Composite Truck Company transported equipment across Lithuania in support of Operation Saber Strike, a multinational exercise that included a combined arms battalion emergency deployment readiness exercise and a port-to-fort movement within 72 hours. (Photo by Capt. Stephen I. DuCharme)

Posturing Sustainment Forces for Rotations in Europe

By injecting four logistics considerations into the predeployment planning process, the 32nd Composite Truck Company was able to rapidly deploy and provide transportation and heavy equipment recovery throughout Eastern Europe during a nine-month deployment.

■ By Capt. Stephen I. DuCharme

The regionally aligned forces (RAF) initiative enables continental United States-based units to sharpen their short-notice, unit-level deployment task skills. RAF requires leaders to embrace mission command principles in order to operate in remote and dispersed environments.

On the heels of the RAF rotation of the 3rd Armored Brigade Combat Team, 4th Infantry Division, the 32nd Composite Truck Company (CTC) received orders to deploy to Eastern Europe as part of the first sustainment forces RAF rotation in support of U.S. Army Europe and Atlantic Resolve.

Atlantic Resolve's supported area includes seven European countries, from Estonia in the Baltics to Bulgaria in the Black Sea region; it includes a road network spanning 1,800 miles, which is equivalent to driving from New York City to Denver. During the nine-month deployment, the 32nd CTC's mission was to provide transportation and heavy recovery support throughout Eastern Europe.

Speed of War

In order to exercise speed of assembly and enable maneuver units to successfully train with NATO allies, sustainment capabilities have to be structured and agile.

The 32nd CTC's rotation to Europe began in March 2017, and it proved to be a challenge. The area to support was vast, and the company had to provide sustainment from multiple nodes while following European highway rules and regulations. The 32nd CTC executed more than 110 transportation movement release missions within the first four months of its deployment. Each transportation movement had its own unique challenges.

The 32nd CTC's experience revealed that future sustainment force rotations to Europe should focus on these four goals:

- ☐ Structuring the organization.
- ☐ Increasing shop stock fitness.
- ☐ Enhancing mission command capabilities.
- ☐ Completing European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR) certification and hazardous materials (HAZMAT) training prior to deployment.

Organizational Structure

A CTC has four platoons: one heavy equipment transporter (HET) platoon, one medium tactical vehicle platoon, and two palletized load system (PLS) platoons. In preparation for the RAF deployment, the 32nd CTC developed a logistics common operational picture that allowed it to execute effective distribution operations from multiple support locations simultaneously.

In order to sustain logistics support and continuity from dispersed locations, the company chose to deploy its formation with modular platoons. Instead of deploying platoons with vehicles specified by the CTC's modified table of organization and equipment (MTOE), each platoon was cross-leveled with the same type and number of sustainment platforms.

The cross-leveling allowed for better crew predictability and 24-hour operations through squad cycles (mission, training, recovery), and platoon leaders could train their Soldiers on multiple platforms. Additionally, platoon modularization ensured each platoon maximized the use of equipment within each supported area.

The 32nd CTC is authorized a senior truckmaster and a truckmaster. These experienced noncommissioned officers assisted in coordinating, supervising, and controlling transportation operations and provided the operational planning and tracking needed to execute operations from separate locations.

The 32nd CTC leveraged its MTOE to split its operations section. By flattening communications, the truckmasters operating in separate locations received and processed battalion transportation movement releases concurrently and coordinated and issued directives to platoons more readily.

This ultimately enabled the company to provide prompt, sustained support to maneuver units and to operate from different countries and support nodes with minimal external assistance.

Shop Stock Fitness

A common goal for logistics units is to economize support by using the right type of sustainment platforms and to sustain those platforms with shop stock lists (SSLs) that are prebuilt using historical trends. One asset the 32nd CTC did not possess in its fleet was the M915 line-haul truck, so the burden of the ubiquitous line-haul transportation mission was placed instead on the company's M1075A1 PLSs.

Unfortunately, the PLS is not the preferred system to sustain long-haul transportation missions. The PLS platform is preferred for executing off-road sustainment operations to rapidly distribute supplies to the forward line of troops in rough-terrain environments. However, PLSs were used on European public roads to transport commodities thousands of miles within a matter of days.

The significant number of miles the PLSs had to traverse, coupled with the changing altitude, caused some unforeseen mechanical issues. The 32nd CTC had to remedy these issues in order to sustain line-haul operations with its authorized equipment.

During the onset of the deployment, PLS turbochargers and turbo tubes were quickly identified as high-consumption items. Air pressure rises with decreasing altitude, and increased pressure escalates the likelihood of blowing engine tubes.

Because the 32nd CTC deployed from Fort Carson, Colorado, where the altitude is higher and the air is thinner than it is in Europe, the PLS turbo tubes were not acclimated to the elevation. The turbo tubes became less reinforced, and the change of elevation caused them to rupture.

This also placed a significant amount of stress on the actual turbochargers as the increased frequency of ruptured tubes caused malfunctions, including over-boosting and bearing failures within the turbochargers.

HET trailer tires were also identified as high-consumption items. European public roads, especially in Poland, are very narrow and have many roundabouts. Both of these features increased the frequency of "curb checks," and HET trailer tires were frequently blown, particularly when the HETs were loaded with large equipment.

In accordance with Army Regulation 710-2, Supply Policy Below the National Level, if a unit does not have the consumption history to support adding critical items to its SSL, then the unit can stock those items through initial issue as long as they do not exceed 10 percent of the demand-supported lines on the approved SSL.

The 32nd CTC's internal maintenance section reacted to these maintenance concerns by adjusting its stockage selection and increasing SSL levels. By bolstering stockage levels with theater-tailored, consumption-based items, the 32nd CTC was able to minimize mechanical issues and increase SSL performance to better sustain equipment readiness.

drives prior to packing for deployment. Vehicles were assessed to ensure BFT and MTS mounting kits were intact and that all components were on hand. BFT and MTS mounting capability shortfalls were identified well in advance of deployment, and the appropriate mounting kits were ordered.

This preemptive step essentially allowed a plug-and-play scenario with MCSs and sustainment platforms and significantly helped the 32nd CTC to communicate tactically as soon as equipment hit ground in theater.

MTS tactical operations center kits were also deployed in a manner that permitted the company to operate multiple mission command nodes. This allowed the truckmasters operating in separate locations to monitor transportation movements more precisely. Ultimately, these actions enhanced the 32nd CTC's mission command capabilities and enabled the company to execute distribution support from multiple locations.

> The CTC's RAF rotation was a truly challenging deployment in which Soldiers and leaders had the opportunity to think creatively and apply fundamental Army skills in an austere environment.

Mission Command Capabilities

Developing the ability to operate in multiple locations simultaneously is challenging for a battalion, so it is even more difficult for a functional company. During the RAF rotation, logistics support areas in certain Eastern European locations were in the early stages of development.

The infrastructure did not support hard-wired communications, and establishing a means to communicate, collaborate, and facilitate functional teams was an essential task. Tactical communications were relied upon heavily.

Prior to deployment, the 32nd CTC focused on enhancing its mission command capabilities. Analysis was conducted on the quantity of mission command systems (MCSs) authorized by MTOE and the imminent dispersal of those assets between sustainment platforms and multiple support nodes. The Blue Force Tracking (BFT) system and Movement Tracking System (MTS) were tested to ensure they were fully operational and capable of running Joint Capabilities Release software.

In addition, European overlays were installed in all MCS hard

ADR and HAZMAT Certification

Sustainment forces frequently transport HAZMAT, such as bulk fuel, ammunition, and explosives across European countries in support of multinational training exercises. Military vehicles transporting HAZMAT in Europe require ADR certification. This certification includes the installation of a safety kit on both the prime mover and trailer.

Prior to the 32nd CTC's deployment, German maintenance personnel traveled to Fort Carson to help certify the 32nd CTC's vehicles. Mobile training teams conducted the required HAZMAT-11 and ADR driving courses for operators who would transport hazardous goods on European public roads. They also taught the required HAZMAT-12 and -15 certification courses for Soldiers who would certify shipping documents for HAZMAT movements on European public roads and railroads.

It is better to obtain these European certifications prior to arriving in theater. By completing these requirements prior to deployment, the 32nd CTC enhanced its freedom of movement and theater utility as soon as equipment arrived in Europe.

The CTC's RAF rotation was a truly challenging deployment in which Soldiers and leaders had the opportunity to think creatively and apply fundamental Army skills in an austere environment. The four considerations illustrated in this article do not represent every logistics challenge that rotational enablers in Europe will face. However, future sustainment forces that inject these considerations into the deployment planning process will be better postured for mission success when supporting Atlantic Resolve.

Capt. Stephen I. DuCharme is the commander of the 32nd CTC, 68th Combat Sustainment Support Battalion, 4th Infantry Division Sustainment Brigade, at Fort Carson. He holds a bachelor's degree in economics from Utah State University and is completing a master's degree in administration with a concentration in acquisitions management from Central Michigan University. He is a graduate of the Ordnance Basic Officer Leader Course and the Logistics Captains Career Course.

Chief Warrant Officer 2 Justin N. Bramlett and Staff Sgt. Scott H. Ferrell contributed to this article.

Soldiers assigned to the 13th Expeditionary Sustainment Command deliver food and water to Hurricane Harvey victims in Houston, Texas, on Sept. 5, 2017. (Photo by Sgt. Jazmin Jenkins)

Managing Money as a Commodity

With help from financial management support operations representatives, expeditionary sustainment commands manage financial resources like they do other battlefield commodities.

■ By Maj. Jose G. Cardenas

Is money just another commodity on the battlefield, like fuel or bullets? During the 13th Expeditionary Sustainment Command's (ESC's) first decisive action warfighter training exercise in over a decade, the command's financial management (FM) support operations (SPO) section facilitated the use of currency as a commodity for circulation around a planned area of operations to support the ESC commander's intent.

Bringing this commodity to the end user (Soldiers on the battlefield) requires forecasting requirements. FM SPOs must use their intuition (based on previous experiences) to interpret (based on the operational environment) where FM units and assets provide the best support.

FM SPO Operations

The FM SPO tracks the location of all financial management support units, subordinate detachments, and teams. The positions of these FM elements represent monetary distribution capabilities, including the ability to exchange currencies, pay local vendors, and facilitate local currency circulation in areas where

Soldiers assigned to the 1st Medical Brigade and the 13th Expeditionary Sustainment Command deliver food and water to Hurricane Harvey victims in Houston, Texas, on Sept. 5, 2017. (Photo by Sgt. Jazmin Jenkins)

local banking systems have failed.

Instead of using U.S. dollars, FM elements can pay for contracts using local currency and issue local currency to field ordering officers and pay agents. Enacting such a monetary policy helps to stabilize the local economy by avoiding an influx of U.S. dollars.

Knowing how much currency an FM unit is authorized to carry equates to knowing a unit's capability. Understanding the cash holding authority and vault location for each FM element, how funds are transferred and transported from one FM element to another, and the associated security requirements is similar to knowing the distribution capability of a transportation battalion.

Additionally, the ESC commander needs to understand the FM support center's role in facilitating the flow of cash and cash equivalents into a theater of operations. The FM SPO works with FM units to provide cash holding authority information and communicate potential FM logistics concerns to the ESC commander. Support may include coordinating emergency currency resupply to identified locations. This information helps the ESC to properly manage currency as part of the commodity management process.

The FM SPO provides the ESC commander with financial counseling concerning emerging funding requirements. The section works with the organizational contracting support cell to execute contracting support, and it tracks available funding authorities that facilitate organizational theater funding objectives.

The FM SPO position requires a theaterwide, customer-centric perspective, as opposed to the G-8's perspective, which is organizationally focused. Like the G-8, the FM SPO helps the ESC commander and staff leverage financial resources within the theater by providing counseling on available funding, currency types, and recommended FM unit relocations to best meet customer demands.

Lessons Learned

Lessons learned create institutional knowledge that improves tactical standard operating procedures and business practices related to FM operations. The ESC commander and staff learn about FM unit capabilities and security requirements when planning for future operations.

The 13th ESC FM SPO learned the following lessons during the warfighter training exercise.

Develop FM metrics. Working in logistics environments requires the rapid development of FM metrics to augment SPO section reporting requirements. Metrics include reporting how many field ordering officers and pay agent teams are available and how many FM support teams are available versus how many are authorized. Attrition may affect FM support unit and FM support detachment capabilities for battlefield circulation. Cash holding authority balances help to determine what locations require additional currency.

Track contract obligations. The FM SPO must track theater contract statuses to provide a theater perspective. This process includes tracking armed forces examining and entrance stations and postal currency support locations.

Define readiness in planning. One question that requires development and definition when planning operations is defining what black, red, amber, and green readiness statuses actually mean. An FM team may be out of funds, but that may not mean the FM support unit and FM support detachment cannot provide additional funding in a timely manner.

Determine EagleCash kiosk requirements. The FM SPO should identify any EagleCash kiosk needs. This includes knowing what phase of the operation and which locations will require this support.

Facilitate travel. FM SPO representatives should work with human resources personnel to help shape a cohesive Defense Travel System theater policy to facilitate service member travel.

Embrace the organizational culture. FM SPOs must embrace the ESC's organizational culture to understand how the unit operates. This will help FM Soldiers better support the ESC's operations

The FM SPO position requires a theaterwide, customer-centric perspective, as opposed to the G-8's perspective, which is organizationally focused.

These lessons learned help both the FM SPO and the ESC continually learn about the FM environment. The result is an integrated learning loop that adjusts to the operational environment. This process allows the 13th ESC to manage financial resources in the same way that it does other commodities on the battlefield.

Maj. Jose G. Cardenas is an assistant professor of military science at the University of Oklahoma. He served as the 13th ESC assistant chief of staff, G-8 (comptroller). He holds an MBA from Webster University, a master's degree in U.S. history from Boise State University, and a doctorate in business administration from Columbia Southern University. He is Department of Defense Financial Management Level 2 certified and a Lean Six Sigma Green Belt.

First Lts. Abe McIntire, Alex Kahn, and Geo Comacho, with the 4th Brigade Support Battalion, 1st Stryker Brigade Combat Team, 4th Infantry Division, conduct sling load operations on July 2, 2017, during a rotation at the National Training Center at Fort Irwin, Calif. (Photo by Staff Sgt. Rodrigo Rocha)

A CRISIS Exists: An Easy Mnemonic to Remember the Sustainment Principles

■ By Mark Solseth and Col. Brent Coryell

The eight sustainment principles discussed in Army Doctrine Publication (ADP) 4-0, Sustainment, can be useful during planning, but many sustainers struggle to remember them. Furthermore, when they are used as guidance, they often add little to the planning effort.

In this article, we introduce a mnemonic to help users remember the sustainment principles of anticipation, continuity, responsiveness, integration, simplicity, improvisation, survivability, and economy. We also offer ways to use them more effectively to develop commander's guidance and mission statements.

The Need for a Mnemonic

Examples of the many useful mnemonics used by the Army include PMESII-PT [political, military, economic, social, infrastructure, information, physical environment, and time], METT-TC [mission, enemy, terrain and weather, troops, time available, and civil considerations], and ASCOPE [area, structures, capabilities, organizations, people, and events]. Yet, no mnemonic exists for the eight sustainment principles described in ADP 4-0. Additionally, some of these principles are used in sustainment units' mission statements and commanders' key tasks, but often they are used in ways that are not particularly helpful to enabling mission command.

Remembering the principles is not only useful for sustainers but also for others on the staff who can use the principles as a guide to assess courses of action, plans, and orders. These

principles provide a useful approach to test aspects of the plan during development and sometimes are included as criteria during course of action analysis.

A CRISIS Exists

In order for planning to begin, some kind of crisis must first exist, so the mnemonic we propose is "A CRISIS Exists." The first eight letters in this mnemonic represent the eight sustainment principles.

Using "A CRISIS Exists" helps the planner or commander remember all the principles, which they can then consider using to provide guidance for planning and operations.

An Issue of Use

Now that we have a way of remembering the sustainment principles, how do we make them useful? Tactical-level commanders often do not use the sustainment principles effectively; instead, the principles become buzzwords in mission statements and commander's intents.

At the National Training Center (NTC) at Fort Irwin, California, observer-coach/trainers often see brigade support battalion (BSB) mission statements that contain elements of the sustainment principles. However, the principles add little to the mission command process because they are used in nondescriptive ways that add nothing useful to the commander's intent, which subordinates use to exercise disciplined initiative.

For example, a mission statement states, "On order (or no later than date time group), the 52nd BSB occupies and defends a brigade support area (BSA) [or logistics support area (LSA)] in the vicinity of grid coordinate NV123459 and conducts logistics and health service support operations in support of a specific brigade combat team's (or sustainment brigade's) operation in Area of Operation Desert in order to ensure freedom of action, extend operational reach, or prolong endurance."

Orders like this often have modifiers added to the end saying something like, "the 52nd BSB occupies and defends a BSA (or LSA) … and conducts anticipatory, responsive, and continuous logistics and health service support operations in support of a specific brigade combat team's (or sustainment brigade's) operation."

Similarly, a commander's intent often includes phrases such as, "My intent is to provide continuous, responsive, and anticipatory logistics support to units throughout the area of responsibility to facilitate …."

These statements may sound good, but are sustainment principles useful modifiers for logistics support? What do the words mean regarding mission accomplishment? Do they add anything that further enables mission command? We would argue that often they do not add much that causes subordinates to change the way they execute the mission or do anything other than their doctrinal mission.

The Sustainment Principles

How can the sustainment principles be useful for issuing guidance? The first step is to understand the principles. Figure 1 on page 68 provides the doctrinal description of the principles from ADP 4-0. The definitions presented are from the publication; however, we present them in a different sequence so that they follow the mnemonic that we have introduced.

Anticipation. Anticipation is the ability to foresee operational requirements and initiate actions that satisfy a response without waiting for an operation order or fragmentary order. Sustainment commanders and staffs visualize future operations, identify required support, and start the process of acquiring and providing the sustainment that best supports the operation.

Try to act, not react. For example, anticipate that air assault Soldiers will need contingency truck transportation in the event aircraft cannot fly. Anticipate that dismounted Soldiers will be tired of walking after completing the mission and will need vehicles to return them to their tactical assembly areas.

Sustainment planners who anticipate requirements before maneuver task force commanders ask for them and posture vehicles and drivers ahead of time are more successful. If there is no "pull" from the supported units, anticipate the requirements and "push" them.

Tactical unit S-4s should have a book, reference, or tool with planning factors for sustaining their types of unit. The planning factors should include vehicle consumptions rates, ammunition basic loads, and water consumption rates by environment type.

Continuity. Continuity is providing uninterrupted sustainment across all levels of war. It is achieved through a system of integrated and focused networks that sustainment to support capabilities and operations across all levels of war. Continuity ensures confidence in sustainment, which allows commanders to have freedom of action, operational reach, and prolonged endurance.

At the tactical level, continuity relates to having a battle rhythm for resupply that is based on synchronized and timely commodity distribution. It is the ability to deliver the right quantity of supplies and services at the right time and place.

Continuity involves physical distribution networks, systems, and data communications; it uses interchangeable and modular exchange distribution assets such as flat racks. Continuity's goal is to reduce distribution cycle times and provide required materiel at the right time.

Responsiveness. The ability to react to changing requirements in order to maintain support is responsiveness. Through responsive sustainment, commanders maintain operational focus and pressure, set the tempo of friendly operations to prevent exhaustion, replace ineffective units, and extend operational reach.

The ability to monitor and manage end-to-end sustainment activities is fundamental to reducing friction in a logistics pipeline. A practiced and enforced logistics status (LOGSTAT) reporting process is instrumental to

this. Combat training center observer-coach/trainers have witnessed that preformatted Joint Capabilities Release LOGSTAT reports work very well for this purpose.

Integration. Integration is combining all the elements of sustainment (tasks, functions, systems, processes, and organizations) with operations to ensure unity of command and unity of effort. Army forces integrate sustainment with joint forces and multinational operations to maximize the complementary and reinforcing effects of each service and national resource.

At the tactical level, this includes integrating enabler units into the sustainment plan to ensure they are supported and being clear on who is integrating attached units into their support plans and how to report plans during task organization and boundary changes.

Simplicity. The processes and procedures that minimize the complexity of sustainment provide simplicity. Clear tasks, standardized and interoperable procedures, and clearly defined command relationships contribute to simplicity.

To keep sustainment simple, use an easy-to-produce support matrix that focuses on who gets what (key commodities and amounts), when, where, and how (supply point, unit distribution, throughput, logistics release point, or forward logistics element). Clear standard operating procedures and a routinely published matrix greatly assist in keeping sustainment simple because they provide a way for everyone to know what to expect.

Improvisation. The ability to adapt sustainment operations to unexpected situations or circumstances is improvisation. It includes creating, arranging, or fabricating what is needed from what is available.

The sustainment commander must apply operational art to visualize complex operations and understand what is possible at the tactical level. These skills enable commanders to improvise operational and tactical actions when enemy actions or unexpected events disrupt sustainment.

Survivability. Joint Publication 3-34, Joint Engineer Operations, states that survivability includes all aspects of protecting personnel, weapons, and supplies while simultaneously deceiving the enemy. Survivability permits forces to avoid or withstand hostile actions or environmental conditions while retaining the ability to fulfill their primary mission. Commanders often must rely on redundant sustainment capabilities and alternate support plans in order to mitigate risks and minimize disruptions to sustainment.

Economy. Economy is providing sustainment resources in an efficient manner to enable a commander to employ all assets to achieve the greatest effect possible. It is achieved through efficient management and discipline, prioritizing and allocating resources, and capitalizing on joint interdependencies. It can also be achieved by using contracted support and host-nation resources to reduce or eliminate the use of military resources.

Practical Use of the Principles

While perhaps helpful in the aggregate, some of the principles are paradoxical. For example, is it necessary to improvise if requirements are properly anticipated?

We want sustainment forces to be responsive, but the ability to respond quickly likely requires proximity to supported forces, which may affect survivability. We want support to be integrated into the brigade combat team's scheme of maneuver, but in the offense, that means moving support areas, which affects continuity in the support plan.

With those considerations as background, how does one use the principles of sustainment in a helpful manner? Rather than using them as mission statement buzzwords, commanders and staffs should use them to describe how they want to position

The Sustainment Principles
"A CRISIS Exists"

Anticipation	Foresee requirements and proactively take action without an operation order.
Continuity	Have a resupply battle rhythm based on synchronized and timely commodity distribution.
Responsiveness	React to changing requirements and respond to meet the needs.
Integration	Combine all operations of sustainment with operations for unity of command and effort.
Simplicity	Reduce the complexity of sustainment through clarity of tasks and standardized procedures.
Improvisation	Adapt sustainment operations to unexpected situations.
Survivability	Protect personnel, weapons, and supplies while deceiving the enemy.
Economy	Provide resources in a manner that employs all assets to achieve the greatest effect possible.

The observation at the National Training Center is that tactical-level commanders do not use the principles effectively. Using "A CRISIS Exists" helps the planner and commander remember all of the Army sustainment principles, which they can then consider using to provide guidance for planning and operations.

Figure 1. The mnemonic "A CRISIS Exists" can be used to remember the sustainment principles found in Army Doctrine Publication 4-0, Sustainment.

assets, sustain forces, and accept risk. Here are some practical examples.

Anticipation. When units have enough time to thoroughly plan an operation, they can anticipate requirements through detailed coordination and well-developed logistics estimates. If communications are disrupted during execution and LOGSTATs are not received, sustainers will not wait. They will push supplies forward after estimating what units need based on time and operational tempo.

Commanders should be willing to assume risk in economy and push supplies to supported units early in an operation without being asked to do so. Building two types of prepared packages based on historical averages and having "speed balls" (prepackaged mission configured loads) of water and ammunition on standby and ready to go within 30 minutes are two ways of anticipating requirements. Units may also anticipate seasonal class IX (repair parts) surges like batteries in cold weather or additional ice and water in hot weather.

Continuity. Being thoroughly involved in the supported force's planning process, positioning liaison noncommissioned officers forward, and ensuring robust communications and reports will help sustainers maintain continuity with supported forces. Coordinating for throughput and employing a forward logistics element when the unit is on the move will ensure that support capability is in place while other elements are moving.

Practiced primary, alternate, contingency, and emergency communication plans are essential to continuity. Cross-training within sections and platoons can also improve continuity for high-tempo and 24-hour operations.

Responsiveness. In order to be responsive during an operation, the BSB should position support areas far forward, keep supplies uploaded, and ensure units are ready to move quickly. To do this, the commander must accept risks to survivability and economy.

Integration. In a high-tempo offensive operation, a BSB may integrate its capabilities into forward units by reinforcing the forward support companies with additional fuel and ammunition assets. The BSB should plan to recover these assets once supplies are consumed by forward units. It can then transition to a more traditional sustainment approach that employs supply point and unit distribution.

Another example of integration is placing sustainment planners on the brigade staff (and with forward units) to assist with planning.

Simplicity. When a BSB does not have much experience supporting the entire brigade in the field, it could initially keep things simple by primarily using supply point distribution from the BSA. It can then progress toward executing logistics release point operations, especially for far-forward or widely dispersed units.

Another example of employing simplicity is operating from a single LSA rather than as base clusters when a unit has not worked closely with its subordinate companies in a newly task-organized combat sustainment support battalion.

Improvisation. Improvisation is used to fill a capability gap. Sustainers should identify the requirement, the capabilities, the gap, and then figure out how to make up the difference.

Early in an unexpected deployment, a unit has not had the time to plan thoroughly. The commander's intent should encourage sustainers in the torch and advance parties to be creative until the rest of the force arrives. This improvisation may include contracted and host-nation support or the creation of a logistics task force made up of pooled resources from multiple units until more cohesive forces arrive. The commander should underwrite risks that sustainers take to make things happen.

Survivability. Survivability can be used to describe acceptable risk. For example, the BSB commander may state that he wants equipment in the support area (or base clusters) widely dispersed in order to mitigate an artillery threat that could significantly affect the BSB's ability to provide support. Alternately, he may want the formation positioned closely together to better secure a perimeter. Priority in preparation should be placed on conducting convoy battle drills and rehearsing increased perimeter security and casualty evacuation.

Economy. Once a BSB has a robust reporting structure, it can rely on units pulling resources based on their LOGSTATs. Before sending assets forward, the BSB should still confirm requirements during logistics synchronization meetings.

Ensuring discipline in trans-loading fuel and water assets minimizes the assets on the road and provides economy; put one full tanker on the road rather than three that have a third of their load.

While this article provides some specific examples of how to use the principles of sustainment, our broader point is that commanders and staffs should make the principles useful to subordinates and planners. Make sure that their inclusion in a mission statement and commander's intent means something, and describe what that meaning is if it is not clear during subordinates' confirmation and back briefs.

Having a mnemonic for the eight sustainment principles and some ideas about how to use them more descriptively in guidance will increase the S-3s' ability to make the principles meaningful to the operations process. By using "A CRISIS Exists," you can do the same.

Mark Solseth is a retired colonel and the BSB sustainment coach at the NTC's Leadership Training Program. He holds a master's degree from the Advanced Operational Arts Studies Fellowship.

Col. Brent Coryell is the military deputy commander of the Defense Logistics Agency Pacific. He co-authored this article while he was the senior logistics trainer at NTC. He holds a master's degree in logistics management from the Florida Institute of Technology.

Soldiers of the 16th Sustainment Brigade and 173rd Brigade Support Battalion, 173rd Airborne Brigade, pull out a tow cable while conducting vehicle recovery training during exercise Saber Junction 2016 at the Joint Multinational Readiness Center in Hohenfels, Germany, on April 5, 2016. (Photo by Pfc. Randy Wren)

Support Rehearsals Are Critical for Maneuver Commanders

To understand logistics capabilities and plans, maneuver commanders and their staffs need to schedule, attend, and provide feedback during support rehearsals.

■ By Capt. Chad P. Scott

Logistics plays a vital role in the outcome of battle. Therefore, it is imperative that maneuver commanders at all echelons understand the logistics capabilities of not only their own units but also the units below and above them. They should also pay close attention to multinational logistics assets.

Commanders need to understand how logistics operations will nest with the scheme of maneuver in order to sustain the fight across the battlefield.

This understanding is becoming even more critical as the Army moves from conducting logistically simple counterinsurgency operations to preparing for near-peer engagements that may require sustaining forced-entry operations across long, undeveloped supply lines.

Logistics Is Changing

Logistics planning became nearly routine over the past 15 years. Outside of attacks on logistics convoys or problems with contracts, supplies generally arrived on time and at the correct locations. This was because of

the many logistically robust forward operating bases that dotted Iraq and Afghanistan. Large logistics hubs in Kuwait supported these bases with relatively uninterrupted supply lines.

If that were not enough, logistics contractors were available to fill any shortfalls. This allowed maneuver commanders to nearly shut themselves off from sustainment planning and leave it completely to the S-4, the support operations officer, and sustainment battalions and brigades.

The future battlefield will not provide such logistics luxuries. Supply trains will once again be critical to war in the future, so it is best to develop the muscle memory of logistics planning now.

What Are Support Rehearsals?

To understand what logistics capabilities are available, maneuver commanders and their staffs at all levels need to schedule, attend, and provide feedback during support rehearsals. Field Manual 6-0, Commander and Staff Organization and Operations, says, "The support rehearsal helps synchronize each warfighting function with the overall operation …. Throughout preparation, units conduct support rehearsals within the framework of a single or limited number of warfighting functions. These rehearsals typically involve coordination and procedure drills for aviation, fires, engineer support, or casualty evacuation."

The support rehearsal ensures sustainment efforts are harmonized within the brigade combat team and ensures that the sustainment plan supports the commander's intent. A support rehearsal is the one event in which all parties involved have input in synchronizing all elements of the logistics system to deliver the right supplies to the right place at the right time.

At a minimum, units need to conduct the brigade-level support rehearsal with the brigade commander present. However, battalions are also encouraged to conduct a support rehearsal since maneuver battalions now have their own integrated logistics units in the form of forward support companies (FSCs).

Why Do We Need Them?

At the Joint Multinational Readiness Center (JMRC) in Hohenfels, Germany, observer-coach/trainers consistently see units forgo support rehearsals, which tends to place units in a reactionary, rather than anticipatory, stance. When logistics is reactionary, emergency resupply requests may be denied or not arrive on time because of the challenges a linear battlefield presents. During forced-entry operations, supplies take days, rather than hours, to travel from units at echelons above brigade to the forward line of troops.

Often, units treat the support rehearsal as a concept of support back briefing, which it is not. A concept of support back briefing is an overview of logistics support capabilities, but a support rehearsal, much like a combined arms rehearsal, allows Soldiers and leaders to build a mental picture of the sequence of key events within the operation, such as triggers and phase changes. The support rehearsal is the opportunity to identify friction points between the logistics operation and the maneuver operation.

A unit's failure to conduct a support rehearsal while training at the JMRC has resulted in consequences that would have been devastating during actual combat. In one case, logistics elements moved in front of a firing battery's guns during preplanned fire missions supporting a brigade's main effort in an offensive operation.

On other occasions, armor companies ran out of bulk fuel, field artillery batteries ran out of ammunition, special operations forces teams were unable to acquire subsistence, and multinational units did not have adequate fueling capabilities. These situations have the potential to turn the tide of battle in the enemy's favor.

Simply relying on the concept of support to coordinate logistics operations is a disaster waiting to happen. Time and again, even the most solid concepts of support fail to account for basic problems such as enemy activity, the weather, or even changes in the mission. Often, concept of support plans occur in a bubble with little influence other than the operation order.

The support rehearsal allows leaders to see the combined picture and make real-time decisions to shape logistics to be in harmony with maneuver plans rather than in reaction to changes in the fight.

Battlefields are fluid, and logistics should be as well. The support rehearsal allows leaders to see the combined picture and make real-time decisions to shape logistics to be in harmony with maneuver plans rather than in reaction to changes in the fight. Even when units follow the concept of support very closely, changes can unnecessarily place Soldiers and equipment on the road and in harm's way because of a lack of prior planning with sustainment units.

Often at JMRC, supply missions bring the wrong commodities to adequately support the fight. This problem begins because of a lack of coordination among the combat sustainment support battalion, the brigade support battalion, the FSC, and the supported maneuver battalion. The support rehearsal can prevent confusion by identifying contingency plans or, at

the very least, by keeping sustainment on the maneuver commander's mind.

How Do We Use Them?

In a brigade, the brigade support battalion commander and brigade support operations officer host the support rehearsal. In a battalion, the S-4 and FSC commander host the support rehearsal. The support rehearsal should confirm Annex F (Sustainment) of the brigade or battalion operation order and the finalized logistics synchronization matrix.

The support rehearsal settles the sustainment questions of who, what, when, where, and how. The rehearsal drives future decisions and triggers changes in logistics requirements.

Some of the most valuable inputs into the support rehearsal come from the unique perspectives of the maneuver units and enablers. Their participation ensures a general understanding of how to sustain operations and aids in developing backup plans. For instance, the surgeon provides the locations of medical assets and casualty collection points, prescribes evacuation procedures, and offers mass casualty plans. All of this knowledge contributes to the commander's decision-making process.

Units must answer these questions at the support rehearsal:

- ☐ What is the current logistics status at each echelon?
- ☐ What are the combat power challenges affecting units?
- ☐ What resupply activities are ongoing from echelons-above-brigade logistics formations?
- ☐ What is the priority of support?
- ☐ What is the priority of maintenance, and does it support the main effort?
- ☐ What is the priority of supply?
- ☐ What is the priority of retrograde movement concerning equipment, medical assets, and so forth?
- ☐ When will units require resupply, and what are the trigger points for resupply?
- ☐ What is the plan for a mass casualty event?

A 16th Sustainment Brigade Soldier disconnects tow chains from pulley system during exercise Saber Junction 16 at the Joint Multinational Readiness Center in Hohenfels, Germany, on April 5, 2016. (Photo by Pfc. Randy Wren)

Without proper logistics planning and synchronization across all commands, battles will be lost. Logisticians and commanders can no longer afford to operate independently under an umbrella of a singular commander's guidance. Logistics is too complex for such a narrow treatment.

Therefore, each unit should integrate the support rehearsal into its military decisionmaking process timeline and establish standard operating procedures. A good practice is to conduct the support rehearsal right after the combined arms rehearsal because the scheme of maneuver will be fresh in the minds of those involved. All participants will already be present, and they can use the same maps or sand table.

At the very least, conducting the support rehearsal minimizes logistics friction points and provides the commander with the confidence that his or her ground tactical plan is supportable.

Capt. Chad P. Scott is the S-3 logistics planner at the JMRC. He has a bachelor's degree in anthropology from New Mexico Highlands University and an MBA from the University of Maryland University College. He is a graduate of the Combined Logistics Captains Career Course, Support Operations Course Phase II, and Operational Contract Support Course.

Brig. Gen. David Elwell, commanding general of the 311th Sustainment Command (Expeditionary), speaks to his staff during the Command Post Exercise–Functional at Camp Parks, Calif., on Sept. 20, 2015. The exercise used a closed computer network to simulate the operation of a command post within a simulated theater of operation. Simulations like this are provided through the Simulation Training Center at Fort Lee, Va. (Photo by Maj. Gregg Moore)

The Simulation Training Center: Contributing to Army Readiness

A collection of organizations located in the Simulation Training Center at Fort Lee provides training and simulation tools that improve the readiness of sustainment units.

■ By Capt. Liliana Tolliver

For the Army to remain the most elite fighting force in the world, it must continually make changes and advancements to its tactics, processes, and technologies. For this reason, the Simulation Training Center (STC) at Fort Lee, Virginia, offers a training capability that is available to Army forces worldwide.

The STC provides individual and collective training and simulations. The Army uses the center to assess sustainment doctrine, validate logistics systems, and develop simulation-driven training for digital systems. To accomplish these missions, the STC has five departments:

- ☐ The Sustainment Knowledge Management–Process Improvement (KM–PI) Office.
- ☐ The Command Post Exercise–Functional (CPX–F) Branch.
- ☐ The Logistics Exercise and Simulation Directorate (LESD).
- ☐ The Deployment and Distribution Training and Simulation Center (DDTSC).
- ☐ The Experimentation and Analysis Branch.

The KM–PI Office

The KM–PI Office is a special

staff element that reports directly to the Combined Arms Support Command (CASCOM) deputy chief of staff and is led by the chief knowledge officer. The office comprises an operations branch and a technology branch. Core competencies include knowledge management (KM) services, process improvement services, data and content management, performance management, and KM–PI training and education.

LESD is a component of the National Simulation Center at Fort Leavenworth, Kansas. Being co-located with CASCOM at Fort Lee allows LESD to coordinate simulation support for the Army sustainment community.

The KM–PI Office's mission is to develop and implement Department of Defense, joint, Army, and Training and Doctrine Command (TRADOC) enterprise KM–PI and collaboration policies, practices, and technologies within CASCOM, the Sustainment Center of Excellence, and the Army sustainment community. The office provides services to CASCOM, Transportation School units at Fort Eustis, Virginia, and to sustainment-related schools at Fort Lee.

Day-to-day activities include updating and maintaining SustainNet (a logistics forum in milSuite) to ensure questions are being addressed and answered by the appropriate subject matter experts and facilitating the CASCOM SharePoint, which is accessible to all staffs and schools at Fort Lee. The KM–PI Office also conducts daily checks and updates to ensure information is accurate and relevant within the Sustainment Knowledge Network.

The KM–PI Office provides user- and owner-level SharePoint training, conducts KM briefings, and provides tactical standard operating procedures and program of instruction briefings for the Army basic instructor courses for the Quartermaster and Ordnance Schools.

Organizations pursuing process improvements seek out the help of the KM–PI Office; however, in most cases, the office offers its services when it notices a flaw in the flow of information or in a process. For process improvements, the organization assesses units' needs and identifies and designs KM solutions. It then develops, builds, tests, validates, and integrates the KM solutions. These KM solutions help many units cut down on man-hours.

The office contributes to Army readiness by giving units and commanders the tools to perform their jobs. It takes individuals' tacit knowledge (internal) and makes it explicit (external) knowledge to share throughout the Army.

The KM–PI Office manages the Sustainment Warfighting Forum and CASCOM's various knowledge centers (for the Ordnance, Quartermaster, and Transportation Schools, the Army Logistics University, the Army Materiel Command's Logistics Support Activity, and the Soldier Support Institute). Its staff also conducts online collaboration and video broadcasts of reverse collection and analysis team (R–CAAT) briefings, Sustainment Connects (quarterly interactive sessions about the sustainment community's hot topics and initiatives), and other events to ensure important information and lessons learned are made available to Soldiers and units expeditiously.

The CPX–F Branch

The CPX–F Branch enhances units' operational readiness by leveraging institutional capabilities to support home-station training for unified land operations. The branch develops and maintains CPX–F training support packages, identifies training gaps and institutional training resources to fix those gaps, and informs the total Army force of available resources.

The CPX–F Branch conducts constructive, simulated, realistic training events to train support operations (SPO) staffs on sustainment warfighting function requirements. The training focuses on sustainment-centric collective tasks, such as conducting the military decisionmaking process, producing concepts of support, logistics status reports, logistics common operational pictures, and logistics synchronization matrices, and coordinating distribution operations.

A CPX–F event shows unit leaders that their existing battle rhythms and event processes are trained, refined, and streamlined, which allows them to focus on preparing and providing support to a corps or division for a warfighter exercise (WFX) or combat training center rotation.

LESD

LESD is a component of the National Simulation Center at Fort Leavenworth, Kansas. Being co-located with CASCOM at Fort Lee allows LESD to coordinate simulation support for the Army sustainment community. LESD provides sustainment mission command simulation exercise support for military operations, mission rehearsals, and training exercises, while giving the Mission Command Training Program (MCTP) priority.

LESD is the capabilities integrator and worldwide provider of sustainment mission command training exercises. It provides exercise support for the institutional and operational Army to assist commanders in preparing Soldiers

to successfully execute their sustainment missions.

LESD advises CASCOM on the use of training technologies to execute the sustainment collective training mission. As the user representative for sustainment constructive simulations, LESD assists the Program Executive Office for Simulation, Training and Instrumentation in integrating the constructive sustainment model into the Joint Land Component Constructive Training Capability (JLCCTC).

LESD includes officers, warrant officers, senior noncommissioned officers, Department of the Army civilians, and contractors. All are subject matter experts in sustainment simulation operations. The directorate is composed of three divisions: Futures Simulation, Simulation Support, and Exercise Support. LESD is the Army's leading provider of sustainment simulation training and a key contributor to building and maintaining readiness in a complex world.

Futures. The Futures Simulation Division is a capabilities integrator and the user representative for sustainment constructive simulations. The organization orchestrates the capabilities development efforts of the other LESD divisions and leads the capabilities development process. Additionally, the division provides testing and reviews documentation for development efforts and fielded capabilities.

The Futures Simulation Division has three branches: the Capabilities Integration Branch, the Field Support and Army Reserve Planning Branch, and the Database Branch. The Capabilities Integration Branch leads the division's capabilities integration effort in coordination with the TRADOC Capability Manager (TCM) Constructive, TCM Live Virtual Constructive, TCM Integrated Training Environment, and TCM Gaming.

The Field Support and Army Reserve Planning Branch interfaces with reserve component units and the MCTP for the collection of exercise simulation training objectives. It also provides reserve component units with simulation architecture development. This branch also provides testing support to the Capabilities Integration Branch and manages Joint Deployment Logistics Model (JDLM) problem ticket reports.

The Database Branch designs, develops, implements, modifies, and manages exercise design and databases. Its staff researches current doctrine, missions, tactics, techniques, procedures, organizations, and equipment characteristics to ensure the exercise databases accurately depict units for simulations.

Simulation support. The Simulation Support Division delivers technical support for the JDLM to support exercise execution. It provides JLCCTC model interface testing, JDLM functional testing, and software troubleshooting. It also assists in requirements development for testing future software versions.

The division provides technical support for exercises, manages Simulation Modeling and Training Networks and the Department of Defense Information Assurance Risk Management Framework, and supports wide and local area networks, including the Global Simulation Network, permanent circuits to Korea, and the National Simulation Center's network.

Exercise support. The Exercise Support Division (EXD) plans and supports JDLM-based sustainment constructive simulation exercises

The Simulation Training Center, located with the Army Logistics University at Fort Lee, Va., offers individual and collective training and simulations to Army forces worldwide.

to prepare multicomponent staffs at Army service component commands, corps, divisions, theater and expeditionary sustainment commands, and sustainment brigades for their wartime missions. It also supports home-station training, MCTP events, WFXs, and Republic of Korea theater-level exercises.

The division supports active, National Guard, and Army Reserve organizations. As the principal agent for on-site support to the warfighter, EXD supported more than 21 brigade- through theater-level simulation exercises in 2017. This included many exercises for active duty divisions, including the 1st Infantry Division, 10th Mountain Division, 82nd Airborne Division, and 101st Airborne Division.

EXD is also the principal agent for the integration of joint sustainment players into large-scale multiservice exercises, MCTP events, WFXs, and Logistics Federation standalone exercises. EXD personnel analyze, evaluate, and depict logistics operational concepts and techniques within exercise frameworks. They also analyze the procedures, methods, and processes involved in logistics concepts being considered for use and the concepts' responsiveness to the needs of the combat forces.

EXD teams regularly travel to exercise locations and attend planning conferences to help units identify desired training objectives. They supervise the development of sustainment functional areas and their incorporation into interactive computerized training models. They also train units on how to use the models.

EXD provides unique opportunities to train a combatant commanders' staffs to successfully perform their wartime missions in a high-stress simulation-supported exercise. The division directly contributes to the training and readiness of sustainment commanders, staffs, and Soldiers by providing exercise support to deploying and forward deployed units for culminating training events.

DDTSC

DDTSC provides realistic individual training on the current doctrine, processes, and systems involved in the deployment, projection, and sustainment of forces around the world. The organization conducts deployment, movement control, and distribution training exercises in support of the Army Transportation School's officer, mobility warrant officer, and noncommissioned officer programs of instruction.

DDTSC is an extension of the Army Logistics University and its curricula. The center trains Transportation Basic Officer Leader Course and Logistics Captain's Career Course students in preparation for their capstone exercises. The exercises are a series of scenario-based vignettes in which students must meet deployment requirements when developing a plan for the deployment of forces.

Deployment is a vital part of the Army. Having trained officers who arrive at their duty assignments properly trained and ready to execute their mission greatly contributes to unit readiness.

Experimentation and Analysis

The Experimentation and Analysis Branch leads sustainment experiments and participates in wargames. The branch uses the Battle Lab Collaborative Simulation Environment for both live and constructive simulation experiments in order to find problems and recommend changes to doctrine, organization, training, materiel, leadership and education, personnel, and facilities.

The Experimentation and Analysis Branch uses logistics-focused exercises and simulations to test the future logistics force of 2025 and beyond. It supports concepts of development and experimentation for TRADOC battle labs throughout the sustainment community. The experiments not only validate future concepts and new ideas but also drive science and technology research.

The branch's recent experiments have focused on these topics:

- ☐ Preparing for a near-peer threat in 2030.
- ☐ Logistics operations in the future.
- ☐ Making logistics units semi-independent.
- ☐ What seven days of supply looks like in a brigade combat team.
- ☐ Reducing commodities, increasing effectiveness, and driving science and technology.

The Experimentation and Analysis Branch collaborates with the maneuver battle lab, and it is also works with all of the Army's centers of excellence. The branch has an operations research/systems analyst who collects data, forms threads or like themes, searches for observations made by others, notes discrepancies, and sends findings to the capability needs assessment staff, which looks for and identifies gaps. The Experimentation and Analysis Branch helps shape the Army's future forces, and its scenario-based experiments help drive science and technology advances, which improve Army readiness.

The STC contributes to the training and readiness of the current and future logistics forces. The center's capabilities and access to information and subject matter experts are available to all sustainment forces worldwide. Find out more about these organizations and how they can enhance your unit's individual and collective training. Contact the CASCOM G-3/5/7 and the LESD for additional information.

Capt. Liliana Tolliver is a simulations technician in the LESD at Fort Lee. She holds a bachelor's degree in management from the University of Phoenix, and she is a graduate of the Army Officer Candidate School, Support Operations Course, Operational Contracting Course, Simulations Operations Course, Combined Logistics Captains Career Course, Airload Planners Course, and Unit Movement Officer Course.

Soldiers training in Operation Cold Steel II are issued training and cold-weather equipment at the logistics readiness center central issue facility at Fort McCoy, Wis., on Feb. 27, 2018. (Photo by Scott T. Sturkol)

Help Is Here: How to Change Equipment Authorizations

Leaders who recognize problems with their equipment authorizations can implement changes to improve readiness.

■ By James L. Kennedy Jr.

In Korea, a captain is conducting her incoming change of command inventory. As she counts a section's equipment, she asks her platoon sergeant about the purpose of one item. The platoon sergeant replies, "Ma'am, that item is outdated, so we never use it. We just keep it in a box in the storage cage."

The supply sergeant informs her that the item is authorized on the modified table of organization and equipment (MTOE), so they cannot turn it in. The captain wonders how she can get rid of this item since it has no purpose in their day-to-day operations and training and may not be needed even in wartime operations.

Meanwhile, a battalion S-3 is observing company-level training during an exercise in Poland. He asks one of the platoon sergeants for his thoughts on the training. The platoon sergeant states that he could better accomplish the mission if he had a certain piece of equipment that he used in his last unit.

These situations have been repeated in motor pools and units around the world for many years. The Soldiers were both asking the same question: How can I change my organization's equipment authorizations?

The Army has several top-driven methods that it can use to change table of distribution and allowances (TDA) and table of organization and equipment (TOE) authorizations. However, this article provides information on how leaders can effect changes to their TDAs and TOEs from the bottom up.

Army Processes

The Army uses different processes to change organizational equipment requirements and authorizations. For TDA changes, the Army uses the Department of the Army (DA) Automated 4610-R TDA Equipment Request Tool in the Force Management System Web Site (FMSWeb).

For TOE changes, it uses the force design update process or a DA Form 2028, Recommended Changes to Publications and Blank Forms. (See figure 1.) Organizational equipment changes can also be incorporated in concept plan submissions.

These procedures are governed by Army Regulation 71-32, Force Development and Documentation. The processes are quite simple but have complex effects. While approvals may be timely, solutions can take a long time to complete for even the simplest, seemingly obvious change. Changing Army organizational designs is the responsibility of the centers of excellence (COEs) and branch or functional area proponents of the Training and Doctrine Command (TRADOC).

TDA Units

Generally, each TDA is unique, which makes the change process simpler. To begin the process, the unit submits an equipment change request through the 4610-R TDA Equipment Request Tool in FMSWeb. This tool requires a common access card to log in.

The process and guidance are outlined in the TDA/AUGTDA Unit Equipment Review and Validation Board (ERVB) Policy, which can be obtained through the "4610-R Help Desk" icon in FMSWeb and at unit G-3 or G-8 offices.

The request is then routed through the unit commander for approval. If the requested item is valued at over $1 million, a cost-benefit analysis must accompany the request. The Headquarters, DA (HQDA) Deputy Chief of Staff (DCS) G-3/5/7 Force Management Directorate provides the cost-benefit analysis tool on the ERVB Army Knowledge Online portal at https://www.us.army.mil/suite/community/25969876.

The cost includes the price of the equipment and any associated costs, such as facility improvements and estimated maintenance. The command must budget for any required life cycle costs.

Once the commander approves it, the request takes one of two paths. The first path is for requests that include HQDA-managed line item numbers (LINs) that are reviewed and approved by the ERVB. These are routed electronically to the HQDA DCS G-3/5/7 Force Management Directorate for staffing.

At this point, if it is classified as a tactical wheeled vehicle request, it will go to TRADOC's Tactical Wheeled Vehicle Requirements Management Office for concurrence or non-concurrence. It then proceeds to the resourcing activity, the Army Materiel Command, HQDA DCS G-4, and HQDA DCS G-8 to see if the request can be resourced.

The request then proceeds to the ERVB council of colonels then to the general officer steering committee about two weeks later for final review and approval. It should be noted that hundreds of requests go through this process each month.

Commands are required to have a representative attend all ERVB sessions either in person or remotely to address board member questions or concerns. After each general officer

Category	Process	Submitted To	Authority
TDA items managed by HQDA	DA Form 4610-R in FMSWeb	Command	Equipment Review and Validation Board
TDA items not managed by HQDA	DA Form 4610-R in FMSWeb	Command	Army Force Management Support Agency
TOE	Force design update or DA Form 2028	Proponent or Center of Excellence	HQDA G-3/5/7

Legend

DA: Department of the Army
DA Form 2028: Recommended Changes to Publications and Blank Forms
DA Form 4610-R: Equipment Changes in MTOE/TDA (EGA)
FMSWeb: Force Management System Web Site
HQDA: Headquarters, Department of the Army
TDA: Table of distribution and allowances
TOE: Table of organization and equipment

Figure 1. The Army uses different processes to change equipment requirements and authorizations for table of distribution and allowances units and table of organization and equipment units.

steering committee meeting, a decision memorandum is distributed to submitting commands and the approved decisions are sent to the Army Force Management Support Agency (USAFMSA) to update applicable TDAs.

The TDA update process can take a week to several months based on priority. Arrival of the newly approved equipment is based on priorities and when the item will be issued from the supply source. This process does not apply to augmentation, mobilization, and joint versions of TDAs.

Second TDA Path

The second path for TDA units is used when the approved command request involves LINs that are not HQDA managed, LINs that are deletions, and LINs that need to be transferred from one command to another. These requests proceed electronically to USAFMSA for action and do not go before the HQDA ERVB.

Some requests, if they meet certain criteria, can be approved by the local command with authority. USAFMSA is the approval authority for all equipment transfers. Generally, additions to the TDA for equipment on hand are favorably considered if the justification is sufficient. TDA commands retain the authority to remove any excess or unnecessary items as standalone actions without higher headquarters' approval.

In most cases, the final approval for TDA updates is the ERVB, chaired by the HQDA G-3/5/7 director of force management. This board is held 10 times a year. Each command is reviewed quarterly or semiannually, based on the average number of automated 4610-R requests that it submits each year.

Currently, only the Army National Guard, the Forces Command, TRADOC, and the Army Reserve Command are reviewed each quarter because their submission volume is more than 2,000 per year. All other commands' requests are reviewed by the ERVB semiannually.

The process works well and allows the Army to manage a significant number of requests, but it is not fast. To illustrate the number of submissions processed, as of March 8, 2018, nearly 15,000 requests were submitted for fiscal year 2019 documentation. Success rates for submissions are high as well, considering that during a one-month reporting period last summer, 8,597 TDA requests were submitted, 6,380 were approved (74 percent), and 2,217 were disapproved (26 percent). The February 2018 ERVB approved 75 percent of 556 requests.

According to USAFMSA, requests are most often disapproved because of an insufficient justification narrative or a lack of an Army sourcing solution. One reason that the process takes so much time is the amount of coordination and clarification required when the 4610-R request and property book data do not match. The HQDA staff spends a great deal of time reviewing current unit property records and contacting the unit to clarify the data.

The HQDA G-3/5/7 policy for the ERVB requires these details in the justification:

- ☐ A clear explanation of what new capability is needed and why.
- ☐ A description of any mission changes that made the new capability necessary, including who directed those changes.
- ☐ The reason that the current approved equipment is insufficient to perform the mission.
- ☐ The impact on the mission if the requested equipment is not added.
- ☐ Related training requests.
- ☐ Related maintenance requests.

Units that submit equipment requests should ensure the following:

- ☐ Tracking of the justification has command emphasis. (The justification should be added to quarterly battle rhythm briefs to ensure visibility.)
- ☐ The justification is complete and specific.
- ☐ The funding information is detailed and complete.
- ☐ The request has a general officer or senior executive service memorandum that provides a strategic assessment of the command submission.
- ☐ The quantities match in the request and in unit property books.
- ☐ The points of contact and information are current within FMSWeb and on the request.

To learn more, log into FMSWeb and download the how-to guide presentation. It details the functions available within FMSWeb and instructions to complete equipment transactions. USAFMSA also details the process during a block of instruction in quartermaster warrant officer courses at the Army Logistics University at Fort Lee, Virginia.

MTOE Units

TRADOC Pamphlet 71-20, Concept Development, Capabilities Determination, and Capabilities Integration, explains the process and steps for MTOE changes.

The process begins with an individual developing the justification and submitting it through his or her chain of command to the division G-3 and force management officer for command review. As the request proceeds, a determination is made about whether a doctrinal capability needs to change or a particular item in a particular unit needs to change.

Once reviewed, the request is submitted to the applicable capability's COE. For example, if a change is requested to a transportation unit, the routing would be through the Sustainment COE.

The key to the justification is explaining the capability gap that needs to be overcome, how the suggested addition addresses that gap, and the risks if the recommendation is not approved. The more specific the justification the better; more

details will answer potential questions and reduce roadblocks. If the request is to remove an item, the requesters must explain specifically why the item is not needed and how the mission that once required that piece of equipment is now being accomplished.

The official Army form to submit a change request is the DA Form 2028, but it is not suitable for all recommendations. The commonly used option is to submit the recommendation on a standard memorandum with a specific justification and attachments.

After command approval, the staffed recommendation should be sent to the proponent or the COE's Capabilities Development and Integration Directorate for staffing. Army Regulation 5-22, The Army Force Modernization Proponent System, lists all the proponents and COEs for each branch and functional area.

At this stage, a simple idea requires a complex staffing process because any recommended change to one unit's TOE affects every unit of that type in the Army inventory. TOEs provide the minimum mission-essential wartime requirements and represent the doctrinal organization from which units within the operating force are built.

The COE decides if the change applies to all units of the same standard requirements code or if the change justifies the creation of a variant standard requirements code. The COE develops the force design update (FDU) packet and submits it to the TRADOC Army Capabilities Integration Center (ARCIC).

ARCIC then conducts an Army-wide field staffing of the proposed change and determines whether to establish or reject the new requirement. If the requirement is validated, TRADOC submits the FDU to the HQDA G-3/5/7 for approval.

HQDA then conducts a force integration functional area assessment to ensure the requirement meets goals such as deployability, stationing, funding, and sustainability. This process takes approximately 90 days to complete and ends with a recommendation for approving, deferring, or returning the FDU for revision.

If approved, the changes are submitted to USAFMSA for documentation. Depending on the recommended changes and priority, it can take a year or two to complete the documentation.

Time Considerations

So what makes the process so long? Deliberate process changes are driven by Total Army Analysis and programming budget process timelines. Organizational changes to be implemented in the 2022 to 2026 time frame need to be submitted to HQDA by October 2018.

There are two other options for FDUs. If operational needs dictate, or at the discretion of Army senior leaders, an out-of-cycle FDU may be submitted to handle complex design issues or special issues. An example of this is a study of a new reconnaissance and security strike group that was directed by the chief of staff of the Army.

An FDU junior is a faster process than a regular FDU and can be submitted at any time. It involves minor adjustments to designs that normally do not affect other proponents and do not contain personnel changes.

Feedback from two COEs indicate that most of the inputs for TOE changes come from lessons learned briefings, senior leaders, and feedback from commands. COEs process 20 to 30 FDUs a year, and each takes approximately six to 12 months to process. The COEs receive many ideas, but not all are executable for a variety of reasons.

USAFMSA recommends that units submit change requests through their chains of command to the division G-7 or equivalent. Each request should be assigned a tracking number that can be referenced.

The brigade commander can assist with this process by requesting that the division (or general officer-level command) G-7 post status updates of pending change recommendations on its portal and include updates in the division or corps materiel management reviews for visibility. Without a tracking mechanism and command emphasis, change recommendations will not have the necessary visibility to succeed.

Leaders at all levels should work with their organizations to recommend changes. They should justify their recommendations and lead the change to prepare their units for the future. These processes take time, but individuals should submit changes they believe can improve the organization, even if they will not be in the unit to see them through to completion.

So, for our new commander in Korea and the battalion S-3 in Poland, there is a process to implement their good ideas. It just takes one critical-thinking professional to start the ball rolling. Efforts are ongoing at the HQDA G-3/5/7 and USAFMSA to reduce the time and effort needed to submit, receive, and approve requests from Army commands.

James L. Kennedy Jr. is a retired Army colonel and an assistant professor at the Command and General Staff College campus at Fort Belvoir, Virginia, where he teaches force management and sustainment. He holds a bachelor's degree in chemistry from Presbyterian College, a master's degree in logistics management from the Florida Institute of Technology, and a master's degree military history from the Command and General Staff College. He is pursuing a master of education degree from George Mason University.

The author would like to thank ARCIC, USAFMSA, the Combined Arms Support Command, and HQDA for providing input to this article.

Soldiers from the 3rd Cavalry Regiment at Fort Hood, Texas, use a Maintenance Support Device version 4 prototype to test a Stryker vehicle during an environmental assessment held between July and September 2017. During the assessment, nine prototypes were tested in various weather conditions and environmental elements. (Photo by Daniel Moody)

An Environmental Assessment for Maintenance Support Device Version 4

Three units conducted an environmental assessment and collected important data from exposing Maintenance Support Device version 4 prototypes to multiple weather conditions and environmental elements.

■ By Gary J. Becquet, Adam Henry, and Daniel Moody

The Maintenance Support Device (MSD) is used throughout all levels of maintenance and in every environment as the Army's at-platform automatic test system. The MSD tests and diagnoses highly complex communications, other electronic commodity equipment, missiles, aircraft, and ground vehicles to identify line replaceable unit failures.

Army ground and aviation maintainers use this capability in conjunction with interactive electronic technical manuals to run application software and upload and download mission data or software.

MSD version 4, as part of the integrated family of test equipment, will be the Army's sixth generation of at-platform multipurpose standard automated test equipment. Unlike its predecessors, the MSD version 4 is being developed based on the results from the environmental assessment and will incorporate user requirements into the variants.

MSD History

The integrated family of test equipment program began in the 1980s and is required to modernize every five to seven years. Modernization efforts are accomplished through the incremental

Soldiers from the 11th Armored Cavalry Regiment at Fort Irwin, Calif., receive new equipment training on Maintenance Support Device version 4 prototypes in January 2017. (Photo by Daniel Moody)

acquisition of replacements in order to keep pace with weapons platform updates, changing diagnostic and hardware technology, significant software changes, and growing cyber challenges.

The MSD version 3 supports more than 50 weapon systems and 30 military occupational specialties. The Combined Arms Support Command's (CASCOM's) Materiel Systems Directorate is the Army's capability developer for the MSD. Today, as in the past, developing and fielding a single solution that captures the numerous requirements needed to support a growing number of systems and technologies has challenges.

The greatest challenge is providing a system of equal or greater capability than earlier MSD versions at a lower cost without compromising the technical capability or environmental requirements. The Materiel Systems Directorate is exploring options to overcome the obstacles of the past 15 years, when unique characteristics drove additional requirements and significantly increased the MSD's cost.

These increased costs limited the number of MSD version 3s that the Product Director for Test, Measurement, and Diagnostic Equipment (PD TMDE) could field. This disparity is evident in the high number of much less capable MSD version 2s that remain in Army units today.

MSD Version 4 Prototypes

In June 2016, CASCOM and PD TMDE began developing a plan to conduct an environmental assessment for MSD version 4. The purpose of the assessment was to collect information related to functionality, performance, and ruggedness.

PD TMDE procured nine commercial laptop or tablet prototypes and placed them into three levels of ruggedness: light/non-rugged (MSD version 4L), semi-rugged (MSD version 4S), and fully rugged (MSD version 4R).

While PD TMDE procured the MSD prototypes for the assessment, CASCOM coordinated with the 11th Armored Cavalry Regiment (ACR) at Fort Irwin, California, and the 3rd Cavalry Regiment (CR) at Fort Hood, Texas, for user participation. Additionally, the Army Materiel Systems Analysis Activity (AMSAA) agreed to provide independent data collection and analysis for each assessment.

The Environmental Assessment

The environmental assessment was nine months long. The first phase, conducted with the 11th ACR, consisted of new equipment training with the user participants, prototype inventories, on-system diagnostic testing, data collection, equipment rotation with internal maintenance sections, and a feedback session. The second phase repeated these steps with the 3rd CR. An additional opportunity for assessment by a National Guard maintenance shop presented itself between the two scheduled phases.

Phase I. PD TMDE, CASCOM, and AMSAA provided the new equipment training and diagnostic troubleshooting techniques. During Phase I, the 11th ACR maintenance shop officer agreed to distribute the nine MSD version 4 prototypes equally among the maintenance shops and rotate them every 30 days to ensure the users had opportunities to evaluate each device. Surveys were developed to ensure accurate documentation was captured for each device.

After the prototype evaluations, CASCOM, PD TMDE, and AMSAA closed out the first phase of the assessment. During the first 120 days, the prototypes were exposed to multiple types of elements, including extreme temperature ranges, lubricants, fuel, sand, dust, rain, and mud.

CASCOM, PD TMDE, and AMSAA conducted feedback sessions with the 11th ACR to validate the surveys and collect information on the devices regarding performance and preferences. Maintainers recommended MSD accessory preferences such as batteries, Blu-ray Disc and DVD players, and external computer mice. The devices' ruggedness and ability to withstand drops from tactical systems was a concern.

An additional opportunity. After the 11th ACR finished assessing the devices, the Nevada National Guard Consolidated Support Maintenance Shop (CSMS) volunteered to assess a sample of the prototypes for 30 days while performing maintenance on both tactical wheeled vehicles and tracked platforms. This turned out to be an excellent time for an environmental assessment because the average temperature was 110 degrees.

The Soldiers assigned to the CSMS used the devices during daily maintenance tasks and while conducting their annual drill requirements. The comments collected from the National Guard maintainers were consistent with the 11th ACR maintainers' comments. They both had concerns about the ruggedness of the light version for their operational environment and battery performance at temperatures exceeding 100 degrees.

Phase II. In July 2017, PD TMDE shipped the prototypes to the 3rd CR. The brigade maintenance warrant officer in the regimental support squadron facilitated the internal management and distribution of the devices.

The same assessment plan used during the first phase was used for the 3rd CR in Phase II. The maintenance warrant officer established an equipment rotation plan at the midpoint of the assessment, and AMSAA provided the data collection resources with personnel assigned to Fort Hood.

The participants used each device in both garrison and field environments, which enabled a larger data collection opportunity. The Stryker systems maintainers were reluctant to use the light devices and shared concerns that they would not survive a deployment or even a field exercise.

One Soldier stated that he was concerned the MSD version 4L would not withstand an accidental drop. He was also concerned about setting it on the ground while troubleshooting the system. This concern was based on the ruggedization level, not performance specifications.

The environmental conditions that each device was exposed to with the 3rd CR were consistent with the conditions at Fort Irwin. Soldiers performed maintenance tasks during periods of dusty and sandy wind conditions, sunlight, and rain. The temperatures exceeded 105 degrees on several occasions. The environmental assessment ended in September with a feedback session during which the participants validated the surveys they submitted and had an opportunity to express any additional comments.

Assessment Results

The questionnaires collected by AMSAA with the 11th ACR, the National Guard CSMS, and the 3rd CR were filled out by personnel of more than 10 different maintenance specialties and ranks ranging from private to chief warrant officer 2. The MSD version 4R prototypes were identified as the favorite by the mechanical maintenance users.

The MSD version 4R prototypes successfully met the various maintenance mission tasks and environmental demands during the assessment. Throughout the assessment, maintainers repeatedly noted the ability of the device to display information in direct sunlight and withstand a drop from a weapon system.

The MSD version 4S prototypes met the maintenance mission's tasks, but most of the semi-rugged prototypes experienced functional problems when exposed to temperatures above 105 degrees.

The MSD version 4L prototypes were not preferred by the maintainers because they were not rugged enough. The continual theme throughout the assessment was that the light devices would work only in an office environment or in a shop shelter.

This assessment will serve as a validation resource for CASCOM and PD TMDE. The information collected over the nine-month period will be used to focus on specific areas. Unlike the MSD version 3, which possesses a single line item number (LIN) and basis of issue plan (BOIP), the MSD version 4 has multiple LINs and BOIPs to support the wide spectrum of user requirements. CASCOM will use the assessment results to develop the BOIP for each MSD version 4 LIN.

The maintainers identified some performance attributes that the MSD needs. These attributes include a fully ruggedized device that can withstand an occasional drop, a display that can be read in bright sunlight for diagnostic testing outdoors, and the ability to maintain operational performance during temperatures of at least 110 degrees.

PD TMDE will use the assessment results as a reference resource and will validate user preferences based upon mission requirements. The MSD version 4 variants are scheduled for a contract award in fiscal year 2018. Fielding is scheduled to begin in 2019.

PD TMDE's innovative acquisition approach for the MSD version 4, which thoroughly analyzes user requirements and categorically applies them to multiple LINs, will result in a manageable, funded program that has the potential to provide maintainers with a fully operational capability.

Gary J. Becquet is a retired Army maintenance noncommissioned officer. He is an operations research analyst for AMSAA. He has a bachelor's degree in business management from the University of Maryland and an MBA in technology management from the University of Phoenix.

Adam Henry is an MSD team leader for PD TMDE. He has a bachelor's degree in mechanical engineering from the University of Alabama and a master's degree in management from the Florida Institute of Technology.

Daniel Moody is a retired Army electronic maintenance systems warrant officer. He is a TMDE military analyst and a capability developer at CASCOM. He holds an executive certificate in leadership from the Massachusetts Institute of Technology and bachelor's degree in management studies from the University of Maryland.

Join the Conversation

ARMY SUSTAINMENT

Keith Archibald posted 2 days ago

Enjoying the recent Army Sustainment Magazine content on sustainment's use of unmanned platforms. See Autonomous Aerial Resupply in the Forward Support... , Autonomous aerial resupply systems needed in BCTs and Army Sustainment: The Case Against a Cargo Unmann... . Thanks Julianne Cochran for making this content available. FYSA: SustainNet; Future Unmanned Aircraft; Unmanned Aircraft System PMO; Small Unmanned Aircraft Systems (SUAS)

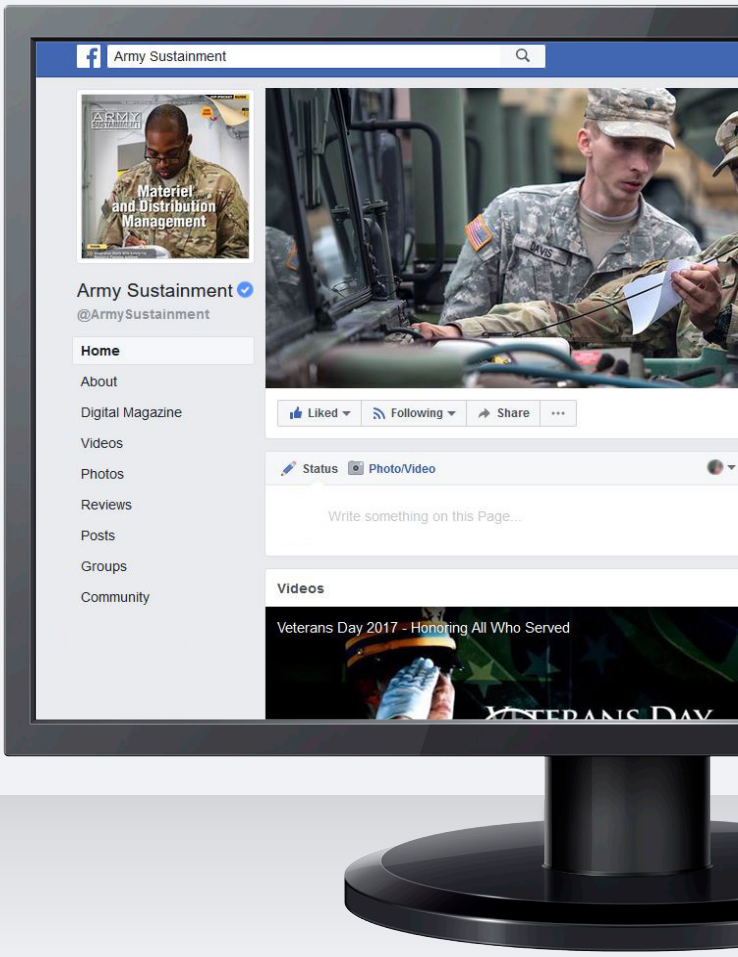
Onetexan_75 @Onetexan_75 · Nov 29
Improvise, respond...

Army Sustainment @ArmySustainment
Heavy equipment vehicles can't just go through the car wash before they are shipped home. That's when #USArmy firefighters step in to help get the mud off these massive tires. Get a quick glimpse below. #ArmySustainment #StrongEurope #KnightsPride

Philip Shouse The U.S.Army mess halls were great on Thanksg rockin' it I see . Army Strong !!
Like · Reply · Message · November 28 at 6:51pm

Ann Caulder Oh my ..that sounds delicious..THANK you..
Like · Reply · Message · November 28 at 7:27pm

Julianne Gallo Yummy menu. Thank you all for your dedication.
Like · Reply · Message · November 28 at 10:32pm

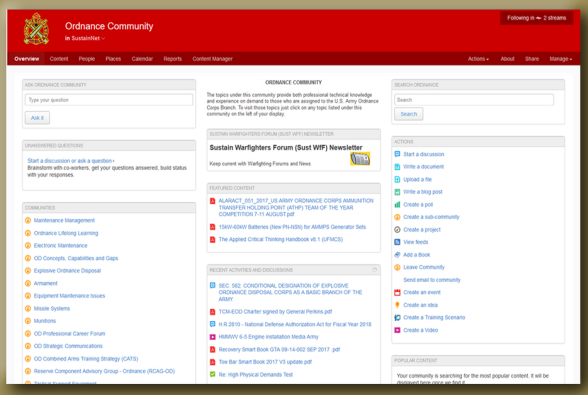


Like. Follow. Share. Connect.

#ArmySustainment



Exchange KNOWLEDGE, LEVERAGE Expertise and Share EXPERIENCES



Come Join the Ordnance Conversation in SustainNet

The Ordnance discussion forum in SustainNet is one of the Army's primary tools for facilitating the exchange of knowledge between Ordnance Soldiers within the generating and operating force. In addition to providing reachback capability, this Army Professional Forum provides sustainment and logistics Soldiers, Department of Defense (DoD) civilians, supporting contractors and other DoD services/agencies with the ability to leverage expertise, share experiences, virtual team, and participate in discussions within several OD Communities of Practice (CoPs).

https://www.milsuite.mil/book/community/spaces/sustainnet/ordnance_community

Ordnance Knowledge Center

The Ordnance Knowledge Center (KC) and portals are platforms for rapidly disseminating and integrating sustainment information and knowledge among Sustainers within the generating and operating force. This KC is an enterprise level "One-Stop-Shop" that will give you access to live video conferencing via Sustainment Knowledge Network-Live, as well as archived conferences for information or training purposes. It was created specifically to address the needs of Sustainers within the OD branch of service. Gain access to logistics and sustainment lessons learned, tools designed specifically to improve the processes of sustainment organizations, and other training resources, to support and enhance the full spectrum of Army operations.

https://www.us.army.mil/suite/page/602124

740 Quarters Road (Building 12408) | Fort Lee, VA 23801-2102 | SCoE.KMO@us.army.mil
SKN: https://www.us.army.mil/suite/page/372426

ISSN 2153-5973
DEPARTMENT OF THE ARMY
ARMY SUSTAINMENT
US ARMY LOGISTICS UNIVERSITY
2401 QUARTERS ROAD
FORT LEE VIRGINIA 23801-1705

Official Business

**PERIODICALS POSTAGE
AND FEES PAID
AT PETERSBURG VIRGINIA
AND ADDITIONAL CITIES**

At the 43rd Annual Joint Culinary Training Exercise (JCTE) on March 16, 2018, the military culinary arts team from Hawaii won Team of the Year for the fourth consecutive year. The JCTE is a weeklong event held at Fort Lee, Va., during which military culinary arts specialists from the United States and coalition partner nations compete. JCTE events are designed to provide competitors with the opportunity to hone their professional skills, improve the quality of their food service, and achieve civilian credentials through the American Culinary Federation. Select competitors who achieve exceptional results during the exercise are also awarded scholarships through Stratford University to help offset the cost to complete a degree program in the culinary arts. Awards were presented by Brig. Gen. Rodney Fogg, 54th Quartermaster General and commandant of the Quartermaster School (far left), lead judge Stafford DeCambra (second from left), and the Quartermaster School's Command Sgt. Maj. Sean Rice (far right). (Photo by Stefanie Antosh)