

MAY-JUNE 2017

ARMY SUSTAINMENT

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SEVEN COMPONENTS
OF LOGISTICS READINESS

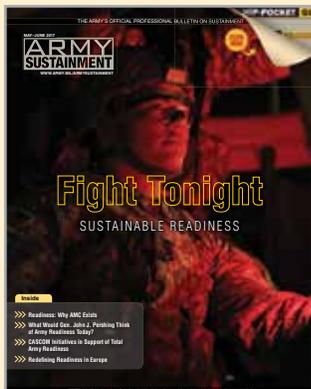
Fight Tonight

SUSTAINABLE READINESS

Inside

- Readiness: Why AMC Exists
- What Would Gen. John J. Pershing Think of Army Readiness Today?
- CASCOM Initiatives in Support of Total Army Readiness
- Redefining Readiness in Europe

ON THE COVER



Sgt. Tyson Howes, 786th Quartermaster Company, stands by with his gunnery crew in their firing order ahead of a night live-fire gunnery at Fort McCoy, Wisconsin, on March 20, 2017. (Photo by Master Sgt. Anthony L. Taylor)

AMC COMMANDER

2 Readiness: Why AMC Exists

Materiel readiness and Sustainable Readiness are the first of six strategic objectives the Army Materiel Command is pursuing to ensure Army readiness.

By Gen. Gustave "Gus" Perna

ARMY G-4

3 What Would Gen. John J. Pershing Think of Army Readiness Today?

Although the name has changed since World War I, readiness is a concept that the Army G-4 believes Gen. John J. Pershing would embrace.

By Lt. Gen. Aundre F. Piggee

FOCUS

5 CASCOM Initiatives in Support of Total Army Readiness

The Combined Arms Support Command's commitment to improving Army readiness is evident through its many initiatives to increase the capabilities of sustainment units.

By Maj. Gen. Darrell K. Williams

FEATURES

16 Redefining Readiness in Europe

U.S. Army Europe is increasing its interoperability and capacity efforts to ensure that its forces are ready to respond to any threat.

By Lt. Gen. Ben Hodges

DEPARTMENTS

COMMENTARY

10 Fog, Friction, and Logistics

By Capt. Philip Lere, U.S. Air Force

13 Moving Forward With Logistics Advising in Afghanistan

By Capt. Ross A. Powers

15 Training Is Déjà Vu; Education Is Vu Jàdé

By Christopher R. Paparone, Ph.D., and George L. Topic Jr.

FEATURES

20 Ready Installations: The Army's Power Projection Platforms

By Lt. Gen. Gwen Bingham

24 Power Projection Readiness: A Historical Perspective

By Maj. Gen. Kurt J. Ryan

28 Visualizing Army Readiness Through the Materiel Common Operating Picture

By Col. John D. Kuenzli and David Martin

32 Army Research and Development Contributions to Readiness

By Maj. Gen. Cedric T. Wins

36 JMC Ensures Munitions Readiness for the Total Force

By Brig. Gen. Richard B. Dix

40 Sustaining Fight Tonight Readiness

By Brig. Gen. John P. Sullivan and David E. Dutcher

"We want to make certain that the Army has sufficient munitions to fight emerging threats, that Army pre-positioned stocks are stored in ready-to-fight configurations, and that depots and arsenals have long-term funding to keep operational lines open."

Lt. Gen. Aundre F. Piggee, p. 3

FEATURES, continued

- 44 Army Pre-Positioned Stocks Support Army Readiness**
By Jacqueline Georlett and Bruce Daasch
- 48 Technology and Army Readiness: An Interview With Retired Gen. Peter Chiarelli**
By Arpi Dilanian and Matthew Howard

OPERATIONS

- 52 The Division Materiel Readiness Center Provides Sustained Readiness**
By Col. Ronald R. Ragin
- 55 Supporting Readiness Through Strategic Sourcing**
By Jerome E. Jastrab
- 56 Sustaining Operation Inherent Resolve**
By Lt. Col. Dean A. Huard

TRAINING & EDUCATION

- 60 The Command and General Staff College Offers a New Theater Sustainment Planners Program**
By Maj. Thomas E. Goyette and Robert M. Bayless
- 62 Training Sustainment Soldiers in the Army Reserve**
By Lt. Col. Ricky J. Janis
- 66 Improving Diagnostics in the Active Component**
By M.C. "Steve" Cherry

TOOLS

- 68 Finding the Right Planning Tools for Defense Support of Civil Authorities**
By Maj. Peter T. Sinclair II and Capt. Eric R. McGinty
- 71 A Breakthrough in Army Watercraft Readiness Reporting**
By Chief Warrant Officer 3 Jason Wade and Chief Warrant Officer 2 Michael Beeman

AWESOME

- 74 The 42nd Military Culinary Arts Competitive Training Event**
Photos by Stefanie Antosh



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Readiness: Why AMC Exists

■ By Gen. Gustave “Gus” Perna



As the Army Materiel Command (AMC) commander and the Army's senior logistician, my number one job is to synchronize and integrate the total capabilities of the vast materiel enterprise in support of the chief of staff of the Army's priorities and combatant commander requirements. My intent is to operationalize the enterprise by focusing the Army's efforts on output to ensure Army materiel readiness.

At the AMC Senior Leader Forum in February, I introduced six strategic objectives: materiel readiness, Sustainable Readiness, force projection, battlefield sustainment, materiel development, and Armywide sustainment. These strategic objectives synchronize Army and AMC priorities and establish AMC's organizational strategy to operationalize the command as the Army's materiel integrator.

In the next few editions of *Army Sustainment*, I will explain and expand on each strategic objective. In alignment with this edition on readiness, the first two objectives are materiel readiness and Sustainable Readiness.

Materiel Readiness

Materiel readiness means providing the right equipment, materiel, and ca-

pabilities to ensure the Army's ability to fight and win. We achieve materiel readiness when combat-ready forces are sustained and equipped to support global requirements through the provisioning of materiel that is synchronized from the strategic level to the tactical level. Materiel management is capabilities-centric, and it requires the life cycle management commands to actively and effectively manage the Army's fleets of equipment.

Strategic initiatives within the materiel readiness objective further define how the Army will achieve its end state. First, we must optimize the supply chain, energizing and focusing the wholesale supply system on critical warfighting fleets. To do this, we will optimize supply availability, working toward having 100 percent of requisitions filled by the required delivery dates. Additionally, maximum use of the Materiel Common Operating Picture will provide predictive readiness for units and commanders.

Second, we will plan and execute redistribution to build equipment on hand and divest and demilitarize excess items to best meet Army needs and requirements. Through fully funded and executed demilitarization, we will reduce required storage space and care of stocks.

Third, the Army must aggressively shape sustainment modified tables of organization and equipment in order to support the requirements of future land forces.

Sustainable Readiness

The Sustainable Readiness objective ensures the readiness of total-force formations through the delivery of required capabilities. Sustainable Readiness is unit and brigade combat team-centric and driven by the Sustainable Readiness Program (SRP) to enable combat power. The

end state is that Army formations are ready to deploy immediately and are postured to meet combatant commanders' requirements.

Key to the Sustainable Readiness objective is ensuring unit equipment is ready to use for Army missions. By providing stable and predictable workloads for the depots, arsenals, and ammunition plants, we ensure a viable organic industrial base (OIB) to meet current and future requirements.

We must decisively link OIB outputs with SRP priorities. Aligning the workload to brigade rotations through the SRP will allow the Army to reset brigade fleets to ensure they are ready when needed, rather than when funding is available for individual types of equipment.

Likewise, the SRP focuses on managing workload to ensure the right work is done to contribute to Army readiness. Optimizing the OIB also includes assessing and scrutinizing the infrastructure and leveraging product-support capabilities.

To achieve materiel readiness and Sustainable Readiness, leaders must enforce standards and discipline, be experts in the Army's processes, and ensure that Soldiers across all formations are trained and equipped to sustain the forces on the battlefield. Across the materiel enterprise, commanders must clearly identify requirements, conduct risk assessments, develop courses of action, and ultimately provide the right output. When this is done, we will be successful at providing materiel readiness for the Army and joint force.

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

What Would Gen. John J. Pershing Think of Army Readiness Today?

Although the name has changed since World War I, readiness is a concept that the Army G-4 believes Gen. John J. Pershing would embrace.

■ By Lt. Gen. Aundre F. Piggee

Media coverage of the 100th anniversary of America's entry into World War I highlighted one of the many reasons Gen. John J. Pershing is so well-respected. He led the nearly impossible transformation of the Army during the first overseas war. In a couple of short years, the Army grew from a 100,000-person ill-prepared military, with no reserves, into an organized force of four million Soldiers who helped the Allies defeat the Central Powers.

I admire Pershing for a personal reason too; he formally established the position that I now hold. After World War I, Pershing became chief of staff of the Army. Having seen how the Army scrambled to equip, clothe, transport, and feed the force, he reorganized the Army staff to look like the wartime headquarters he commanded, making today's Army G-4 position a permanent part of the force.

Pershing and Readiness

Pershing once said, "In each succeeding war there is a tendency to proclaim as something new the principles under which it is conducted But the principles of warfare as I learned them at West Point remain unchanged."

So I have to ask, if Black Jack Pershing were here today, what would he think of Army readiness? For starters, he would see that those principles of warfare have remained

intact. His priority as the chief of staff of the Army was preparedness; today, we call it readiness. Having properly manned, fully equipped, and well-trained units is the foundation of readiness that has not changed.

Sustainment is a key part of readiness, and Pershing would be pleased to know that senior leaders who followed in his footsteps understood that. Gens. Brehon Somervell, George Patton, and George Marshall all stated repeatedly that sustainment must be thought of both early and often. They understood that professional logisticians are the ones who make operational plans suitable, feasible, and executable and set the conditions for success in any combat operation.

Sustainment is not an afterthought. It must be built into plans from the very beginning. Pershing would approve that this mindset is evident in today's operations, from the fight against terrorists in Iraq and Syria to the preparations to conduct a full range of military operations to defeat any future enemy.

But as I sit in the position Pershing created, I know the Army has more work to do. Soldiers know the feeling of receiving the call to war. When the order is given, leaders must never wish that their units had done more to get equipment and Soldiers ready or that they had resourced more time and energy to



"Sustainment is a key part of readiness, and Pershing would be pleased to know that senior leaders who followed in his footsteps understood that."



FORCES COMMAND

SEVEN COMPONENTS OF LOGISTICS READINESS



THE ARMY

MAINTENANCE STANDARD

BASIC ISSUE ITEMS (BII) AND COMPONENTS OF END ITEMS (COEI)	Ensure all authorized BII and COEI are present or on order.
MODIFICATION WORK ORDERS (MWOs)	Ensure all routine, emergency, and urgent MWOs are applied and reported in the Modification Management Information System.
SCHEDULED SERVICES	Perform equipment services within the scheduled service intervals.
HIGHER LEVEL REPAIRS	Corrective actions requiring higher level maintenance are put on a work order.
PARTS AND SUPPLIES	Ensure parts that are not on hand are on valid funded requisition.
REPAIRS AND SERVICES	Complete corrective actions when required parts are on hand.
ALL FAULTS IDENTIFIED	Use technical manual 10/20 checks to identify faults.
FULLY MISSION CAPABLE	If all repairs are complete, the equipment is fully mission capable.

MODULES *THREE DESCRIPTIVE 3-MONTH MODULES ASSOCIATED WITH FISCAL QUARTERS.*

- Align force generation with quarterly training and readiness processes.
- Provide common standards across the Total Army.
- Clearly represent a unit's preparedness for decisive action.
- Synchronize resource decisions and unit activities.

PREPARE MODULE

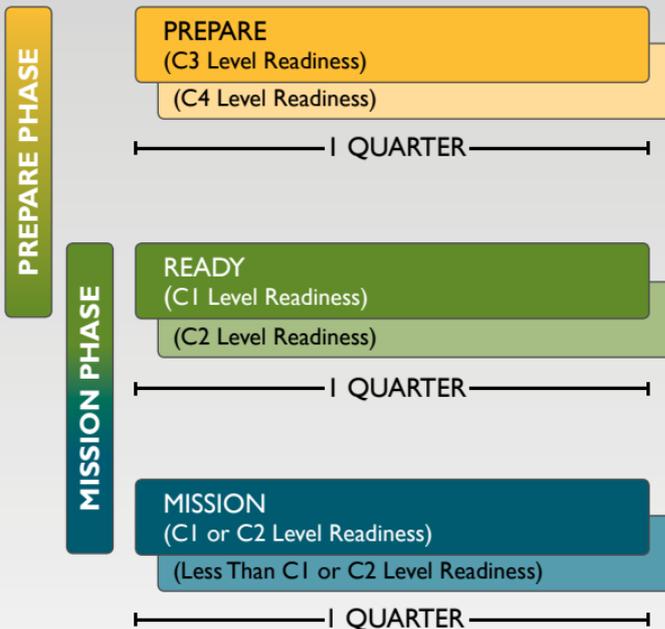
Service retained or assigned units preparing for mission who are C3 or C4 and not executing an ordered mission.

READY MODULE

Service retained or assigned units ready for immediate deployment by sustaining C1 or C2 levels of decisive action readiness (e.g., band of excellence).

MISSION MODULE

Allocated or assigned force demand units with an ordered mission. Units are differentiated by whether or not the mission requires C1 or C2 decisive action readiness.



train particular tasks. Those of us in the Pentagon must do our parts to prepare the Army for those orders.

Building Readiness

Here are some of the challenges we are working on to build readiness for a multidomain battle.

Fight without contracted support. First, during the recent wars in Iraq and Afghanistan, the Army contract-

Over time we have gotten better, but we are not yet in a position to provide the best materiel management to improve or maintain readiness. It is key that we keep improving materiel management by leveraging technology so that we can see ourselves, provide mission command, and have a common operational picture.

Find the next game changer. Third, sustainers have to find the next

pared to deploy in a timely manner. In light of the renewed emphasis on expeditionary operations, the Army is rebalancing its efforts to ensure that it has the required capabilities needed during the early stages of war.

Ensure the right force structure. Fifth, as the Department of Defense strategy changes, leaders are working on future budgets to ensure the Army has the right force structure and that sustainers get the resources to refurbish on hand equipment and to modernize fleets.

We want to make certain that the Army has sufficient munitions to fight emerging threats, that Army pre-positioned stocks are stored in ready-to-fight configurations, and that depots and arsenals have long-term funding to keep operational lines open.

During the past year, we have made good use of taxpayer dollars by redistributing more than 290,000 pieces of equipment to fill shortages. This has resulted in a 15-percent increase in the number of brigade combat teams that have reported having all of their required equipment on hand.

We plan to continue our efforts to increase sustainment training. Of all the things that Pershing would appreciate most, I think it would be the changes that have happened to the home of sustainment training, Fort Lee, Virginia.

Just weeks after President Woodrow Wilson declared war on Germany, the Army opened Camp Lee. The camp trained 60,000 doughboys before they departed for Europe. As we celebrate the 100th anniversary of Fort Lee this summer, we can all be proud of the Sustainment Center of Excellence and its modern training facilities for preparing sustainers for the expeditionary fights of the next 100 years.

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.

We need big ideas that will improve readiness in the near term. It could be a process. It could be an autonomous robot or a remotely controlled convoy to deliver supplies. It could be how we turn in equipment.

ed vast amounts of logistics support. In an expeditionary operation, the Army cannot rely on that ability, so we are ensuring that our sustainers are trained to have the appropriate level of confidence and ability to execute sustainment missions themselves, without contracted support. This means working on the fundamentals and doing those things that we have gotten away from over the past 15 years.

To be successful, we have to develop processes, procedures, techniques, and training at the tactical level. We have to be able to execute routine things routinely, like a basketball player following through on a free throw. An example of this would be conducting preventive maintenance checks and services in garrison in order to do them from muscle memory in combat.

Improve materiel management. Second, we have concerns about materiel management. When the Army restructured sustainment organizations and eliminated the division and corps materiel management centers, it lost critical capabilities to provide materiel management for its warfighters.

game-changing innovation. Global Combat Support System-Army has proven to be a logistics game changer, but it took 20 years to develop and field it. The Army cannot wait another 20 years for the next innovative technology; technology changes in months, not years.

We need big ideas that will improve readiness in the near term. It could be a process. It could be an autonomous robot or a remotely controlled convoy to deliver supplies. It could be how we turn in equipment. It could be an application to complete a transaction or a new way to employ big data.

Proven technologies are out there today, and we need to be creative and bold in our thinking to find, develop, and field them. We cannot expect them to be the be-all and end-all to all of our challenges. But if there are innovations that allow sustainers to do their jobs better in changing environments, we need to employ them.

Prepare the total force. Fourth, readiness requires a total Army force effort. The reserve component makes up 77 percent of the sustainment force and is key to the Army's success. It is absolutely critical that it is pre-

CASCOM Initiatives in Support of Total Army Readiness

■ By Maj. Gen. Darrell K. Williams

The Combined Arms Support Command (CASCOM) and Sustainment Center of Excellence (SCOE) at Fort Lee, Virginia, and Fort Jackson, South Carolina, play a key role in assisting the operational Army in meeting the chief of staff of the Army's imperative of readiness.

The SCOE provides world-class sustainment professionals and leaders to the operational force through professional military education and advanced individual training. It is home to the largest noncommissioned officer academy in the Army, 36 percent of enlisted military occupational specialties, and 40 percent of Army warrant officer specialties. In fiscal year (FY) 2017, SCOE schools will deliver more than 113,000 trained professionals to the force.

Readiness Initiatives Overview

In addition to providing sustainers to the force, the SCOE has several major initiatives that will significantly affect readiness. The Army G-4, CASCOM, and the Quartermaster School are collaborating on innovative education solutions for Global Combat Support System-Army (GCSS-Army). A new 3-D virtual change of command inventory application will further support property accountability efforts.

Transportation readiness efforts include the Deployment Process Modernization Office (DPMO) and proponency activities. DPMO is playing a critical role as the Army places renewed emphasis on expeditionary capabilities. The Unit Movement Officer Game that is being developed will take these lessons and provide them to the field in a

practical toolkit.

The Ordnance School is improving organic maintenance capabilities through the development of three ongoing initiatives: the Maintenance Readiness Playbook, the Direct Recovery Operations (DRO) Application, and the Unit Diagnostics Immersion Program (UDIP).

As the Army transitions its personnel activities to the Integrated Personnel and Pay System-Army (IPPS-A), the Adjutant General School, in coordination with the Army G-1, is developing new training modules to support the transformational leap in business practices that IPPS-A represents.

The Financial Management (FM) School has developed, piloted, and launched in record time an S-8 gunnery training program to support the newly established brigade combat team and sustainment brigade S-8 position.

Each of these specific initiatives will have a direct impact on increasing the organic capabilities of units in the operational force. They demonstrate CASCOM's commitment to improving Army readiness.

Quartermaster Initiatives

As of February 2017, the Army has completed the GCSS-Army Wave 1 fielding and approximately 60-percent of the Wave 2 fielding. In support of the fielding, the CASCOM G-3 has developed an enterprise resource planning (ERP) education strategy. The Quartermaster School's efforts to support the Army's fielding of GCSS-Army align with the CASCOM ERP education strategy.

In 2013, automated logistical spe-



The Combined Arms Support Command's commitment to improving Army readiness is evident through its many initiatives to increase the capabilities of sustainment units.

cialists were the first to transition their training from the Standard Army Retail Supply System to the warehouse module and in 2014 from the Standard Army Maintenance System–Enhanced to the plant maintenance module.

Unit supply specialists transitioned in April 2016, at which time the school trained students on both Property Book Unit Supply Enhanced and GCSS–Army. Since October 2016, the school has focused its education on GCSS–Army. This enables readiness by ensuring all advanced individual training supply Soldiers arrive at their operational assignments trained on and proficient in the latest system.

Soldiers will use the same new equipment training (NET) package the program manager uses during fielding to minimize trouble during the transition from the schoolhouse to operational units.

The CASCOM G-3 modified the training package, added more simulation, and called it NET+. The package provides tutorial assistance and is interactive, which allows Soldiers to simulate transaction processing;

however, the Soldier must select the correct answer in order to continue the transaction.

Additionally, the Quartermaster School uses uPerform, a virtual environment that allows Soldiers to walk through transactions using step-by-step instructions and checklists for key functions and reports. The program bridges the gap from the NET+ package to the live GCSS–Army system.

The school is in the process of training instructors on the GCSS–Army live training database. Once the instructor training is complete, the Quartermaster School and training developers will add practical exercises to the lesson plans. Soldiers will continue to train using the NET+ with simulations (crawl), uPerform (walk), and the GCSS–Army live training database (run).

The school is also building a virtual 3-D change of command property accountability resource designed for company-grade leaders. This product, which will be available in both desktop and mobile versions, will enable leaders to practice conducting a change of command inventory

for an arms room, Soldier individual equipment, and a motor pool. It will also provide a common starting point for change of command inventory stakeholders.

The Quartermaster School, in coordination with the CASCOM staff, is providing Soldiers who are well-trained on GCSS–Army by using great instructors, training developers, and training tools. The school continually updates its training and methods of instruction and seeks best practices to train the world’s best sustainers.

Transportation Initiatives

The Office of the Chief of Transportation and DPMO are the two principal touch points between the SCOE and the field for transportation activities and functional information. These two organizations affect the Army’s ability to project combat power and the long-term readiness of the force.

DPMO, as the Army’s user representative, continually gathers feedback from the field in coordination with the joint planning and execution community. Recent DPMO activities include the following:



Spc. Joseph Opstelten demonstrates to fellow students how to shrink-wrap boxes on a pallet on March 14, 2017, at Fort Lee, Virginia. The demonstration was part of training detailing the procedures for receiving and delivering supplies and equipment to customers from a warehouse location. (Photo by Terrance Bell)

- Capturing lessons learned and best practices in the *Division Transportation Officer and Mobility Officer Newsletter*, the Army's publication for deployment professionals.
- Partnering with the Army G-3 and G-4 and Army service component commands to support and evaluate emergency deployment readiness exercises.
- Working with all stakeholders to monitor current deployment information systems, analyze feedback, and develop solutions to support operational units in the Transportation Coordinators' Automated Information for Movements System II and the Cargo Movement Operations System.
- Acting as the proponent for Army deployment, movement control, and terminal doctrine and assisting CASCOM and the Army G-3 and G-4 in formulating policy.
- Acting as the lead for management and execution of the Deployment Excellence Award program.
- Providing modeling expertise for actual or notional deployments, including for reception, staging, onward movement, and integration.

These DPMO actions help ensure the Army continues to refine its force projection ability, as expeditionary capability and capacity become increasingly important to overall unit readiness.

The Office of the Chief of Transportation is the lead for personnel development. Talent management helps deliver efficiencies to the force. The office is working several efforts in conjunction with the Human Resources Command to ensure the Army and the sustainment community are postured for success.

First, the office recognizes the valuable and consistent impact that mentorship has on total Army readiness. The Transportation School has key regimental engagements that bring together retired mentors, transportation leaders, and transportation personnel from across the country.

Second, in support of tactical forces, the office has focused on divisional transportation. The chief of transportation, in conjunction with the Directorate of Logistics and Resource Operations at the Command and General Staff College, is revitalizing the division transportation officer (DTO) elective to ensure it is relevant in order to meet expanding expeditionary requirements.

Each of these specific initiatives will have a direct impact on increasing the organic capabilities of units in the operational force.

The Office of the Chief of Transportation is striving to build a successful DTO team that emphasizes the mobility warrant officer and the DTO sergeant major. It is analyzing the potential of a DTO elective at the Sergeants Major Academy.

The Unit Movement Officer Game is being developed to address training gaps at the unit level and to supplement institutional training. It is an avatar-controlled, scenario-based training platform that will be available through the CASCOM Sustainment Virtual Playbook in May 2018.

Throughout the many exercises it has observed, DPMO has frequently identified as a shortfall the inaccuracy of processed deployment data. This tool will directly improve the accuracy of deployment data and increase the Army's near-term readiness and expeditionary capability.

Ordnance Initiatives

Forward operating base-centric maintenance, supply, and contracted logistics support operations over the past decade have created a false sense of readiness. Augmenting maintenance personnel with contracted logistics support caused technical

skills to atrophy and resulted in more costly maintenance operations and a decline in a sense of ownership of equipment within many units.

Further, professional military education course lengths were reduced to support Army Force Generation. As the Army refocuses its efforts on expeditionary operations and decisive action, leaders must understand that contracted logistics support is not the

best means of building and sustaining readiness.

The use of contracted logistics support must be limited in duration, and it should augment rather than replace organic maintenance and supply capabilities. The unknown and ever-changing environment of the future requires well-trained, well-planned, and well-executed organic maintenance.

The Ordnance School is improving organic maintenance through three initiatives: the Maintenance Readiness Playbook, the DRO Application, and UDIP.

Maintenance Readiness Playbook. The Maintenance Readiness Playbook will be a web-based, interactive tool delivered to the point of need. It will allow users to follow avatars through realistic motor pool and shop environments, similar to a gaming environment. The training scenarios will simulate field-level maintenance operations and procedures, such as command maintenance, shop operations, and maintenance operations planning.

It will include a broad overview of sustainment-level maintenance. The Maintenance Readiness Playbook is scheduled for completion and deliv-



Spc. Stanley Hays, 508th Quartermaster Company, briefs Maj. Gen. Darrell K. Williams, the commanding general of the Combined Arms Support Command and Fort Lee, Virginia, on the 9-millimeter Beretta pistol on March 9, 2017. (Photo by Terrance Bell)

ery to the field by the first quarter of FY 2018.

DRO Application. The DRO Application will be available for use on various mobile operating systems and computer-based platforms for the entire Army. After the user selects a towing wrecker and vehicle to be recovered, the application calculates the types of resistance for the recovery operation.

Information for more than 200 vehicle types is stored within the application, which can be accessed without internet connectivity. The DRO Application provides calculations for all aspects of recovery and related materials involved in recovery scenarios for the entire fleet of Army vehicles.

UDIP. The Training and Doctrine Command and Forces Command jointly discovered a skills gap in the diagnostic capabilities of unit maintenance personnel. The UDIP was developed to address this problem. The UDIP is a diagnostics-centric, train-the-trainer program for sergeants and above that delivers enhanced training for the maintainers

of Abrams tanks, Bradley fighting vehicles, Paladins, and Strykers.

Each platform module includes two weeks of intensive training. The goal is to provide a greater foundation in fault isolation and component repair in order to reduce the “no evidence of failure” rate and decrease the funding required to maintain a high state of readiness during decisive action training.

The UDIP is an interim solution that will be used until an additional two weeks of advanced diagnostics training can be integrated into advanced leader courses for maintainers of the four vehicle platforms.

The Ordnance School, in conjunction with the Army Materiel Command and Forces Command, implemented the UDIP in FY 2016. Since that time, UDIP training has been conducted at several installations and hundreds of Soldiers and leaders have been trained.

These Soldiers now can better conduct organic maintenance and increase their formations’ readiness. The program will continue through FY 2018.

Adjutant General Initiatives

The sustainment community has moved away from using older disjointed accounting and logistics systems to more modern systems, such as the General Fund Enterprise Business System (GFEBS) and GCSS-Army.

It now must also move away from traditional personnel management systems to an all-component, total force talent management ERP system. That system is IPPS-A.

The Army is committed to deploying a personnel system that is transparent, efficient, and comprehensive to meet the needs of today’s total Army. IPPS-A will allow all Soldiers to have 24/7 access to an online self-service portal to view, initiate, and track human resources (HR) and pay actions.

IPPS-A transitions military pay from the FM community to the HR community. It also provides critical capabilities, including visibility across the entire force, increased talent management tools, and secure and efficient auditability in support of congressional requirements.

IPPS–A is being used now. Release 2 in FY 2018 will subsume the functions contained in the Standard Installation/Division Personnel System (the Army National Guard’s personnel system) to provide personnel readiness management and essential personnel services.

Release 3 in FY 2019 will enable commanders in all components of the Army to manage their Soldiers effectively. Release 4 in FY 2020 will provide commanders with the ability to electronically approve personnel and pay actions through the web portal 24 hours a day. This will increase efficiency and reduce paperwork processing requirements.

In the current HR environment, many HR systems are outdated, not fully integrated with one another, and stovepiped by function and component. The Standard Installation/Division Personnel System, Regional Level Application Software, and the Electronic Military Personnel Office are prime examples.

Soldiers must go to multiple locations to update information, execute a transaction, or correct errors in pay or promotion actions, and they have no visibility of the process. The result is inefficiency, data inaccuracy, and a support environment that is not optimized for commanders and, most importantly, Soldiers.

IPPS–A will transform the way the Army currently does business by taking advantage of modern technology to reduce the reliance on antiquated, stovepiped systems. As the total force transitions to IPPS–A over the next three to five years, the system will automatically integrate HR and pay actions, reduce errors, ensure greater accountability, enhance readiness, and provide better customer service for Soldiers and families.

The Soldier Support Institute continues to plan for institutional-level training for IPPS–A and advocates for functional training that goes above and beyond NET. It is applying the lessons learned from the fielding of other sustainment ERPs.

The highest Army leaders are com-

mitted to fielding IPPS–A. The sustainment community must continue to lean forward in preparation for IPPS–A, the newest and most long overdue ERP system. For more information about IPPS–A, visit www.ippss-a.army.mil.

FM Initiatives

Over the past year, the Army FM School at Fort Jackson integrated 40 hours of S-8 gunnery training into its FM Captains Career Course, Basic Officer Leader Course, and Senior Leader Course to ensure brigade S-8s are trained and ready to execute their missions in support of readiness.

In 2009, the Army validated the requirement for a dedicated brigade combat team and sustainment brigade S-8 capability. Previously, brigades relied on undertrained personnel to perform resource management functions, which created errors related to funds accountability and audit readiness. Moreover, fielding GFEBs generated additional fiscal processes and resource requirements.

These capability gaps drove the requirements for qualified brigade FM Soldiers who are responsible for operationalizing the commander’s fiscal picture and for enhancing stewardship, accountability, and audit readiness. So, the FM School developed, piloted, and launched the new S-8 gunnery training to ensure delivery of FM capabilities.

The development of the S-8 gunnery training was a collaborative effort. The FM School’s director of training formed an operational planning team and invited corps, division, and brigade financial managers to help.

The team identified 13 critical battle drills that brigade S-8s must execute routinely to operationalize the commander’s fiscal picture, enhance stewardship and accountability, and enable audit readiness.

Each student must demonstrate proficiency in the S-8 battle drills, complete 80 hours of GFEBs provisioning training, and complete appropriate certifications. Furthermore,

when new S-8 Soldiers arrive at a brigade, the division G-8 provides a local orientation, certifies them as mission ready (grants fund certification authority), and continues to coach, teach, and mentor the brigade S-8 team.

To propagate readiness for financial managers at the deputy division G-8 level and below, the FM School developed the 80-hour Financial Managers Essentials Course. This course provides a solid baseline education for deputy G-8s, S-8s, and Department of Defense civilian financial managers.

The course is a pragmatic training approach that capitalizes on a performance-based training model centered on a “fiscal year in the life” and a “day in the life” of a deputy G-8 and a brigade S-8. The course re-creates realistic situations that financial managers working in divisions and brigades experience sequentially and progressively during a fiscal year. A pilot of this functional course will occur in June 2017.

CASCOM and the SCOE are committed to providing operational forces with the best sustainment training, doctrine, and capabilities development and integration to support the Army’s number one priority of readiness. In addition to delivering trained sustainers, CASCOM executes on-site support, stays current through regular engagements with the operational force, and develops practical game-changing initiatives for the challenges it finds.

All of these activities contribute directly to improved organic capabilities and the overall readiness of the Army. I encourage all of you to take advantage of the many available resources and learn about other current and future initiatives by visiting <http://www.cascom.army.mil>. Support Starts Here!

Maj. Gen. Darrel K. Williams is the commanding general of CASCOM and the SCOE at Fort Lee, Virginia.

Fog, Friction, and Logistics

To prepare for the unexpected disruptions created by the fog and friction of war, logisticians will have to prepare the joint logistics enterprise to return to capacity-centric concepts.

■ By Capt. Philip Lere, U.S. Air Force

The information age has brought unique challenges and opportunities to logistics in war. Information management has taken center stage as data flows up and down the supply chain with incredible speed and volume. Military logisticians have enjoyed a vast array of new enterprise management tools that were not available just a few decades ago.

Despite these technological leaps, the uncertainty of the battlefield remains a constant factor in enterprise logistics. In the dynamic environment of war, logisticians need to understand the critical vulnerabilities of information age logistics. Today's logistics doctrine emphasizes the advantages of information age concepts and downplays their weaknesses.

What modern doctrine seems to lack is deeper thinking about how the fog and friction of war could upset predicted outcomes for an information-based logistics enterprise. Predicted outcomes should account for both advantage and vulnerability.

A framework of potential challenges in a contested environment shows that capacity-centric logistics concepts are still relevant to modern warfare and should remain part of logistics strategy.

Fog and Friction

Unexpected disruptions caused by fog and friction are always major challenges for logisticians. For Carl von Clausewitz, friction was a defining aspect of war and included aspects of uncertainty that are now associated with the term "fog of war."

Fog, in keeping with popular understanding of the concept, refers to the ambiguous nature of information in war and the difficulties encountered in maximizing good information. According to Clausewitz, friction "is the force that makes the apparently easy so difficult." Friction is the interaction of chance and action and can be caused by many factors, including enemy forces, friendly actions, or the environment.

Most importantly, fog and friction cannot be erased from warfare regardless of advances in thinking and technology. Advances in technology change the nature of uncertainty, but they do not eliminate it.

The biggest danger of the information-centric approach to logistics is the assumption that "good information" will be enough to peel back the fog of war and prevent unexpected disruptions. Unfortunately, warfare is far too unpredictable no matter how good the information process is.

I have developed a framework for thinking about the information challenges that the joint logistics enterprise (JLEnt) could face in a contested environment. (See figure 1.) The framework addresses the vulnerabilities of the JLEnt as they relate to information and the physical lines of communication (LOCs).

In this framework, the level of information viability or degradation refers to how well information flows. Does information move easily and effectively, or is it impeded by an adversary or even friendly actions? For the logistician, this is the level of friction encountered in the process of collecting good information.

The other axis of the framework is strategic LOC viability or degradation. It includes the physical infrastructure and components of the coalition. Seaports, sea lanes, air lanes, aerial ports, road networks, and other transportation assets are strategic LOCs. The viability of strategic LOCs, in both friendly and contested areas, is described on the horizontal axis.

The framework lays out basic characteristics of the environment that the JLEnt could face. At any point a conflict could shift from one scenario to the other in an unpredictable way. Multiple quadrants could be true simultaneously, although the unexpected disruptions caused by fog and friction will cause definite pressure toward certain outcomes, often negative.

The goal of this framework is to broaden thinking on potential outcomes for the JLEnt and contribute useful terms for discussing how logistics could be affected by the context. The practitioner should not take the framework as dogma but simply as a starting point for asking better questions.

Quadrant 1

Quadrant 1 of the framework is the best-case scenario for the JLEnt. Much of Department of Defense doctrine envisions a future contested environment in which both information and LOCs, to and from the theater, will remain viable enough for supporting operations. Doctrine assumes a successful defense.

Quadrant 1 is a risky basis for scenario building, and it should not form the backbone of the planning

process. Should events break in favor of a U.S. coalition, the JLEnt will be able to perform as envisioned, so little needs to be added here about a best-case outcome.

Quadrant 2

The Quadrant 2 scenario aligns with predicated doctrinal outcomes in the information space because it assumes the networks will be protected and viable enough for operations. Computer networks and data systems will be adequately defended and information will flow as needed for command and control. Portions of the supply chain, however, could be degraded or closed by an audacious adversary.

In this scenario, the JLEnt will once again be forced to overcome physical limitations more than informational friction points. Despite intact information nodes, the degraded supply chain will be the defining theme of this scenario. Capacity-centric ideas, such as pre-positioned supplies, will

play a sizable role if LOCs are not viable and reliable.

An adversary could attack the LOCs in many ways. Some techniques already available include autonomous torpedoes capable of traveling long distances to U.S. seaports and drones operating in swarms around key airfields.

It is possible that even strategic nodes in the United States could be challenged with these techniques. This type of attack is becoming easier to carry out as technology proliferates for advanced adversaries.

The “openers,” capabilities in the force that can be used to open new logistics nodes, will be invaluable tools for this type of scenario. An opener capability may require creative technological solutions for moving materiel. This includes ship-to-shore and shore-to-ship capabilities in the event that friendly ports are compromised.

The hastily deployed and strategically significant “Mulberry harbours”

that the British developed during World War II are a good example of the type of opener capability that will be required in a contested environment. The joint task force–port opening (JTF–PO) is a more recent example. The JTF–PO would require major expansion if aspects of the contested environment fall into Quadrant 2.

Today’s JTF–PO may not be robust enough to deal with multiple strategic LOC closures in both friendly and contested territories. It is safe to assume that in any scenario with degraded LOCs the concepts of decentralization and the use of openers will be critical capabilities.

Quadrant 3

In the Quadrant 3 scenario, the information environment is degraded or blocked but the strategic LOCs remain viable. Again, the JLEnt may have to move away from an information-centric approach as the tools of the information age be-

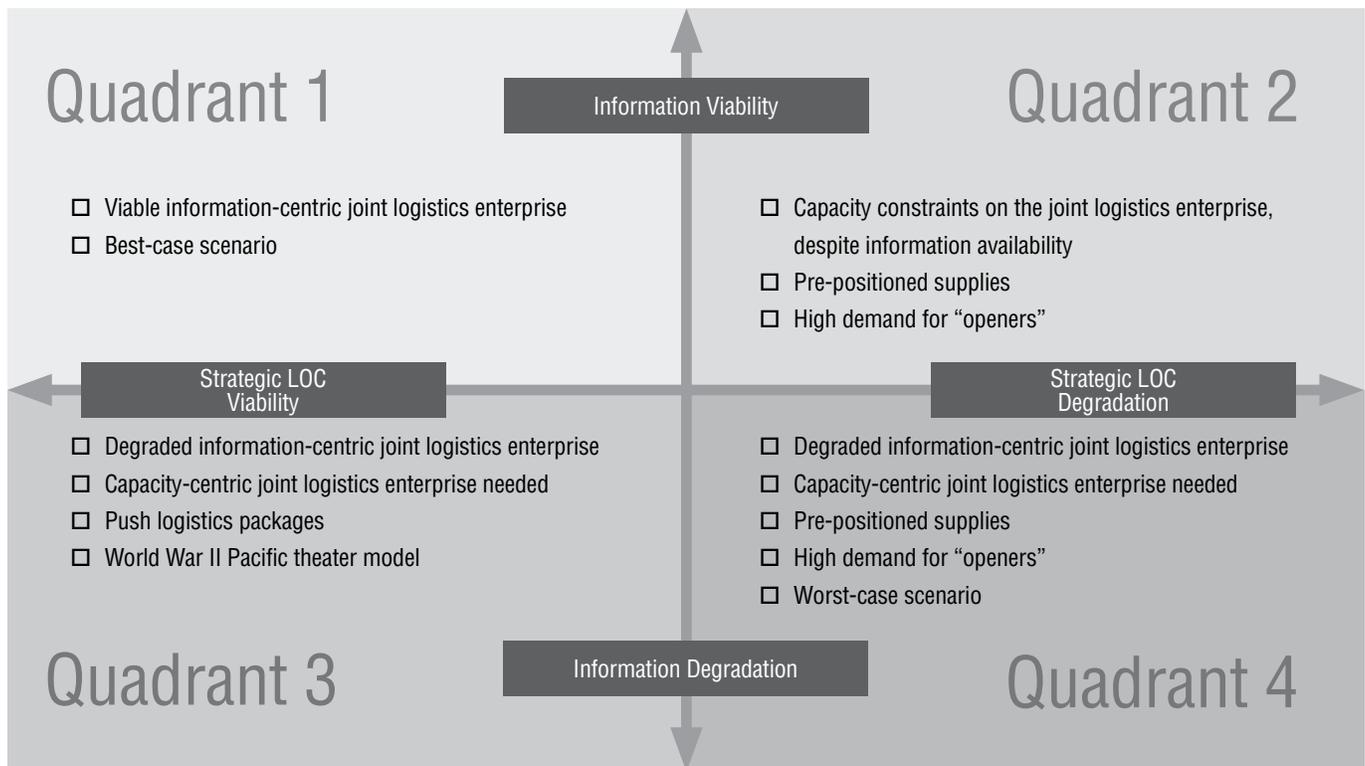


Figure 1. This framework addresses the vulnerabilities of the joint logistics enterprise as they relate to information and the physical lines of communication (LOCs). The level of information viability or degradation refers to how well information flows.

come degraded.

The shift to capacity-centric strategy becomes easier with open LOCs, but it is still a challenge. A successful transition to the capacity approach will require logisticians to recognize early that the information-centric approach will not be adequate to sustain the force. Like the first scenario, this is not a possibility that current doctrine thoroughly explores.

In this scenario, the capacity-centric logistics campaigns of World War II in the Pacific may offer clues to successfully utilizing the LOCs in an information-contested battlespace. Preplanned push packages could offer a significant support capability in place of the current pull model.

Push logistics falls squarely within a capacity-centric approach and can provide support despite a degraded information space. Should the campaign's nature change into something resembling the Pacific theater of World War II, the JLEnt will have to shift to a capacity-centric approach.

Quadrant 4

In the Quadrant 4 scenario, an adversary can seriously harm the information network and hinder the ability to carry out logistics. This is the worst case for the joint force and the JLEnt.

The multidimensional disruption could be carried out by creative and irregular methods that already exist. Web-based networks, critical to information-centric logisticians, could be brought down by cyberattack. Or worse, the adversary could infiltrate the web-based systems with bad data, causing logisticians to lose trust in the entire system.

Centralization of logistics information systems will be exploited to full effect. Strategic LOCs could be challenged in a variety of unpredictable ways. All of this is possible using today's technology. The future is likely to create even more disruptive capabilities for an adversary to use.

In this type of environment, an information-centric JLEnt will be

severely degraded unless it can creatively adapt. This scenario could place enough demand on informational and physical systems that it will be impossible for the JLEnt to recover quickly. Because of the potential for a two-pronged attack on physical and information spaces, this scenario deserves more attention from logistics strategists.

This scenario could also bring about the paradox of disruptive technology. As information systems become more central to the JLEnt, their disruption could bring about a need for solutions that look much like a system that a pre-internet logistician would recognize.

The paradox is that the more technologically advanced the JLEnt becomes, the farther back it would have to go in technology to cope with the challenges of a contested environment.

If information processes become irreversibly impaired, the capacity-centric approach may prove the only viable method to sustain the force. For example, pre-positioned supplies, a hallmark of capacity-centric logistics, will be critical if the LOCs are not viable.

Much of the doctrinal and future operating concepts assume that information will be contested, but information still persists as a central theme of future logistics systems. If the transition to a primarily capacity-centric system becomes necessary, it will represent a significant paradigm shift for logisticians and the JLEnt.

Another layer of complexity will involve information flow among the local area, the theater, and the national level of logistics. Cyberattacks could disrupt centralized logistics systems, but how will the operational and tactical levels be affected?

It is quite possible that the strategic information space could be contested but information could still flow up to that level by unexpected means. This scenario could also see a globally contested space but a relatively uncontested local area or theater information space.

A degraded information environment coupled with physical constraints on the JLEnt is the riskiest and most demanding possibility in the contested environment. Paradoxically, the JLEnt of the future may come to rely on aspects of the pre-internet logistics system while supporting the most technologically advanced military of all time.

The overwhelming success of the JLEnt in meeting combatant commanders' needs has led to a strong attraction to information-centric systems. Capacity problems have been rare, and combatant commanders have been free to focus on campaigns without significant logistics limits.

To be successful in the future, logisticians will need to exercise influence in the JLEnt and will require the ability to communicate logistics limits. Capacity and information disruptions in the contested environment could set the boundaries of campaign plans.

As fog and friction degrade the JLEnt, logisticians must anticipate significant imbalance and volatility between information-centric and capacity-centric logistics. The volatility expected in the contested environment will challenge the JLEnt in new ways.

The role of capacity-centric logistics in sustainment operations during war should not be underestimated. To prepare for the unexpected disruptions created by fog and friction, logisticians will have to prepare the JLEnt for the possibility of a return to capacity-centric concepts.

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The author thanks George Topic and Christopher Paparone, Ph.D., for reviewing and contributing to this article.

Moving Forward With Logistics Advising in Afghanistan

The pull logistics system that has been taught to the Afghan military may not be the best choice for the culture in Afghanistan.

■ By Capt. Ross A. Powers

Having the ability to supply and sustain an army is the difference between a professional organization and a well-organized militia.

The U.S. military operates one of the most sophisticated supply and distribution systems in the world. Soldiers can leave their bases in the United States and arrive in a foreign country ready to execute operations in less than 48 hours. As supplies arrive, the military maintains momentum to continue the push forward.

Rigorous training at the Army Logistics University tests students' ability to war-game requirements for some of the most austere conditions in the world. Complex training and the study of logistics systems ensure that officers and enlisted Soldiers are ready to respond to any situation.

The Afghan Logistics Problem

In Afghanistan, the current coalition mission is to train, advise, and assist (TAA) the Afghan military to conduct independent and enabled operations against insurgent forces. Creating a self-sustaining Afghan military would ensure national stability and allow coalition forces to redeploy confident that the Afghans can defend their country. Crucial to an independent Afghan military is its ability to operate and maintain a supply system without coalition assistance.

Even though the United States has invested billions of dollars in the Afghan military and spent years developing its logistics system, which

is now the most sophisticated in Southwest Asia, Afghanistan still heavily depends on U.S. and coalition support.

To understand why an independent Afghan logistics network has not taken root, one must first understand Western military logistics and how that model does not fit Afghanistan's military or culture.

Push and Pull Cultures

Logistics networks, at a very basic level, operate in two ways: pull and push. A push network operates from forecasted data and delivers supplies based on estimated and historic requirements. Under this logistics system, the demand for items is never truly known, only projected. The practice of holding a small number of items in reserve is common to offset possible shortages.

Pull systems rely on demand-driven data; requirements are made, and exact quantities are delivered. As a result, pull networks can be seen as more dependable. But because few items are kept in stock at forward locations, pull systems tend to be slower because of the time required to deliver supplies to the requesting customer.

Demand for combat-enabling supplies such as subsistence, fuel, ammunition, and repair parts can be difficult to forecast because of the nature and unpredictability of conflict. As a result, U.S. military logistics tends to operate a pull system. Units on the front lines do not have stockpiles of supplies and, therefore,

move quickly and take advantage of opportunities in their areas of operations.

Fewer items being stocked and transported creates a lean system that reduces wasteful shipments. A pull system is what coalition advisers are attempting to create in the Afghan military.

The adoption of the pull system has not been widely accepted by Afghan military leaders and logisticians. Receiving supplies only when required is counter to the Afghan culture. Afghans live in an environment of constant scarcity due to years of conflict and a limited economy.

The typical rural home in Afghanistan is a building and courtyard surrounded by high mudbrick walls. Known as a "qal'at" (Dari for "fortress"), this compound protects the family and everything inside. From a logistics mindset, the Afghan home can be compared to a warehouse in which supplies are held for presumed future needs. Stocking supplies is one of the key components of a push system and is a critical component of Afghan life.

The topography in Afghanistan also heavily influences the need to store supplies. Dominated by mountains in the middle of the country and along the eastern border with Pakistan, the populated valleys and flatlands are often isolated in the winter months because of snow accumulation in mountain passes.

Furthermore, for the past 30-plus years, the country has been in



Repair parts are piled up in a back room of a maintenance shop in Afghanistan's Paktia province in March 2016. When the parts arrived, workers claimed they were the wrong items but did not return them. (Photo by Capt. Ross A. Powers)

an almost constant state of conflict. Because of a limited economy and constant border crossing closures, resupplies are often limited, further enforcing the reserve-store mentality.

Operating Independently

The TAA mission has become more difficult. During the height of coalition involvement, nearly 135,000 uniformed personnel were in Afghanistan. Mentors were partnered with Afghan units at multiple levels and provided supplies, advice, and training to help the Afghans operate a Western-style logistics system.

The majority of U.S. and coalition forces left the country at the end of 2014. By 2016, just over 10,000 U.S. and coalition troops remained, and Afghans were struggling to operate the Western-style supply chain.

Persistent shortages of supplies plagued units on the front lines and limited combatant commanders' ability to conduct operations. Where had all the supplies gone, and why were military logisticians not providing assistance? A combi-

nation of mismanagement and the Afghan "store for later" mentality contributed.

Warehouses and containers around the country were overflowing with repair parts because of the Afghan cultural inclination to store supplies. Managers had no idea what was on hand because they did not know how to conduct inventories and did not want to give up their stocks.

U.S. and coalition advisers reacted by conducting key leader engagements with an emphasis on Afghan military logistics. Advisers quickly realized that there was not a lack of knowledge to operate the pull system, but rather an unwillingness.

During the height of coalition involvement in Afghanistan, there were enough advisers to essentially force a pull network to work. By teaching what was known to work in their own cultures, coalition advisers implemented a logistics network in a culture that was not ready for it.

Required Change

Changing how Afghan logisticians and leaders are advised is required for them to have a working system. The

pull mentality should be modified to fit the Afghan culture. They should be trained to use a combination of push and pull logistics.

High-demand items, such as tires and batteries, should be regularly delivered so they are kept on hand. For the combination of push and pull logistics to work, advisers must accept that there will be less accountability of supplies in the Afghan logistics system.

Modern technologies, like radio frequency identification and centralized digital distribution systems, reinforce accountability in pull-style supply chains but are extremely difficult to maintain in a country like Afghanistan because of a lack of infrastructure and technical knowledge. Using a paper-based system for reports submissions and record keeping is more in line with the infrastructure and knowledge of the individuals who will operate it.

Over the past 15 years, Afghanistan's military has moved in the direction of becoming a viable, self-sufficient force. But if coalition advisers want to continue to reduce their presence, they must reevaluate what is being taught so that the Afghans can become truly independent.

Imposing a logistics system that cannot be maintained discourages Afghan soldiers and hampers progress toward building the Afghan military. The logistics TAA mission must be changed to fit the cultural mindset of the people operating the system.

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Training Is Déjà Vu; Education Is Vu Jàdé

■ By Christopher R. Paparone, Ph.D., and George L. Topic Jr.

The call for creative practitioners, innovative solutions, and novel approaches to the complex challenges facing our nation has never been stronger. Our most senior logisticians are committed to developing future practitioners who are able to deal with uncertainty. In fact, to embrace uncertainty as normal and natural is central to working in today's operational environment.

It is clear that the educational institutions within the Department of Defense struggle to meet this important challenge. Between the two of us, we have observed for more than 40 years many attempts to list attributes and competencies associated with leader development.

These lists are usually associated with growth through progressive levels and focus on rank and position. These efforts often seem to suggest that if we closely adhere to a carefully planned process, we will produce the practitioners we need.

We are not convinced this is the best way to frame the process of educating logistics practitioners and would like to offer another approach. In lieu of lists and levels, we need first to draw a conceptual line between training and education.

Traditional training assumes that problems repeat over time; hence, the central theorem for logistics training is that of déjà vu—a feeling that we have seen this situation before. The body of knowledge captured through lessons learned and doctrine provides ready-made solutions or perhaps a tentative baseline for future solutions.

Readiness for these recurring problems is a matter of making the solutions (in the form of individual, unit, and higher organization actions) routine. Key to conveying measures of readiness are clearly articulated tasks, conditions, and standards. In the

military logistics realm, we know, for example, that there are routine procedures to control the quality and tactical distribution of fuel under a variety of conditions.

On the other hand, we argue that logistics education should be oriented on “vu jàdé”—the sense that this has never happened before. Karl E. Weick in his 2011 article in the *Journal of Change Management* argues that we may have an unreflective proclivity to exercise our trained routines even when facing complex, novel situations. He adds that these contexts require hunches or “conceptual substitutions for perceptual experience.”

As strange as it may sound, this art of conjecture is more closely aligned with poetry than with hard science. What may surprise the sustainment community is that detailed studies of history, the fine arts, and other subjects in the humanities may actually help hunch-making, which is a vu jàdé learning process.

For example, while we have developed a military science for fueling operations, we may find creative ways to change our conceptual schemes of how we procure and distribute fuel altogether. Helping students become good at creating new concepts to deal with novel situations is the challenge of education.

Unfortunately we do not capture the need for what Weick calls a “nanced appreciation” of the uniqueness at hand. Educating logisticians—and practitioners in general—should focus more on developing stratagems while work is in action. We instead focus on after-action learning, to include naming a new approach and eventually categorizing it as a new doctrinal term or task.

We become preoccupied with re-creating the situation during training and assuming that our task-based

science is repeatable, sharable, and progressive. Categorically thinking and acting (routines linked to déjà vu) are valued more than the process of concept creation (education associated with vu jàdé). This is because routines are easier to understand and teach.

This is the cultural blind spot we believe is keeping our community of practice from fully embracing uncertainty and operational complexity. We could overcome this problem by developing education processes that place less emphasis on programs of instruction (training routines) oriented on previously decided actions, well-defined competencies, and highly categorized functions.

We recommend that defense educational institutions focus more on open-ended, imaginative learning activities that value reflective thought and hunch-making in practitioners and the organizational culture. We would be well-served to have more logisticians who are creative conceptualizers in a new tradition of vu jàdé.

Complex thinking in a complex world requires a logistician to recognize the uniqueness of each situation and have the confidence to exercise newfound hunches. The irony of this educational approach is that recognizing and dealing with the reality of vu jàdé actually becomes something practitioners have sensed before.

Christopher R. Paparone, Ph.D., is a retired Army colonel who served 29 years as a logistician. Since 2002, he has been involved in the military education system.

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



Cpl. Jean-Philippe Roberge with the 1st Battalion, Royal 22nd Regiment, 5 Canadian Mechanized Brigade Group, prepares for an air assault exercise during Exercise Saber Guardian at the Romanian Land Force Combat Training Center in Cincu, Romania, on July 31, 2016. (Photo by Pfc. Jessica L. Pauley)



Redefining Readiness in Europe

■ By Lt. Gen. Ben Hodges

The Army has a renewed focus on readiness, and rightly so. While the United States was engaged on two battlefields in Southwest Asia, unencumbered adversaries continued to modernize. Readiness is now the Army's number one priority, and for U.S. Army Europe (USAREUR), 2017 is the year of readiness execution. The footprint of land forces in Europe is changing to project credible deterrence and defense with postured and ready forces.

As USAREUR shifts its force posture, readiness is paramount. Foundational to every readiness discussion is a shared understanding of the threat. Every Soldier needs to be able to answer the question, "Ready for what?"

In USAREUR, Soldiers must be prepared to "Fight Tonight" against an adversary that has freedom of

movement on interior lines of communication, significant anti-access/area-denial capabilities, and many instruments of national power to gain advantages on the battlefield. Fight Tonight is a slogan used by U.S. units in Korea, but recently the entire Army has been using it to describe its ability to respond quickly as a ready and resilient force.

Establishing the Fight Tonight culture and then outlining the varying readiness postures is as important as defining the threat. Much of the Army's readiness discussion fixates on Soldiers' medical fitness and training to the Objective Training standard, both of which are obvious indicators of a unit's ability to perform its wartime missions.

However, Chief of Staff of the Army Gen. Mark A. Milley acknowledges that the current aperture for readiness is much broader.

He said it involves "not just training, manning, and equipping" but also "strategic deployment, rotations through contingency or training events overseas" to ensure the Army is ready to fully execute national strategic plans.

Interoperability and Capacity

Enabling the readiness that Milley describes will happen through USAREUR's relentless pursuit of interoperability and capacity. Interoperability in Europe is measured by the ability of multinational formations to execute secure communications, process a digital fire mission, and share a common operational picture.

Capacity, for the purpose of this discussion, is the infrastructure and resources required to achieve speed of assembly. To collectively defend Europe and respond to 360-degree

FEATURES

U.S. Army Europe is increasing its interoperability and capacity efforts to ensure that its forces are ready to respond to any threat.

threats, USAREUR must have the systems and ability to muster and move formations quickly on lines of communication that cross multiple nations.

For more than a decade, U.S. forces have used a force generation model that facilitated 12 or more months of preparation prior to a unit's deployment to an established theater. Because military forces in Europe will likely have only a few days of unambiguous warning in the event of a crisis, multinational formations will have to be ready to come together in a matter of days.

These formations must be able to immediately plug into multinational and joint communications, fires, intelligence, and logistics systems. This requires interoperable systems for each of those functions. The absence of interoperability degrades air defense, rapid counterfire capabilities, sustainability, communications security, and the common operational picture. This degradation significantly increases the risk of casualties and mission failure.

Interoperability Solutions

USAREUR always trains with its allies and partners to ensure interoperability. All of its exercises involve multinational units. Some exercises, such as Allied Spirit, a multinational brigade decisive action training event, and Dynamic Front, a multiechelon live-fire exercise, are specifically designed to improve interoperability.

Interoperability solutions can be as simple as training, as expensive as technology, or as cumbersome as legal agreements, but they need to be achieved through NATO.

For secure communications, nations must issue communications security at the tactical level for their own radios. Multinational formations can then leverage tactical voice bridges to link incompatible radios regardless of waveform, frequency, or communications security.

For digital fires, nations must follow the protocol of the Artillery Systems Cooperation Activities, an Army pro-

gram that makes U.S. and allied nations' artillery systems compatible.

Finally, to achieve a common operational picture, nations must re-evaluate the restrictions placed on their mission command systems so they can federate on a secret network. Soldiers and leaders can overcome the diversity in tactics, techniques, and procedures inherent across different nations, but an inability to communicate with, see, or defend allies and partners fighting in close proximity will greatly impede mission accomplishment.

Building Capacity

An essential element for readiness in Europe is the capacity required to set the theater and move forces to the point of a crisis. USAREUR has aggressively pursued improvements in surface and air movements and infrastructure. These improvements, largely funded by the European Reassurance Initiative, ensure freedom of movement and speed of assembly and include the following benefits:

- Reducing diplomatic clearance timelines to achieve a military equivalent of the Schengen Area (a group of European countries that do not require passports or customs controls at their mutual borders).
- Improving railhead capability to support the loading of M1A2 Abrams system enhancement package (SEP) tanks in the Baltic states.
- Standardizing the rail gauge from Poland through Estonia to eliminate transloading at the Lithuanian border.
- Borrowing European Union-compliant British heavy equipment transporters to move M1A2 SEP tanks.
- Bringing all USAREUR bulk fuel and ammunition hauling assets in compliance with the European Agreement Concerning the International Carriage of Dangerous Goods by Road.
- Improving the forward operat-

ing site at Mihail Kogalniceanu Air Base, Romania, to provide a projection platform and forward logistics hub for sustainment capability in Eastern Europe.

Systems and infrastructure to enable speed of assembly are complemented by the forward positioning of more equipment and resources. During the next three years, the U.S. Army will complete the stationing of a division's worth of equipment in five locations across Belgium, Germany, the Netherlands, and Poland as part of the Army pre-positioned stocks program.

In October 2016, USAREUR received its largest Army ammunition shipment from the United States to Europe in two decades. This stock, combined with improvements and new construction of ammunition supply points in Romania and Poland, has reduced the time it takes to draw and issue ammunition and explosives for both training and contingency operations. The ammunition also provides options for leaders should the force need to transition

from deterrence to defense.

Cognizant that capacity is not just a military solution, USAREUR has cultivated a relationship with a German rail cargo carrier for cross-continent moves. Heavy railcars capable of hauling M1A2 SEP tanks are in short supply in Europe. Continued dialogue at both the executive and action officer levels has produced agreements to prioritize military movements and additional heavy railcars for major exercises and contingency operations.

The increased readiness initiative in Europe started with a directive in the USAREUR strategic guidance to "know where your helmet is." This guidance was tested by the arrival of the 3rd Armored Brigade Combat team, 4th Infantry Division, in Europe. January 2017 marked the beginning of uninterrupted nine-month rotations of armored brigades that will provide an invaluable in-progress review of capacity and interoperability in Europe.

Observer-controller trainers were poised to evaluate troops at seaports of debarkation, railheads, convoy support

centers, and tactical assembly areas across Europe. As soon as the vessel ramp dropped, the 3rd Armored Brigade Combat Team was on the clock and postured to Fight Tonight. More than 37 trains, 2,827 pieces of equipment, and 3,954 people transited from Germany to meet in western Poland before onward movement to Operation Atlantic Resolve.

Advantageous to this deployment was the absence of the contested environment anticipated in the next conflict, but the interoperability lessons learned and the capacity improved through exercising the system will expand USAREUR's readiness.

Lt. Gen. Ben Hodges is the commander of U.S. Army Europe. He is a graduate of the United States Military Academy. He holds a master's degree in public administration from Columbus State University, a master's degree in advanced military studies from the Command and General Staff College, and a master's degree in national security and strategic studies from the National Defense University.



Spc. Timothy Kinkade, a tank gunner assigned to C Company, 1st Battalion, 68th Armor Regiment, 4th Infantry Division, fuels an M1A2 Abrams main battle tank during the first live-fire accuracy screening test at a range in Swietozow, Poland, on Jan. 16, 2017. (Photo by Staff Sgt. Elizabeth Tarr)



Representatives of the Army Reserve Installation Management Directorate join the installation staff in an integrated strategic sustainability planning session on Dec. 7, 2016, at Fort McCoy, Wisconsin. The session built on the post's existing strategic business plan. (Photo by Scott T. Sturkol)



Ready Installations: The Army's Power Projection Platforms

■ By Lt. Gen. Gwen Bingham

Readiness remains the Army's number one priority, and installations serve as the foundation for readiness. The Army's assistant chief of staff for installation management (ACSIM) ensures readiness by establishing policies, synchronizing programs, and providing resources for installation infrastructure and services.

The ACSIM ensures land-holding commands, such as the Installation Management Command, the Army Materiel Command, and the Army Reserve and National Guard, have the resources needed to keep the total Army ready.

The ACSIM team enables Army readiness, prepares for the future, and cares for Soldiers, civilians, and their families.

Enabling Army Readiness

The ACSIM team partners with the assistant secretaries of the Army for installations, energy and environment; manpower and reserve affairs; and financial management and comptroller to improve Army readiness across 156 installations and 1,100 community-based National Guard armories and Reserve readiness centers. These installations

FEATURES

The Army's assistant chief of staff for installation management discusses the importance of installation readiness for the total Army.

provide more than 13.5 million acres of land with more than 363 ranges that prepare Soldiers to deploy and conduct combat operations.

Synchronizing critical service programs is a core ACSIM mission. Last year, the ACSIM team partnered with the Army G-4 and collaborated with the Army Materiel Command, Forces Command, Training and Doctrine Command, and Installation Management Command to develop baseline standards for logistics readiness centers.

These standards set the conditions for dependable feeding operations, central issue facilities, nontactical vehicle management, pass-back maintenance, laundry and dry-cleaning services, and ammunition storage to sustain Soldiers at home station and while deployed. Implementing baseline standards will ensure consistent resourcing of these critical logistics functions and improve Army readiness in fiscal year 2017 and beyond.

Resourcing Army infrastructure is also a fundamental element of the ACSIM mission. An annual facility investment strategy is published to establish policy for investments to sustain infrastructure, dispose of excess property, and improve the overall quality of the most critical facilities. The facility investment strategy synchronizes Armywide execution of sustainment, restoration and modernization, disposal, and military construction programs.

Preparing for the Future

As it plans for the installations of the future, the ACSIM team advocates for resources to enhance mission command centers at Forces Command installations, enabling 24/7 support for forces in the field. The ACSIM team provides master planning expertise for the Army's most critical military construction priorities, including the Cyber Center of Excellence at Fort Gordon, Georgia, a project that directly supports both the Training and Doctrine Command mission and the Army's dominance in the emerging domain

of cyberwarfare.

Deploying rotational forces forward generates new requirements for installation services and infrastructure. Team ACSIM works with the Office of the Secretary of Defense, the joint and Army staffs, and all land-holding commands to synchronize installation programs that meet combatant commander strategic objectives.

Team ACSIM programs resources for critical infrastructure and services, including housing in South Korea, ranges and pre-positioned stock sites in Germany, and training complexes in Bulgaria and Romania.

Partnerships and third-party investments help to prepare the Army for the future. Team ACSIM works with the Army secretariats to establish policies and programs that enable partnerships to modernize infrastructure and services. For capital improvements, privatization partnerships, such as the Residential Communities Initiative, Utility Privatization Program, and Privatized Army Lodging, have saved more than \$20 billion.

In the energy arena, partnership efforts have attracted more than \$2 billion in capital investments for energy efficiency and renewable energy projects. These projects will pay for themselves and save the Army more than \$200 million in utility bills.

Team ACSIM and the Army secretariats also partnered successfully to gain new authorities for sharing municipal services with host communities. Partnering with local communities improves service delivery and uses resources in the most efficient and effective manner.

Supporting the Army Family

Team ACSIM partners with land-holding commands to deliver Soldier and family programs that enhance resiliency and increase readiness. The team develops policies to provide critical services that keep Soldiers, civilians, and their families ready.

Army installations contain more

than 276,000 barracks spaces and 102,000 family housing units that provide safe, healthy, and secure living conditions for Soldiers and their families. Through Army senior leader approval, ACSIM allocates funds each year to improve and modernize barracks and family housing.

This year, ACSIM's collective efforts resulted in an adjustment of the independent duty lease program for Soldiers assigned to the Army Recruiting Command, Army Cadet Command, and the Military Entrance Processing Command. This adjustment relieves Soldiers of significant financial burdens from out-of-pocket housing costs and adopts the standard used by the Air Force and Navy.

Other services and infrastructure

resourced by the ACSIM team and delivered by the land-holding commands increase individual readiness by building resiliency throughout the force. Programs provided by Child, Youth and School Services ensure Soldiers can focus on their missions while their children are supervised in safe and secure environments. Programs such as family advocacy and financial readiness teach Soldiers and families life skills to reduce stress while integrating Soldiers into the Army profession.

Team ACSIM, in partnership with the incredible men and women serving on the Army team, provides the critical infrastructure and services needed to generate combat power and keep the Army ready. Profes-

sionals from across the total force remain dedicated to and focused on their vital missions every day. Altogether, the installation management community supports 2.2 million Soldiers, civilians, and family members and keeps the total Army strong.

Lt. Gen. Gwen Bingham is the assistant chief of staff for installation management. She graduated from the University of Alabama as an Army ROTC distinguished military graduate with a bachelor's degree in general business management. She holds master's degrees from Central Michigan University and the National Defense University.

Richard G. Kidd IV and Col. Andrew Liffing contributed to this article.



Fort McCoy, Wisconsin, family members read each other's answers as part of an exercise during the Green Dot program on Jan. 24, 2016, at the School Age Center/Youth Center. The Green Dot program focuses on how to be a proactive bystander and addresses techniques on intervening when witnessing harassment. (Photo by Aimee Malone)



A Soldier assigned to the 1st Squadron, 14th Cavalry Regiment, 1st Stryker Brigade Combat Team, 2nd Infantry Division, guides a Stryker vehicle during rail offload at Orchard Combat Training Center, Idaho, on Sept. 25, 2016. The 200 pieces of equipment that arrived on the train were used for Raptor Fury, a monthlong training exercise to validate the mission readiness of the 16th Combat Aviation Brigade. (Photo by Capt. Brian Harris)



Power Projection Readiness: A Historical Perspective

■ By Maj. Gen. Kurt J. Ryan

For close to a decade and a half, U.S. forces deployed on a rotational basis and were not required to exercise critical short-notice unit-level rapid deployment skills. As a result, the Army's ability to project units rapidly with their full complements of authorized equipment has atrophied.

The time and location of the nation's next major conflict is unknown, but we do know that we must be ready. To be ready, it is imperative that the total force build the collective skills of power projection and large-

scale deployment readiness so that, if called upon, we can provide a viable land force that is prepared to operate across the conflict continuum.

As a continental United States-based expeditionary Army, we must train deployment readiness relentlessly, and we must practice these skills at the "speed of war." The Army must leverage every training opportunity, such as deployments to and from combat training centers, rotations of forces in support of combatant commanders' theater security and cooperation plans, and emergency

deployment readiness exercises.

Bottom line: the Army must build its capabilities and instill a mindset to be ready to rapidly alert, marshal, deploy, and upon arrival at the theater, be ready to fight. Installations are the power projection platforms, and deployment readiness begins in the motor pools. Leaders must build unit capacity to marshal and upload equipment at home station, to move equipment by rail, line haul, or inland barge, or to convoy equipment to any of the nation's 23 strategic seaports.

Strategic enabling commands, in-

FEATURES

Power projection platforms are critical to an expeditionary Army's ability to deploy, fight and win.

cluding the Forces Command, the Army Materiel Command, and the U.S. Transportation Command, must practice fort-to-port and port-to-port tasks to rapidly load seagoing vessels to sail combat power to foreign ports of debarkation.

When units arrive, theater enablers, including the Army service component commands, theater sustainment commands, and assistance from allied support agreements, will facilitate deploying units' reception, staging, onward movement, and integration tasks, which are key to building and providing ready-to-fight forces to the joint force commander.

Historical vignettes from the Army's own power projection experiences over the past 50 years show many applicable examples of how the Army can effectively campaign as long as it can deploy rapidly.

The Vietnam War

The United States managed the considerable feat of transporting 200,000 troops to South Vietnam in the early months of 1965 following the presidential order to deploy a large-scale combat force to Southeast Asia. However, the moves of the first two divisions—the 1st Cavalry Division and the 1st Infantry Division—were neither synchronized nor efficient.

The Army had last deployed a large-scale joint force for the Korean War in the early 1950s; it was out of practice. The initial force move to South Vietnam required 17 special trains, 126 aircraft, 27 cargo vessels, 933 buses, 12 troop ships, and five aircraft carriers to move the two divisions. After this initial, albeit inefficient, success, the nation made changes to significantly improve its power projection readiness.

The Army faced long delays in off-loading ships in South Vietnam, and the delays were made worse by single ships making multiple port calls. The Army adjusted its deployment processes by sending fully loaded ships of combat configured loads to

a single port whenever possible.

While only 7 percent of ships en route to South Vietnam were destined for a single port in October 1965, by April 1966 that number had improved to 95 percent. This vastly increased the nation's capability to efficiently project military forces and to amass combat effects upon arrival.

The Army was relearning quickly and began institutionalizing deployment processes by investing in training and focusing on critical deployment and redeployment mission-essential tasks. These tasks are now resident in nearly every unit's mission-essential task list.

Desert Shield and Desert Storm

In March 1988, Brig. Gen. John R. Piatak, the U.S. Transportation Command's first director of plans, presciently stated, "In the future, we will have to pay closer attention to our deployment readiness and to industry's ability to handle transportation surges."

Just 29 months later, Iraq invaded Kuwait, and the president called for the massive deployment of U.S. forces to the Middle East to commence Operation Desert Shield. Deployment lessons learned from combat training center rotations throughout the 1980s helped to shape the Army's response to the massive force deployment requirements of the operation, which included more than 500,000 service members at its height.

In August 1990, commercial ports at Jacksonville, Florida; Savannah, Georgia; and Charleston, South Carolina, were selected as the best ports from which to deploy the large volume of equipment needed for the first three Army divisions to defend Saudi Arabia. These divisions were the 101st Airborne Division, the 24th Infantry Division, and the 82nd Airborne Division. Soldiers and equipment simultaneously deployed by strategic air from designated airfields close to each division's home station.

The divisions and brigades had rehearsed their deployment tasks prior to their deployment notifications. Senior mission commanders had refined readiness standard operating procedures, practiced installation deployment assistance teams, and conducted emergency deployment readiness exercises. These exercises were often held in conjunction with a movement to a combat training center.

Units had been evaluated on deployment mission-essential tasks, and the port authorities were familiar with the units' special outload needs. Deploying units had formed and exercised necessary port support activities, routinely conducted reconnaissance of their designated ports, and occasionally performed tabletop exercises or tactical exercises without troops to the port.

The port at Jacksonville enjoyed the requisite size to handle the special requirements of the 101st Airborne Division's unique cargo, which included more than 300 helicopters. Savannah's close proximity to the 24th Infantry Division at Fort Stewart and Fort Benning, Georgia, provided an adequate rail network connecting bases to the port and promised faster loading and departures. Deployments were executed at the speed of war.

Enduring and Iraqi Freedom

Following the terrorist attacks of 9/11, Operation Enduring Freedom demonstrated the importance of being ready. Deployments began within days after the terrorist attacks. President George W. Bush initially announced the operation as a bombing campaign and deployed special operations forces to support the Afghan Northern Alliance in its successful drive to topple the Taliban government.

Operation Iraqi Freedom began with large-scale deployments to Kuwait in 2002 in preparation for operations against Saddam Hussein's Iraqi army in March 2003. The U.S. Army benefited from months of



Beginning his unit's move to Poland for Operation Atlantic Resolve, an M1A2 Abrams crewman from the 3rd Armored Brigade Combat Team, 4th Infantry Division, secures a tank after it is loaded onto a rail car at Fort Carson, Colorado, on Nov. 15, 2016. (Photo by Ange Desinor)

prior planning, several warfighting exercises, and deployment rehearsals that enabled commanders and staffs to learn from prior deployments.

The U.S. Central Command's continual rotation of brigade teams to Kuwait throughout the 1990s had helped to keep the Army ready for large-scale deployments. Using brigade combat teams provided a foundation of familiarity and deployment readiness for future operations in the Middle East.

The Army's Future

While history provides us with experience and a frame of reference, the benefits end there if we do not build upon the lessons learned. Readiness can only be attained through focused effort, continued action, and a relentless desire to master deployment tasks.

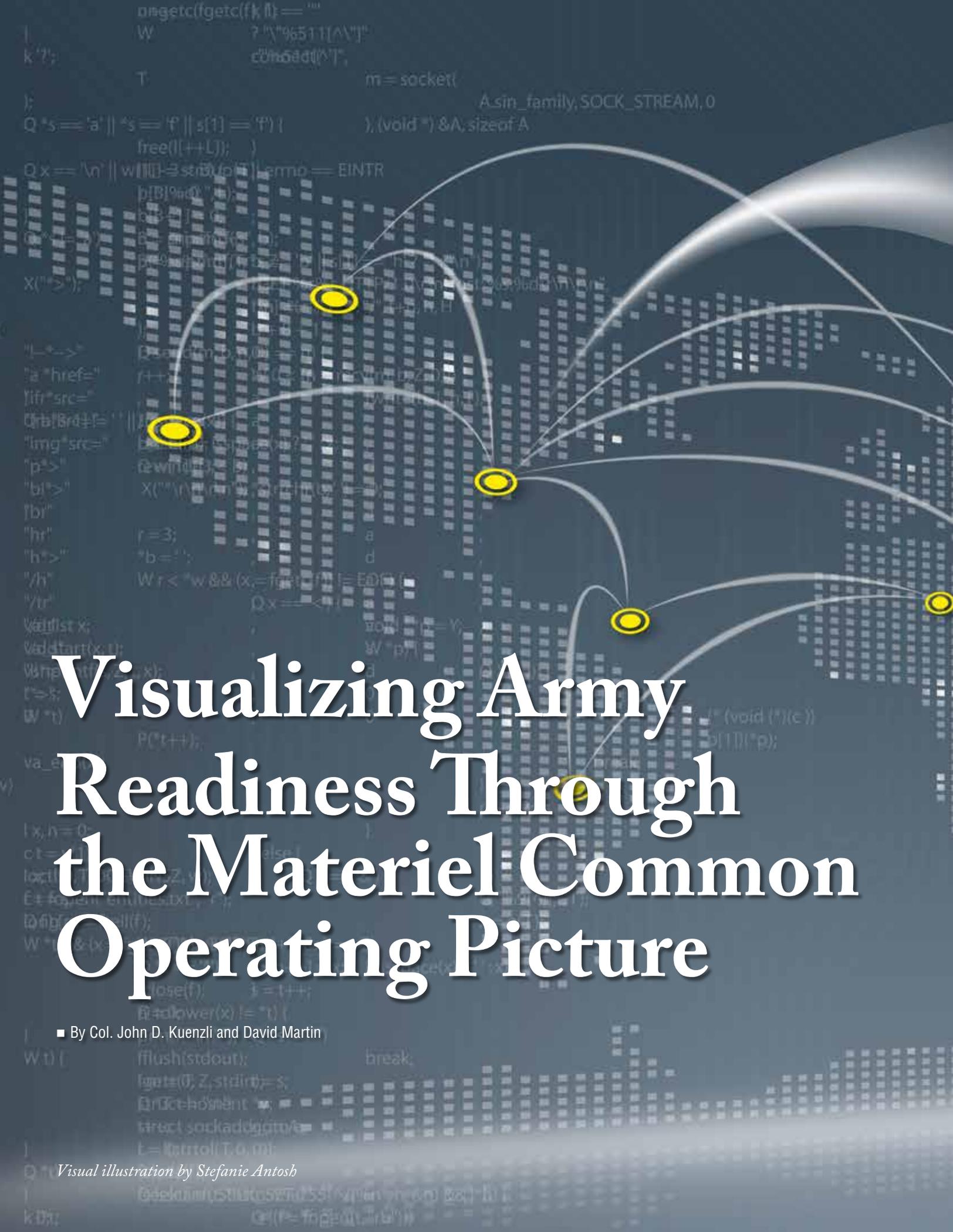
The Army may enjoy only a narrow window of opportunity to prepare for the nation's next conflict. The period we are in now will be described as the current generation's interwar years. We do not know when or where the next fight will take place, but as history shows, it

will most certainly come, and we must be ready.

Repetition is key, and Army leaders should leverage every unit movement as a deployment training opportunity. In 2017, the Army will deploy or redeploy numerous brigade combat teams. Each movement should be viewed as an opportunity to build deployment readiness in the Army's warfighting formations.

By repetitively practicing and mastering the skills associated with deployment and global power projection, the Army will ensure it is ready to deploy, fight, and win when it is called.

Maj. Gen. Kurt J. Ryan is the commanding general of the Military Surface Deployment and Distribution Command at Scott Air Force Base, Illinois. An Ordnance Corps officer, he holds a bachelor's degree from York College of Pennsylvania, a master's degree in logistics management from the Florida Institute of Technology, and a master's degree in strategic studies from the Army War College.



Visualizing Army Readiness Through the Materiel Common Operating Picture

■ By Col. John D. Kuenzli and David Martin

Visual illustration by Stefanie Antosh



As the Army's lead materiel integrator, the Army Materiel Command (AMC) manages the global supply chain and synchronizes logistics activities across the Army to deliver readiness. Resources are not in infinite supply; therefore, the Army's ability to see and make decisions about readiness is critical. Managing the supply chain and synchronizing efforts and effects requires visibility of readiness rates and sustainment activities from the tactical to the strategic levels of support.

While the tactical level is where readiness exists, all readiness resourcing happens at the operational and strategic levels. Synchronizing readiness and resourcing information to achieve one common picture is paramount.

What started out as an idea written on a napkin has evolved into a common operational picture and business intelligence capability that provides

commanders with predictive readiness insight to make key readiness and resourcing decisions. This business intelligence system is known as the Materiel Common Operating Picture (M-COP).

Why the M-COP?

As the Army transitioned from counterinsurgency operations, logistics information systems transitioned simultaneously. Enterprise resource planning (ERP) systems reinvented data processing and analysis and have provided an electronic way to accomplish tasks that before could be done only manually.

The ERP capability provides tremendous potential for Army human resources, finance, and logistics. At AMC, an ERP system called the Logistics Modernization Program has helped modernize depot and arsenal operations, increased depot inventory control, and reduced stocks by more

than \$10 billion.

Additionally, a single ERP system, the Global Combat Support System—Army (GCSS—Army), has replaced the Standard Army Maintenance System (SAMS), Standard Army Retail Supply System, and Property Book Unit Supply Enhanced (PBUSE) for managing all maintenance, supply, and property functions. This single system provides better analysis and linkage between a unit's property and its sustainment operations.

However, the expanding amount of data and information available through ERPs has made it harder to see key readiness indicators. Adding to this difficulty is the fact that a portion of the force still uses SAMS and PBUSE because the Army is still in the process of developing and fielding GCSS—Army.

While ERP systems integrate more data and information, they are built using software that does not com-

FEATURES

A tool developed by the Logistics Support Activity provides commanders with up-to-date readiness information from 17 different systems.

municate with the Army's legacy systems. This has resulted in two separate systems for reporting Army readiness.

Army leaders need a means to see readiness comprehensively. The M-COP has become an increasingly capable lens for the necessary visibility to make decisions to sustain the Army.

What Is the M-COP?

The M-COP is a web-based tool that incorporates and analyzes data from 17 different sources. Through automated processes, the M-COP creates workbooks and dashboards that provide reports on fleet readiness, unit maintenance, supply operations, warehouse operations, installation logistics readiness center operations, and other functional logistics areas.

The M-COP was developed by AMC's Logistics Support Activity (LOGSA), which also developed the Theater Provided Equipment Planner and the Lead Materiel Integrator Decision Support Tool (LMI DST). These previous developments provided a proof of concept for the M-COP.

What Does the M-COP Do?

The M-COP allows leaders at all levels to see multitiered views of key readiness areas or to focus on specific functional areas, such as maintenance, supply, or finance. The M-COP preserves leaders' custom views, allowing them to review and act on information faster. Leaders use this information to make decisions and to review how unit performance aligns with the Army's goals.

The M-COP provides one consolidated readiness picture for tactical, operational, and strategic commands. While the Army uses SAMS and PBUSE in the legacy information systems environment and GCSS-Army in the ERP environment, M-COP consolidates these readiness feeds into a single view of critical fleet readiness, unit property levels, and more.

Once in M-COP, users can tailor their views to their respective needs (for example, information about a specific battalion, brigade, or class of supply) without disrupting or breaking the integrity of the data viewed by other users. After users set up and sort data specific to their needs one time, M-COP will update their established reports daily with necessary data while maintaining a complete data set to be used at other levels.

By using the Army's agreed upon metrics and standards applied as business rules, M-COP automates data analysis and information presentation so that fleet readiness is measured the same at all levels. A supply technician may focus on a specific supply support activity and view its performance in M-COP, while a division G-4 or sustainment brigade may view all of the supply support activities in the division. The M-COP provides single and combined unit views of performance, measured against established metrics and business rules, to accommodate both types of users.

The M-COP also provides a quality control capability for units and staffs as Soldiers continue to learn GCSS-Army. As the M-COP pulls property and maintenance data from units with GCSS-Army, it exposes errors within the system that units do not always see.

GCSS-Army is still new to many users, and some legacy system processes are not conducted in the same way in GCSS-Army. In M-COP, leaders can apply quality checks on their own units' data to ensure what is reported for maintenance and supply is correct.

The M-COP links directly to the LMI DST and provides reports on a unit's progress in executing the turn-in, transfer, or disposal of excess property. While LMI DST sees all unit property book data, including on-hand in lieu of items, the M-COP provides a quick view of unit and installation performance.

The M-COP also provides the ca-

pability for units to conduct meetings and reviews without spending staffs' time building presentations and standalone reports. Staffs can instead spend this time taking action by visiting unit motor pools, maintenance shops, or supply support activities to better understand challenges on the ground. They can also use this time to talk to installation supply representatives or item managers about the delivery of parts with long lead times.

M-COP provides the ability to tailor, save, and share views that will update daily, both on the nonsecure internet protocol router network and on the secret internet protocol router network. Units can conduct nearly all aspects of a brigade maintenance meeting in a live setting without spending hours and days doing staff preparation.

Using prebuilt M-COP views, they can review key maintenance and safety messages, a unit's fleet readiness and projection reports, work order and supply part statuses, and recoverable and repairable items.

M-COP Improvements

The M-COP is continuing to improve by automating division readiness reviews, corps logistics readiness reviews, and other key readiness forums to further reduce the churn and burden of staff preparation.

The logistics community has requested that M-COP allow users to tailor their respective and relative views in any workbook and then save the view. This will allow users to log in to M-COP at any time and view saved workbooks with refreshed data. Users can then share saved views through email with other M-COP account holders (subordinates, partners, and higher headquarters) without developing reports or presentations.

Within the last year, more critical data has been added to the M-COP. At the request of the Army G-4 and the commanding general of the Combined Arms Support Command, LOGSA added 10 additional

dashboard views of information to meet 10 brigade-and-below capabilities, transforming the M-COP from an AMC product to an Armywide product.

Some of the viewable dashboards that reach down to brigade-and-below levels include financial readiness statistics, ammunition management, property accountability, and overall fleet status by system. Bringing this data to the tactical level gives new commanders saved dashboard views that are critical to their jobs and relevant to their units and keeps them from having to go through a lot of work creating slides and reports.

M-COP training for this target audience is beginning in the Logistics Captains Career Course and the Support Operations Course offered by Army Logistics University at Fort Lee, Virginia. Further expansion will include training in logistics warrant officer and noncommissioned officer courses.

M-COP Training

To improve the fidelity of the readiness picture, LOGSA launched an aggressive training and orientation effort to help the Army become familiar with the system. M-COP training teams visited installations and headquarters around the Army in 2016. They will continue to do so this year to increase Soldier and leader awareness of the capability.

In the vicinity of each of AMC's Army field support brigades there is a LOGSA liaison officer serving as an initial touch point for M-COP issues and education. They are ready to provide M-COP assistance and information.

LOGSA can also launch M-COP teams that travel around the Army and provide demonstrations, instructional forums, and question and answer sessions at every level of the Army. Teams have conducted large forum training sessions at Fort Hood, Texas, across Hawaii, and at Redstone Arsenal, Alabama.

At a recent Global Force Symposium in Huntsville, Alabama,

LOGSA offered training for 200 personnel at the LOGSA Logistics Training Forum. The forum taught personnel about the M-COP as well as the most current logistics tools and programs available for sustaining and generating readiness.

Tools like the M-COP have allowed commanders to improve readiness visibility. The Army is moving forward by eliminating stovepiped systems and migrating to ERP systems, and the M-COP gives Army senior leaders the ability to see strategic-level insights in one place.

Through stakeholder involvement and feedback from the field, the M-COP will continue to offer greater predictive analytics for operational and strategic leaders. The M-COP should be operationalized to synchronize sustainment efforts at every level so that units can clearly see and report readiness, identify requirements, conduct risk assessments, develop courses of action, and ultimately provide the right output to meet requirements. The end game is enabling readiness.

Col. John D. Kuenzli is the commander of LOGSA in Huntsville, Alabama. He holds a bachelor's degree from Michigan State University and a master's degree from the Naval Postgraduate School. He is a graduate of the Infantry Officer Basic Course, Combined Logistics Officer Advanced Course, Combined Arms and Services Staff School, and Battalion and Brigade Pre-Command Courses, and the Army Senior Leader Course. He also attended the NATO Defense College as an Army War College Fellow.

David Martin is the deputy to the LOGSA commander. He holds a bachelor's degree from the University of Maryland and a master's degree from the National Defense University. He is a graduate of the AMC Supply Intern Program, the Logistics Management Development Course, Logistics Executive Development Course, and the Industrial College of the Armed Forces.



Army Research and Development Contributions to Readiness

■ By Maj. Gen. Cedric T. Wins



Brent Geary and Jeff Gareri perform maintenance on a multi-mission launcher at the Aviation and Missile Research, Development and Engineering Center's high bay at Redstone Arsenal, Alabama. (Photo by Tom Faulkner)

FEATURES

Through expertise and collaboration, Army research and development organizations get Soldiers the equipment they need as quickly as possible.

Recognizing the contributions that Army research and development (R&D) organizations make to Army readiness can be tricky because the primary R&D products that Soldiers receive—new capabilities in the field—are usually the result of long, complex processes designed to deliver thousands of identical pieces of equipment to everyone at the same time.

If the Army etched each contributing organization's name onto the components of each machine, then it would be easy to see how many organizations contribute to developing the equipment and how vital those contributions are. Prominent among these names would be the Research, Development and Engineering Command (RDECOM), which executes about 75 percent of the Army's science and technology budget.

RDECOM has the mission to research, develop, and engineer capabilities that provide decisive overmatch for the Army against the complexities of the current and future operational environments in support of joint warfighters and the nation.

It's Complicated

Each piece of Army equipment is actually a system of systems. Each component of each system has its own history of discovery, development, and integration from multiple streams of technologies and sources over many months or sometimes years. Each component must take this complex path in order to deliver capabilities that improve Army readiness.

For example, RDECOM's Aviation and Missile Research, Development and Engineering Center delivered the first multi-mission launcher prototype to the Program Executive Office Missiles and Space in late 2015. It was the first major acquisition program developed by the government in more than 30 years.

The center brought together a team of more than 150 subject matter experts from more than 20 func-

tional areas to design, build, and test the system. The team also engaged more than 85 industry partners to assist in designing and manufacturing the launcher. All of this effort was for a system that is made from some existing components and fires existing rockets.

Army R&D personnel contributed to Soldier readiness by having the scientific and technological expertise, the collaborative reach, the position within the greater science and technology community, and the organizational scale necessary to harness the R&D process and meet the Army's needs. Using these tools, The Army's R&D contributions flow along two intertwined paths: scientific and technological expertise and organizational collaboration and support.

Expertise

Scientific and technological expertise contributions are easy to understand because most people have an idea of what scientists and engineers do: they study, work on difficult problems, collaborate, experiment, study some more, collaborate some more, and experiment again.

More specifically, Army scientists discover things about how the world works and use that knowledge to develop technologies. When a technology is sufficiently advanced, the engineers take over to develop it into something even more useful and ideally design a system that works for Soldiers.

Because of how science and technology work, advances may immediately benefit the Army or they may not be useful for decades—if they are useful at all. In science, as in battle, it is important to know when something will not work.

Not every aspect of how technological expertise contributes to readiness is immediately apparent. Scientists and engineers must first understand the unique circumstances and requirements of Soldiers and the Army. This is not something the average scientist or engineer typ-

ically knows, and it is not easy for someone who has not served in the armed forces.

Collaboration and Support

Technology has advanced to the point that an algorithm can be as valuable as a new material. An improved testing method or manufacturing procedure can save millions of dollars or make it possible to field a piece of equipment when the scale or cost would otherwise make the equipment impossible to manufacture. These advancements and their use are made possible through RDECOM's organizational collaboration and support.

Internal collaboration. RDECOM is an organization of almost 14,000 people, including more than 10,000 scientists or engineers working on thousands of projects. The command is composed of six research, development and engineering centers and the Army Research Laboratory that work to synchronize and integrate technologies into Army systems. Internal collaboration is very important.

Requirement partnerships. The most important thing Army scientists and engineers bring to their collaboration and support activities is knowledge. This begins with capabilities development. When RDECOM scientists and engineers are allowed to evaluate technology requirements and provide feedback, the Training and Doctrine Command has a better understanding of whether or not that technology will have some utility in meeting the requirements.

Armed with the knowledge provided by scientists, capabilities developers can fully understand the possibilities and not narrow requirements unnecessarily. They will also have enough flexibility to define key performance parameters and key system attributes to ensure the technology that the Army is pursuing and the requirements are synchronized.

Development partnerships. After determining the requirements,

Army R&D organizations partner with industry and share knowledge through established exchange vehicles, such as cooperative research and development agreements and memorandums of understanding. These exchange vehicles enable Army R&D organizations to develop technology faster because they provide access to research from industry.

Working with industry, the Army can field technology more quickly to Soldiers. The Army R&D community also works closely and shares information with academia. These partnerships help move technology more quickly from the development stage to the final acquisition stage.

Close alignments with industry and academia are key to getting the most advanced technology to Soldiers. The directors of research, development and engineering centers work in concert with industry and academia so that they understand the technological advancements in their fields.

It does not make sense for both the Army and its partners to invest money in the same area. That is why the Army shares intellectual property with its industry and academic partners, who then reciprocate. This kind of arrangement is necessary and will continue to yield positive results down the road.

Support to the field. RDECOM also engages Soldiers on the ground. The Field Assistance in Science and Technology (FAST) teams and RDECOM forward elements work with combatant commanders and major Army staffs who report how Soldiers are using technology in the field and if they have any problems that need to be addressed.

One of the primary ways research, development and engineering centers and FAST teams close capability gaps is by developing prototypes. Prototypes eliminate the long lead times that often occur as a capability moves through the acquisition process. FAST advisers continually look for prototypes that can be delivered

to Soldiers in the field.

R&D for the Future

While RDECOM works to develop capabilities that can be fielded to Soldiers now, it also has to manage innovation and technology long term. Some engineering projects will take several years to bear fruit, and some technology development projects will take significantly longer than that. Recent scientific breakthroughs may not result in a fielded capability for 20 to 30 years.

For example, Army scientists and engineers are exploring exciting technology in quantum effects, human performance enhancement, and synthetic biology. Soldiers in the future will need these technologies to fight and win, so the technologies will remain a priority.

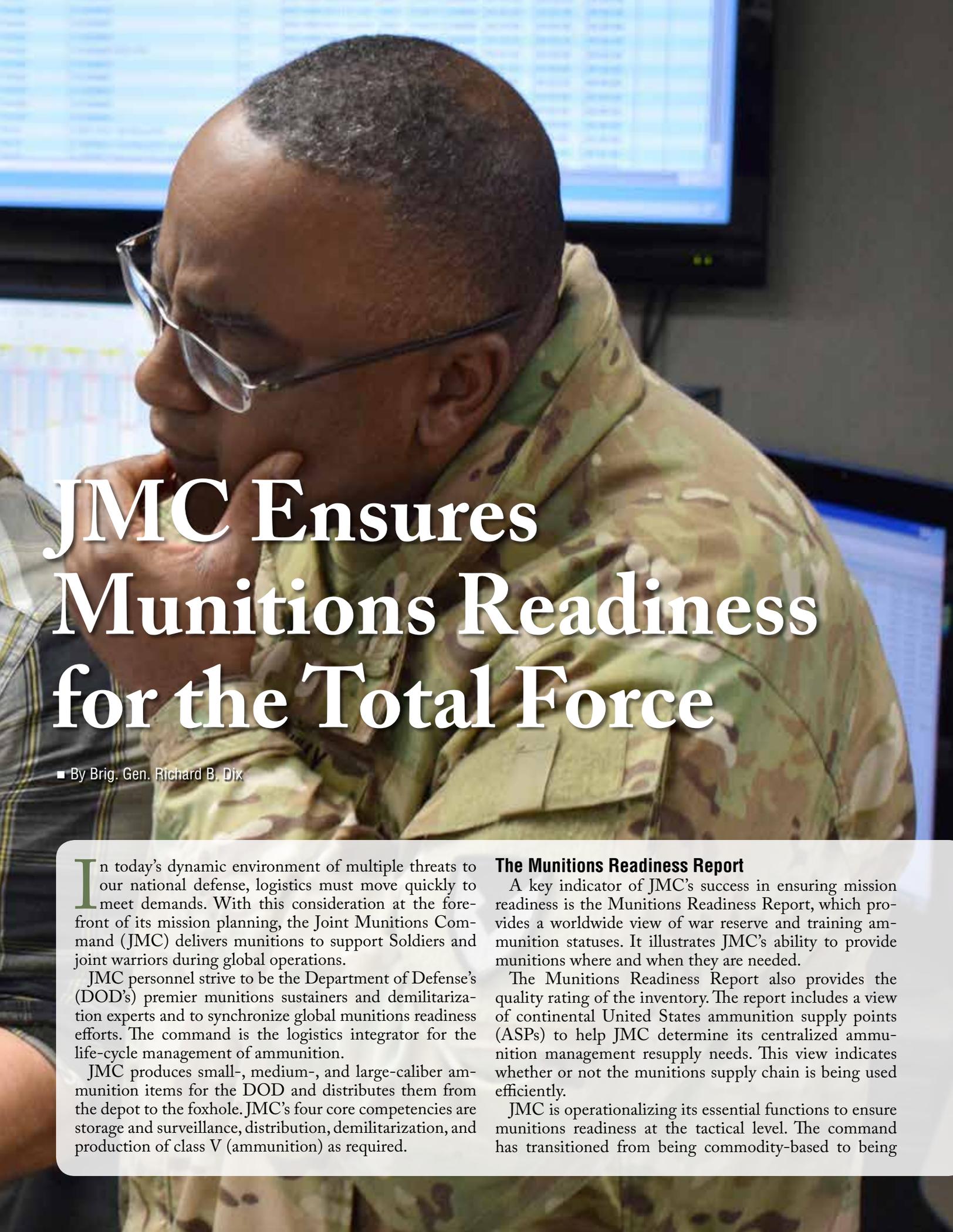
It is also clear that if the Army does not continue to invest in R&D then a growing number of nations and nonstate actors will surpass its capabilities. In some areas, there is no such thing as quickly catching up, an axiom the Army has relied on for several decades.

Technology is moving at a fast pace. RDECOM scientists and engineers are working hard not only to provide today's Soldiers with the latest technologies but also to anticipate what Soldiers in the future will need in a world where battles will be fought very differently. At RDECOM, we are committed to exploring and developing new technology so that Soldiers are ready and capable to fight and win.

Maj. Gen. Cedric T. Wins serves as the commanding general of RDECOM. He holds a master's degree in management from the Florida Institute of Technology and a master's degree in national security and strategic studies from the National War College. He is a graduate of the Field Artillery Officer Basic and Advanced Courses, the Command and General Staff College, and the National War College.



Dustin Cox explains how his depot has been exploring the use of tablets for its ammunition logistics operations to Brig. Gen. Richard B. Dix, commanding general of the Joint Munitions Command, during his visit to Crane Army Ammunition Activity, Indiana, on March 7, 2017. (Photo by Capt. Marshall Howell)

A man in a military camouflage uniform and glasses is looking at a computer monitor. The monitor displays a grid of data, likely a munitions readiness report. The man is resting his chin on his hand, appearing thoughtful.

JMC Ensures Munitions Readiness for the Total Force

■ By Brig. Gen. Richard B. Dix

In today's dynamic environment of multiple threats to our national defense, logistics must move quickly to meet demands. With this consideration at the forefront of its mission planning, the Joint Munitions Command (JMC) delivers munitions to support Soldiers and joint warriors during global operations.

JMC personnel strive to be the Department of Defense's (DOD's) premier munitions sustainers and demilitarization experts and to synchronize global munitions readiness efforts. The command is the logistics integrator for the life-cycle management of ammunition.

JMC produces small-, medium-, and large-caliber ammunition items for the DOD and distributes them from the depot to the foxhole. JMC's four core competencies are storage and surveillance, distribution, demilitarization, and production of class V (ammunition) as required.

The Munitions Readiness Report

A key indicator of JMC's success in ensuring mission readiness is the Munitions Readiness Report, which provides a worldwide view of war reserve and training ammunition statuses. It illustrates JMC's ability to provide munitions where and when they are needed.

The Munitions Readiness Report also provides the quality rating of the inventory. The report includes a view of continental United States ammunition supply points (ASPs) to help JMC determine its centralized ammunition management resupply needs. This view indicates whether or not the munitions supply chain is being used efficiently.

JMC is operationalizing its essential functions to ensure munitions readiness at the tactical level. The command has transitioned from being commodity-based to being

FEATURES

The Joint Munitions Command's global mission is to deliver ready, reliable, and lethal munitions at the right place and time to support the joint force.

process-focused. By focusing on its core competencies, JMC is poised to better anticipate customer requirements, identify demands from the field, and deliver munitions to sustain training base and combatant command (COCOM) readiness.

CAM

In 2002, JMC had critical shortages in 30 of 42 rated munitions groups. That year, to rebuild the broken supply chain, the Centralized Ammunition Management (CAM) system was established to enable the integration of wholesale and retail ammunition management. CAM encompasses five U.S. geographic regions and aligns JMC depots and customers with JMC's Enterprise Integrated Logistics Strategy.

CAM provides JMC with the ability to ship millions of rounds of ammunition annually to ASPs and COCOMs throughout the five regions. JMC uses the system to supply 85 ASPs in support of the military services and the test community. Through CAM, JMC's customers can maintain visibility of requisitions.

CAM allows JMC to project munitions in support of COCOMs, concept plans, and Army pre-positioned stock vessels to better enable support to global operations and training and to ensure optimal adaptability to the future operational environment. CAM also prevents an excess build-up of ammunition at the ASPs.

Globally, CAM is used to supply 55 joint installations, including those in Puerto Rico and Honduras, and other theaters of operation.

Managing Efficiency

An important part of the JMC's framework is a distribution network that balances readiness and efficiency. Over the past four years, the JMC network has shipped and received an average of 331,605 short tons of munitions annually.

Another important aspect is managing munitions storage requirements. While critical supporting

supply depots sustain the stockpile, JMC analyzes storage footprints to ensure the depots have the proper storage capacity to meet DOD wholesale munitions storage requirements.

JMC works with Program Executive Office Ammunition to manage the demilitarization of stored ammunition. In order to ensure munitions readiness and a viable footprint in the future, JMC stores all munitions efficiently and economically while working to right-size excess infrastructure and munitions.

JMC takes into consideration the production and other third-party work performed at Army installations. The JMC network provides critical munitions production capabilities and support for a wide range of private and public customers. JMC uses an integrated business strategy to ensure installations sustain critical capabilities.

The revenue from production and third-party workload can help spread overhead costs. In addition, during a contingency outload surge, production and third-party depot personnel, as well as other personnel performing logistics functions, can be temporarily reassigned to supplement the outload distribution staff in order to move ammunition more quickly and efficiently. This additional "flex labor" allows each depot to increase its outload capacity from a lower initial level during the first week of the contingency to a maximum surge level.

The JMC headquarters also strives to ensure timely support to the COCOMs. In 2016, JMC stood up its COCOM desks to serve as direct liaisons from JMC to the COCOMs. COCOM desk personnel can elevate munitions issues, such as time-sensitive problems with resupply, shortages, or malfunctions, directly to the JMC commanding general.

SAAS-MOD

To support the Army Sustainment Command as the Army Materiel Command's face to the field, JMC

uses the Standard Army Ammunition System–Modernization (SAAS–MOD) to track ammunition once it leaves a depot.

ASPs, ordnance companies, and ammunition transfer holding points use SAAS–MOD to account for ammunition before issuing it to a unit. The current SAAS–MOD is being upgraded to provide more centralized and accurate information to support ammunition management.

SAAS–MOD provides munitions management functionality from the brigade through theater levels for the operational Army. In addition to managing assets, SAAS–MOD supports a combat commander’s intent in forward positions and allows leaders to adapt to needs on the battlefield.

The Organic Industrial Base

JMC manages a nationwide network of organic industrial base installations that sustain critical capabilities, meet current mission requirements, and provide the ability to surge production of ammunition as required. The organic industrial base is essential to the nation’s readiness and allows warfighters to be combat-ready.

Through continuous improvement initiatives, JMC has right-sized, made invulnerable, and modernized the organic industrial base. That base can anticipate and surge munitions in an uncertain and complex world to fulfill Army and joint warrior munitions requirements at the point of need.

Cost-Saving Programs

As JMC strives to be more effective, more efficient, and the best value for the Army and the DOD, it finds new ways to provide lethality to ensure warfighter success. This includes developing innovative solutions.

One example is the low-cost reduced-range practice rocket (LCRRPR) igniter rework program at Crane Army Ammunition Activity (CAAA), Indiana. In order to provide LCRRPR igniters quickly

and at a fraction of the cost of new procurement, CAAA recently developed a rework process, which includes fabrication of tooling and test equipment, for unserviceable igniters already in the inventory.

After successful testing of the first seven LCRRPR units at Redstone Arsenal, Alabama, in the summer of 2016, CAAA stood up the process to complete another 100 units. CAAA is now a qualified supplier of the reworked LCRRPR igniters for the Aviation and Missile Life Cycle Management Command.

CAAA reworks an igniter for roughly half the cost of a new igniter and eliminates shortages in the supply stream. Reworking 50,000 igniters would save the Army approximately \$12.5 million.

A recent initiative at Radford Army Ammunition Plant (RFAAP), Virginia, is another example of JMC working to operate more efficiently and cost-effectively. In January 2017, RFAAP shipped more than 2 million pounds of propellant to other locations for demilitarization. In doing so, RFAAP cleared out 22 active, within-code magazines and rented out that space.

This initiative saves money in two ways. First, it increases revenue by renting out the magazines. Second, it decreases overhead costs by ceasing maintenance of the magazines at the strict temperature and moisture quality-control thresholds required for propellant. RFAAP’s staff will continue to consider how to move the other magazines on the installation to other locations, thereby maximizing capacity and lowering net costs.

Ordnance Training

To support readiness, JMC assists in the training of ordnance Soldiers. Before a deployment, ordnance units require six months to become proficient in sustainment tasks. But in the past, they have lacked hands-on predeployment training.

A JMC-led initiative called mobilized ordnance specific training

(MOST) fills this gap and improves the readiness of deploying ammunition units. JMC is expanding MOST to include explosive ordnance disposal Soldiers from across the total force.

MOST is part of JMC’s Total Force Integration initiative, which supports the implementation of the Army’s Total Force Policy. It has two phases: munitions individual sustainment training (MIST) and munitions unit sustainment training (MUST).

MIST is individualized training on munitions tasks such as ammunition storage, shipping, accountability, and stock control. MIST training is available at five JMC-managed installations: Tooele Army Depot, Utah; McAlester Army Ammunition Plant, Oklahoma; CAAA; Letterkenny Munitions Center, Pennsylvania; and Blue Grass Army Depot, Kentucky.

MUST supplements MIST by providing ammunition platoons with a unit training event designed to increase proficiency on mission-essential tasks. The MUST event includes topics such as explosives safety and loading operations.

From storage and surveillance to distribution, demilitarization, and production, JMC operationalizes the ammunition enterprise in support of munitions readiness for the total force. JMC provides lethal munitions from the depot to the foxhole to ensure warfighter success.

Brig. Gen. Richard B. Dix is the commanding general of the Joint Munitions and Lethality Life Cycle Management Command and the Joint Munitions Command. He holds a bachelor’s degree in marketing from South Carolina State University, a master’s degree in national resource strategy from the National Defense University, and a master’s degree in materiel acquisition management from Webster University. He is also a graduate of the Industrial College of the Armed Forces.



Sustaining Fight Tonight Readiness

■ By Brig. Gen. John P. Sullivan and David E. Dutcher

In the Republic of Korea (ROK), sustaining “Fight Tonight” readiness is the primary mission of the U.S. Army’s 19th Expeditionary Sustainment Command (ESC). The command strives to be ready to support Eighth Army’s mission of deterring North Korean aggression and maintaining peace on the Korean Peninsula.

The 19th ESC is headquartered in Daegu, ROK, and its units are geographically dispersed across all four areas of the theater. The 19th ESC is the sustainment synchronizer and integrator on the peninsula. It provides operational sustainment to Eighth Army as it executes com-

bined and joint reception, staging, onward movement, and integration (CJRSOI), noncombatant evacuation operations (NEO), and Army support to other services within the Korean theater of operations.

Fight Tonight is more than just a slogan. The strategic importance of the Korean Peninsula in the U.S. Pacific Command area of responsibility, coupled with the dynamic, ever-evolving threats on the peninsula, underscores the importance of Fight Tonight readiness.

Readiness serves as a cornerstone and an enduring priority for both Eighth Army and the 19th ESC. Every 19th ESC training event serves

to better set the theater and prepare the command to execute its contingency missions.

Realistic Training

One of the command’s key missions in support of Eighth Army is the reception, staging, and onward movement (RSO) of personnel and equipment arriving on the Korean Peninsula. Along with the major theater exercises conducted there each year, Key Resolve and Ulchi Freedom Guardian, the rotation of forces to the peninsula provides the command ample opportunity to train on this critical mission set.

During 2016, the 19th ESC sup-



Pfc. Drestan Thompson, 19th Expeditionary Sustainment Command, is tested on his ability to react to unexploded ordnance during Expert Field Medical Badge testing near Panmunjeom, South Korea, on April 25, 2016. (Photo by Pfc. Lee Kyeong-min)

FEATURES

Readiness is a cornerstone and an enduring priority for the 19th Expeditionary Sustainment Command and Eighth Army.

ported the deployment of the 1st Brigade, 1st Infantry Division, and the redeployment of the 1st Brigade, 1st Cavalry Division, as well as several smaller unit deployments. Capturing the RSO lessons learned from each unit rotation allowed the command to improve RSO processes and hone readiness.

Integrating strategic sustainment partners, including the Army Materiel Command's 403rd Army Field Support Brigade and the Military Surface Deployment and Distribution Command's 837th Transportation Battalion, into RSO support operations allows the ESC to harness the unique capabilities of these organizations.

The 19th ESC also works with ROK partners, such as the ROK Transportation Command and the ROK's 2nd Operational Command, which further improves interoperability.

CJRSOI Training

Over the course of 2016, the 19th ESC led multiple tabletop exercises and rehearsal of concept drills to ensure synchronized CJRSOI procedures. These meetings were attended by U.S. and ROK leaders and staff sections from across the peninsula, from within the U.S. Pacific Command area of responsibility, and from stateside units scheduled to attend CJRSOI exercises in the ROK. These events culminated with ground and aerial inspections of CJRSOI nodes.

The 19th ESC also led two field training exercises (FTXs) in 2016 that involved ROK partners and running convoys from the port of Busan to northern staging areas by road and rail. In addition to training Soldiers on the multimodal transportation of personnel and cargo, the FTXs stressed the convoy escort responsibilities of ROK partners, mission command for both U.S. and ROK units, and combined communication and in-transit visibility.

Numerous ROK Homeland Reserve divisions operated throughout the battlespace to train on route and area security responsibilities. Both

FTXs involved area of responsibility transfer and coordination at the ROK joint chiefs of staff and ROK Transportation Command levels as the convoys crossed from one ROK field army operating space into another.

The 19th ESC continually addresses limitations in the current CJR-SOI framework to improve tactics, techniques, and procedures. Specifically, U.S. Forces Korea (USFK) and Eighth Army lead annual wartime host-nation support, Wartime Movement Program, and Korean Service Corps conferences to capture CJRSOI requirements.

NEO

The 19th ESC is responsible for ensuring Fight Tonight readiness for the NEO mission in area IV. Although the declaration of NEO is ordered by the Department of State, it is the responsibility of the Department of Defense to evacuate civilians affected by NEO. The Department of State estimates that about 500,000 people in the ROK would need to be evacuated in the event of hostilities.

While most noncombatant evacuees are located in the areas surrounding Seoul, most evacuation nodes are located in the southern coastal regions where the 19th ESC is responsible for establishing and operating relocation centers.

The 19th ESC works closely with ROK counterparts and the U.S. Transportation Command to ensure the timely relocation and evacuation of noncombatants to minimize the amount of time they stay in harm's way.

NEO training is addressed continually to ensure readiness. NEO tabletop exercises and ROC drills are held in conjunction with those supporting the CJRSOI mission, ensuring joint and combined partners understand that these mission sets will likely be executed concurrently in a wartime setting.

Unlike for CJRSOI operations, the civilian population is heavily involved in NEO. Families new to the

Korean theater of operations receive initial NEO briefings during newcomer's orientation sessions. They are required to meet their NEO wardens, build their NEO packets, and receive their field protective masks from the central issue facility before being issued a ration control card.

These dependents also participate in annual NEO training exercises to include Focused Passage and Courageous Channel. The latter requires all family members to process through an assembly point in areas I, II, or III or a relocation center in area IV.

Key Resolve and Ulchi Freedom Guardian test NEO mission command and reporting procedures. During each exercise, USFK uses forward engineer support teams to identify and provide recommendations about existing ROK infrastructure that could potentially serve as NEO mission areas.

Follow-on meetings are scheduled with ROK leaders to validate the availability of locations recommended for the NEO mission. Although wartime host-nation support is only applicable to the CJRSOI mission, ROK support (in the form of the Wartime Movements Program and the Korean Service Corps) allows the 19th ESC to update and notify the ROK military of requirements to support the NEO mission.

As it does with CJRSOI, the 19th ESC trains as it fights regarding the NEO mission set and constantly challenges both U.S. and ROK units to make the training scenarios as difficult and realistic as possible. This was demonstrated during Courageous Channel in October 2016, when the 19th ESC trained on NEO by leveraging the redeployment of 300 Soldiers of the 1st Brigade Combat Team, 1st Cavalry Division.

Using the redeploying Soldiers as role players allowed the 19th ESC to train realistically on evacuating civilians as part of a NEO event. With the injection of a master scenario events list, Soldiers simulated having medical problems, lost passports, frustration, and other realistic issues

associated with a NEO movement.

To further provide realism, the 19th ESC worked closely with U.S. Forces Japan and U.S. Army Japan to establish temporary staging support at Yokota Air Base, Japan, for the Soldiers before onward movement to the continental United States.

The 19th ESC also "evacuated" volunteer family members to Okinawa, Japan, aboard a Marine Corps C-130 Hercules aircraft. Joint partners cared for the evacuees for two days at a Marine Corps base before returning them to South Korea.

Operation Pacific Reach 2017

The 19th ESC put all aspects of sustaining Fight Tonight readiness to the test in April 2017 at Pohang, ROK, during Operation Pacific Reach. This two-week U.S. Transportation Command, Combined Forces Command, and USFK exercise was a multidomain, multiechelon, combined, and joint sustainment exercise.

The 19th ESC took on the mission of an expeditionary joint sustainment command in leading and exercising mission command of combined joint logistics over-the-shore, air terminal supply point, and area distribution center operations. It established its command post in an austere environment to provide mission command to all sustainment units and synchronized operations across multiple domains.

The Materiel Support Command-Korea established distribution operations to provide sustainment and Army support to other services. Its central receiving and shipping point simulated bringing cargo into an austere environment, breaking it down, and sending it out to forward-echeloned units.

The ROK's 2nd Logistics Support Command and the 2nd Infantry Division Sustainment Brigade established a combined logistics element to increase interoperability. They conducted combined sustainment including aerial delivery with both ROK and U.S. riggers.

The Joint Task Force-Port Opening

and ROK Combat Response Squadron combined to rapidly deploy and operate from two airports. They loaded U.S. and ROK cargo onto C-130 and CASA-235 transport aircraft at Gimhae Air Base in Busan, ROK, and discharged it at Pohang Airport.

The Navy's Expeditionary Strike Group 3, the 7th Transportation Brigade (Expeditionary), and the ROK Flotilla 5 established a combined joint operations center, which tested the synchronization of discharging containers and equipment from U.S. and ROK vessels over the shore.

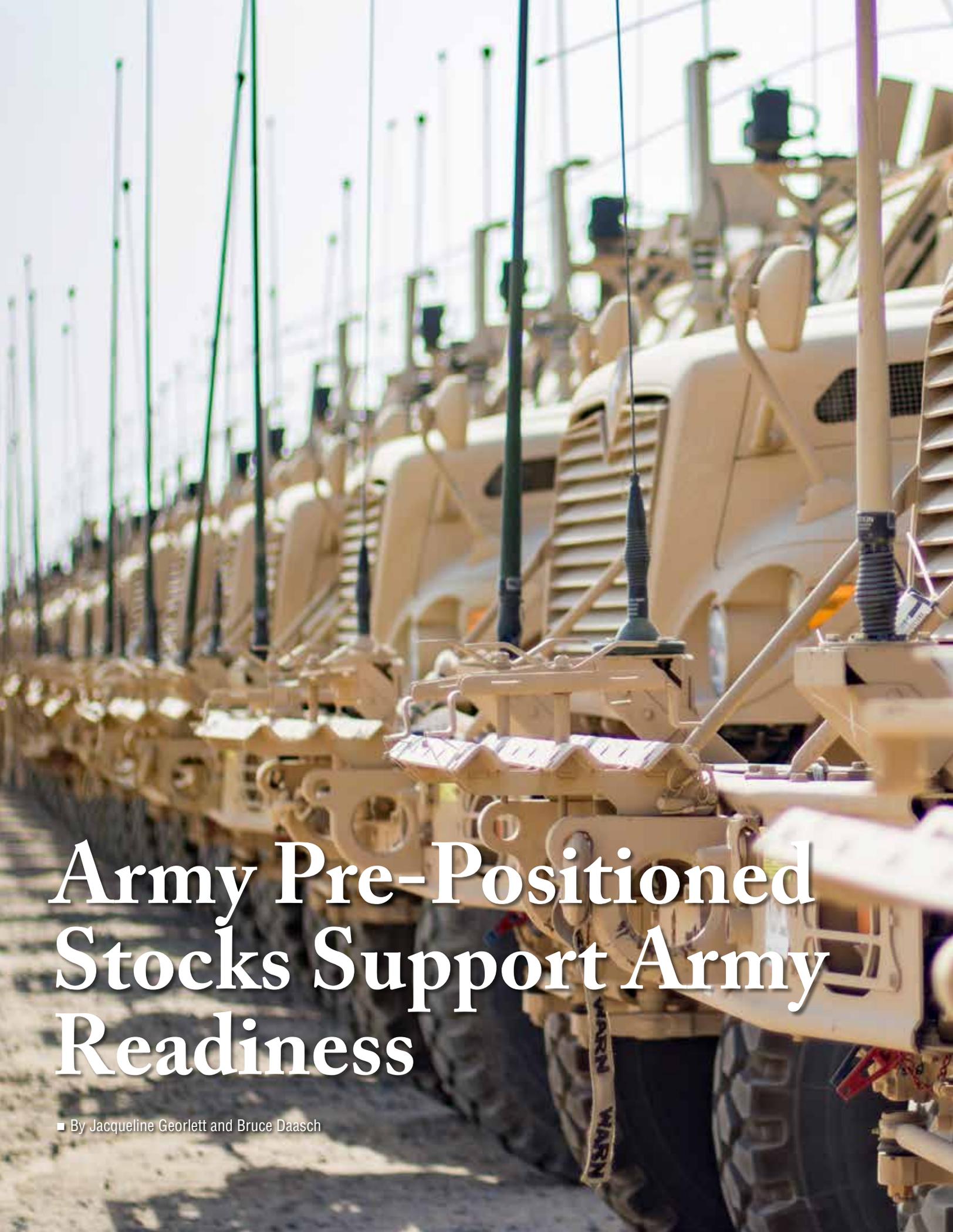
The exercise validated bulk fuel system interoperability of the offshore petroleum discharge system, the marine amphibious assault fuel system, and the inland petroleum distribution system.

The 19th ESC's operational reach on the Korean Peninsula in the U.S. Pacific Command area of responsibility underscores the importance of Fight Tonight readiness. Readiness is a cornerstone and enduring priority for both Eighth Army and the 19th ESC.

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Army Pre-Positioned Stocks Support Army Readiness

■ By Jacqueline Georlett and Bruce Daasch



Vehicles and equipment are pre-positioned at the wharf at the Army Strategic Logistics Activity–Charleston in Charleston, South Carolina, in June 2015. This equipment was being shipped to Europe to build up the European Activity Set, part of the Army's pre-positioned stocks program. (Photo by Sgt. 1st Class Shannon Blackwell)

FEATURES

Army pre-positioned stocks need to be ready, modern, and responsive equipment sets that are regionally aligned to meet geographic combatant command requirements and timelines.

Army pre-positioned stocks (APS) are vital components of total Army readiness. They provide speed of response for geographic combatant commanders to execute operation plans (OPLANs) and conduct contingency operations worldwide.

Why the Army Uses APS

The pre-positioning of stocks throughout the world provides the Army with the ability to rapidly equip forces and provide support until air and sea lines of communication can be established.

Pre-positioned stocks are located at or near the points of planned use, reducing the initial strategic lift required for power projection to enable the fight until the theater matures. Using APS is essential to creating tactical and technical overmatch in a geographic combatant command area of responsibility and to countering immediate threats.

Key to fighting and winning the nation's wars is the ability to respond quickly to meet combatant commanders' objectives. This means maintaining responsive APS capabilities to deter and defeat current and future complex threats in the battlespace in any operational environment.

APS are critical to quickly employing overwhelming combat capabilities anywhere in the world. U.S. land forces must have the ability to act even when no permanent U.S. presence or infrastructure is available. This is the purpose of the APS program.

Types of APS

APS comprise five land- and sea-based categories: unit sets, operational project stocks, sustainment stocks, War Reserve Stocks for Allies, and activity sets.

Unit sets are equipment positioned ashore and afloat worldwide to reduce deployment response times and support the Army's force projection strategy.

Operational project stocks are designed to support Army operations, plans, and contingencies. They consist of materiel tailored to strategic capabilities essential to the Army's force projection strategy.

Army war reserve sustainment stocks are major end items and war reserve secondary items pre-positioned in or near a potential theater of operations. They are used to sustain operations by replacing supplies consumed or lost in combat until wartime production and supply lines can be established.

Sustainment stocks provide the minimum essential support to combat operations and postmobilization training beyond the capabilities of peacetime stocks, industrial production, and host-nation support.

The War Reserve Stocks for Allies program is directed by the Office of the Secretary of Defense to pre-position stocks that assist U.S. allies in case of war. These stocks are released to Army component commanders for transfer to the supported allied force under provisions of the Foreign Assistance Act and under existing nation-to-nation agreements.

Activity sets are used to equip Army forces deploying outside the continental United States to conduct training and exercises, including joint and bilateral operations.

The concept of the APS activity set was introduced in 2014 and continues to evolve. Activity sets are currently being used in Europe to support concepts of adaptive planning and theater campaign plans. Future activity sets will be built to support the U.S. Pacific Command, U.S. Army Special Operations Command, and U.S. Southern Command.

Responsible Organizations

The Army Materiel Command (AMC) is the Army executive agent for the APS program. In this role, AMC is responsible for APS program management, equipment modernization planning, and cur-

rent operations, excluding class VIII (medical materiel) support. AMC also orchestrates the development of standards and procedures for the transfer of APS materiel to deploying combat units.

The Army Sustainment Command executes the APS mission for AMC through its Army field support brigades with critical assistance from AMC's life cycle management commands, the Military Surface Deployment and Distribution Command, and the Army Contracting Command. AMC ensures the readiness of APS support to the global combatant commanders at the tactical points of need.

APS Strategy Changes

While the purpose of APS remains unchanged, the APS program is evolving as it plays a more essential role in response to the changing operational environment. Continued high demand on the total Army force, budget constraints, and changes to planning doctrine have resulted in a growing requirement for the use of APS.

The Army is currently developing the APS 2025 Strategy for implementation this year. This future APS strategy is aligned with current Army strategic guidance and designed for defeating current and future threats.

Pre-positioned stocks will be organized and maintained to support shaping operations and contingency plans. The revised APS strategy supports the Army Power Projection Program. It is clearly defined, synchronized with Army initiatives, and flexible in response to changing requirements. APS will contribute to assurance and deterrence while supporting global responsiveness.

What This Means

What does the transition to the APS 2025 Strategy mean to the Army? The primary focus of the future APS strategy will be shaping APS into ready-to-fight configurations with increased speed of issue

and readiness to support changing and evolving global priorities.

APS-2, located in Europe, are high-priority, and new APS-2 unit sets are currently being built. APS will be postured to reduce force closure times throughout Europe and to support U.S. Pacific Command and U.S. Central Command

Continued high demand on the total Army force, budget constraints, and changes to planning doctrine have resulted in a growing requirement for the use of APS.

OPLAN requirements.

The APS 2025 Strategy will serve as the updated road map for fielding and sustaining APS and will provide guidelines for integrating APS in theater campaign plans. This new strategy also presents a foundation for a continuous assessment and a decision cycle for adjustments of pre-positioned stocks.

Transitioning to a more operationalized APS program will give Soldiers critical enabling technologies that provide decisive overmatch to shoot, move, communicate, command, control, and protect. Modernization efforts are key to achieving the new paradigm.

Modernization is more than simply updating equipment in the APS fleets. Speed of response is achieved through a multifaceted approach, which includes enhanced facilities allowing for the storage of sets in a highly enabled and preconfigured state to reduce equipment issue time.

The ultimate goal is to store and issue equipment in a ready-to-fight configuration with command, control, communications, computers, intelligence, surveillance, and reconnaissance enablers to allow for a quick response to any OPLAN or contingency requirement.

The Army is currently planning

for significant changes and improvements to the APS infrastructure and the labor categories required to maintain these technologies and enablers. The goal is to configure, store, sustain, and issue to optimize relevance and provide flexibility for combatant commanders.

As seen in Europe and around the

world, APS are critical enablers supporting the geographic combatant commanders' OPLANs and contingency operations. As the Army implements the new APS 2025 Strategy, it will set the conditions to continue to equip, sustain, and station APS equipment at multiple locations worldwide. Through APS, AMC ensures that deploying units have what they need to defeat any threat.

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Bruce Daasch is the chief of the Land Based APS Division at the Army Sustainment Command. He holds a bachelor's degree in marketing from Augustana College and an MBA from St. Ambrose University. He is level III certified in life cycle logistics and level II certified in facilities management. He is part of the Army acquisition workforce and a former Navy submariner.



Maj. Gen. Duane A. Gamble, commander of the 21st Theater Sustainment Command, observes a 702nd Ordnance Company (Explosive Ordnance Disposal) Soldier operating a remote-controlled Talon robot during Vanguard Proof at Pocek Range in Postonja, Slovenia, on March 22, 2017. (Photo by Paolo Bovo)

Technology and Army Readiness:

An Interview With Retired Gen. Peter Chiarelli

■ By Arpi Dilanian and Matthew Howard

As the vice chief of staff of the Army, retired Gen. Peter W. Chiarelli oversaw day-to-day operations of the Army's 1.1 million Soldiers. Among other accomplishments, he changed the military's attitude about mental health issues. He now serves as chief executive of a Seattle-based company overseeing science and technology that will not only radically change how brain injuries are treated but could also help the Army build readiness. Here are his impressions of some of the challenges currently facing the Army.

Army Readiness has many components: manning, equipping, training, maintenance, and leader development. Which is most important?

I do not think there is one that is most important. I think they are all very, very important. When I was in the Pentagon, I worked for successful chiefs [of staff of the Army] who really believed it was necessary that we keep everything in balance and that you run into problems if, in fact, you emphasized one component over the other.

I think the components of readiness are all supportive of one another. Good training is good leader development, but it's also absolutely critical that we equip the force with the most modernized equipment available while maintaining the manning levels we need so that we can fight.

I remember the words of a mentor of mine, and it's generally accepted in the Army today: "No Soldier should go into harm's way untrained." That is as true today as it has been throughout the history of the Army.

Do you think the Army is getting the philosophical fundamentals cor-

rect as it shifts from the Army Force Generation (ARFORGEN) model to the Sustainable Readiness Process in order to maintain readiness?

As one who led the Army when it was in the ARFORGEN model, I think the Sustainable Readiness Process is the right way to go. I honestly believe many of us grew up in something that was very close to the Sustainable Readiness Process. Leaders today have been informed by 16 years of combat and are blending lessons learned from those conflicts with the Army's training model. I have great confidence that we are getting the philosophical fundamentals correct because I have great trust in the leadership of the Army today.

How can the Army better maintain readiness in the reserve component to keep the total force ready?

You have to be willing to invest in it. If you don't invest in it, you're not going to get the kind of ready force that we know we need. That was one of the great frustrations to me in my last year and a half as vice [chief of staff of the Army]—the inability to convince everyone that we needed to invest in the reserve component.

I was in the Pentagon on 9/11. In fact, I was the head of the Army Operations Center . . . After the building was hit, we brought in a reserve component military police battalion to help provide force protection. These were individuals who reported to the building with their weapons, but they were not prepared to do the assignment. It was no fault of theirs. They wanted to be well-trained Soldiers, but we had not invested in them prior to 9/11.

Throughout the past 16 years, the Army has made a huge investment, mostly through overseas contingency operations funding, in training the reserve component, and I would hate to see us go backward. I really believe that given the size of the active component force, and the reliance on the reserve component, particularly the sustainment forces, we just can't afford to have them untrained.

I really think we need to make the case for acquiring the resources needed to train them; but, I think we have to take the long view and ensure that no matter the resources we're given, the reserve component gets its fair share. I feel very strongly about that.

What are a few of the most important lessons that the Army learned when it wasn't as ready as it could have been?

I remember as we were getting ready to do the drawdown of the force after the Berlin Wall came down; Chief of Staff of the Army Gen. [Gordon] Sullivan did a video clip. In that clip he reemphasized over and over again, "No more Task Force Smiths."

He was referring to the first ground maneuver unit to enter combat in Korea after the North invaded. That happened not too long after World War II. As the nation normally does, it decided to take its peace dividend, underfunded the Army, and when faced with the crisis in Korea, we found ourselves in a situation where we had to send an untrained force into harm's way.

As I was growing up in the Army during the Cold War, if there was a division that was C-4 [requiring additional resources or training to accomplish the mission], it was front page,

FEATURES

A former vice chief of staff of the Army discusses readiness and the move to the Sustainable Readiness Process.

above-the-fold news in *The New York Times* and *The Washington Post*.

I remember Gen. [Raymond] Odierno testifying that only about a third of the force was properly trained and could go into combat. I think we have to make sure that we get back to the idea of the absolute criticality of having a well-trained force. I fear somehow we've gotten away from that. It's natural maybe that it occurs. At least it seems to be a historical trait that, over the life of the nation, every time we exit a war we take away the resources necessary to maintain the force and the fighting edge that it has coming out of conflict. That is a great concern to me, and I think it should be a great concern to all Americans.

What advice would you provide commanders and unit leaders on the best ways to ensure their units remain ready?

There is nothing that substitutes for good, well-thought-out training. Commanders have to be good trainers and have to have a willingness to learn their art. That's absolutely essential for leaders at all levels, from platoon all the way up to corps. They need to ensure that they understand Army doctrine, and they need to be able to apply that in their training exercises.

I remember what UCOFT [unit conduct of fire trainer] did to the armor force; it revolutionized the way we trained. I think it's time the Army break out of the program of record when it comes to training devices and look at some of the things that can be found commercially that have great applicability to training Soldiers.

I am absolutely intrigued with virtual reality and where the civilian commercial world is going with its use. I think there is an opportunity for the Army to have state-of-the-art trainers if it would look outside of programs of record that take eight to 10 years to develop and that deliver eight-to-10-year-old technology. In contrast, some of the things [capabilities] we're seeing in virtual reality today are changing every other year,

if not every year. These are huge advancements that I only wish that I had while I was training my force.

Today, I work with individuals with post-traumatic stress and traumatic brain injury, and one of the things that is being used is something called prolonged exposure therapy. You recreate for the individual what brought about the change in their amygdala that caused post-traumatic stress. Watching how civilian advancements in virtual reality transport individuals back to whatever caused them to have the problem that they're having today, and the ability to use that in evidence-based therapy, is absolutely amazing. I think there is tremendous applicability for the Army.

Good commanders will need to understand the combination of live and virtual training and how they complement each other. You can, in fact, get a much better-trained force if you use those in the right combination. And it would be a less costly training bill, both in terms of time—which is really a trainer's most precious asset—and money.

Are there other futuristic concepts and advancements that will change how the Army fights and remains ready?

I think virtual reality in all its different variations and where it's going will give us a capability we've never had before. When we first had the UCOFT, it was a big box that was delivered to the battalion area with a huge operations and maintenance bill that went along with it, and Soldiers had to leave wherever they lived to come train. Today, we have the ability to almost do that [training] off of an iPhone 7.

I can see the Army moving away from some of the elaborate training centers built on posts, camps, and stations and going to relatively inexpensive virtual reality environments that can be much more realistic. I remember at the start of the Iraq War, I visited a center at the 101st [Airborne Division] where Gen. [David] Petrae-



Retired Gen. Peter W. Chiarelli

us had established an amazing course for his medics and combat lifesavers to train on triage and treating the combat wounded. We can do that in virtual reality today for a fraction of the cost of what it took to do the same back then.

I don't want to be misunderstood to say that live training isn't absolutely critical. It is absolutely critical. But good trainers are going to find ways to use these kind of tools to get their Soldiers to a higher level of training before they spend precious resources in the most expensive form of training, which of course is live training with all its pieces. I believe that when you marry these together, you're going to get a much better-trained force.

What about robotics?

I think we have finally turned the corner on robotics and should really look at how robotics can help us on the battlefield. I was in Pittsburgh recently, and I noticed as I drove into town that the vehicle in front of me had a spinning dome on top of it. It was a driverless vehicle. Uber is testing its ability to put driverless vehicles on the road in a very difficult city to navigate. Requirements today mandate that a driverless vehicle have a human driver in the seat, but they seem to be the most bored people in the world. It's because the technology is so good.

Now think of the people we could have kept off the road in the sustain-

ment forces, moving supplies from Kuwait and other locations in and around Iraq and Afghanistan. The Army needs to be looking at those kinds of technologies.

What can the Army, as part of the joint force, do better to enhance its combined readiness with the other services?

We always have to be reaching out and looking for ways to train together. That's true for not only the joint force but allies too. We need the opportunity to work together. I would hope that we are doing better with standardization of equipment and not creating conditions that make it difficult for us to maintain jointness as a result of having separate acquisition programs and requirements processes.

I really believe that engagement and working together are absolutely critical elements as we try to enhance our combined readiness. Without them, I think we will have some real issues in fighting together when we meet on the battlefield.

Can you elaborate on how important the Army's allied partnerships are to its readiness strategy?

We can be better allies by engaging at all possible opportunities. Granted, it was very, very expensive to have the forces that we had in Europe during the Cold War, but we had a level of engagement with our allied forces that was unprecedented.

That does a whole lot of things. It ensures that you understand where you have interoperability and where you don't, which is absolutely critical. And it ensures that you train together and understand the different combat formations. Leaders begin to understand leaders.

It also created an opportunity for many of us to meet people as captains who would go on to lead armies. They would come to our schools; some of us would go to their schools.

You can't expect to meet on the battlefield for the first time and have

success. You will, in fact, guarantee that your casualties will be much higher, and it will take you longer to do what you have to do if you don't train together and engage together.

What do you think the Army should be ready for?

I think it's a hybrid threat. I don't think it's going to be purely nonlinear like we fought before nor is it going to be totally linear and kinetic. I think it's going to be a combination of both. Electronic and cyber warfare are going to be part of any conflict.

The work we began many, many years ago to digitize the Army and to provide situational awareness up and down the chain of command is critical in today's world. We need champions who will look at the network, understand it, and dig into it because I think it's absolutely critical to our success on future battlefields.

How would you balance modernization against current readiness requirements?

Every year for the four years that I was the vice chief of staff, I went up and testified to Congress as we saw our budgets decrease. We talked about balance; we did not want either one of those things [modernization or readiness] to get priority over the other. I know that's easier said than done, but I think we have to be one voice—both in the active and retired force—encouraging balance when we talk about people, equipment, and training.

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The Division Materiel Readiness Center Provides Sustained Readiness

Modifying a force structure concept of the past may hold the key to the Army's materiel readiness for the future.

■ By Col. Ronald R. Ragin

The Combined Arms Support Command's Army 2020 and Beyond Sustainment White Paper (2013) asked what the future Army, as part of the joint and multinational force, must do to integrate and synchronize operational and institutional sustainment forces and capabilities to effectively sustain unified land operations. Revitalizing materiel management capabilities at both the corps and division levels is a critical component to ensuring readiness for the next fight.

The 4th Infantry Division (ID) and Fort Carson, Colorado, leaders have identified the need for a division materiel readiness center (DMRC). Establishing a DMRC that is focused on managing information and visibility and on creating a shared understanding is critical to developing a single logistics common operational picture, reducing redundancy, gaining sustainment synergy, and ensuring readiness. The primary goal of a DMRC is to make readiness preeminent, which will ensure the operational endurance of division elements.

Understanding the Past

According to the commander of the Training and Doctrine Command, from the late 1970s until the early 1990s the military defined its focus as "how to fight the Soviet Union in the central plains of Europe with NATO, outnumbered, and win."

To change the battlefield calculus, the Army invested in five key technologies (the M1 Abrams main battle tank, the M2 Bradley fighting

vehicle, the multiple launch rocket system, and Apache and Black Hawk helicopters) and developed the industrial enterprise to sustain forward-basing requirements at the height of the Cold War. Leaders knew that the best way to deter a potential adversary was to build a military capable of power projecting a force that could amass fires against multiple threats simultaneously and sustain long campaigns to defeat the enemy.

Theater, corps, and division materiel management centers (DMMCs) were essential to maintaining centralized control of materiel to ensure readiness. The DMMC provided the division commander with centralized and integrated materiel management for classes I (subsistence), II (clothing and individual equipment), III (petroleum, oils, and lubricants), IV (construction and barrier materials), V (ammunition), VII (major end items), and IX (repair parts) and maintenance. Some of the key functions of the DMMC included the following:

- Supervision of the division's authorized stockage lists.
- Management of the division master property records.
- Management of the maintenance workloads of corps maintenance assets in support of the division.
- Management of the division class IX system.
- Management of weapon system replacement operations.

During a linear fight with multiple echelons of sustainment, it was nec-

essary to have a degree of controlled management because of the long lines of communication that characterized the supply chains. Centralized management was essential because logistics automation systems were still immature. An example of a textbook linear campaign that necessitated centralized materiel management was the Persian Gulf War.

Post 9/11

After 9/11, the military found itself engaged in another conflict in the Middle East. The environment had changed, requiring modular rotational forces to deploy periodically in support of simultaneous asymmetric campaigns in both Afghanistan and Iraq.

The Army managed the rotation of forces using the Army Force Generation (ARFORGEN) model. ARFORGEN allowed a unit to build readiness just in time for its major validation exercise prior to deployment. But after returning from deployment, the unit would not sufficiently maintain its readiness.

During this period, the Army looked for ways to increase its responsiveness and deploy capabilities at a sustainable rate to meet the requirements of battlefield commanders. The Army decentralized much of its materiel management capabilities by placing them in brigade combat teams (BCTs) and relying on contracted support for other functions that were part of the pre-9/11 force.

Because of the enemy's constant adaptation, the military was required to rapidly adjust its tactics, equip-

ment, and sustainment. The national industrial base focused its efforts on quickly producing new systems, such as the mine-resistant ambush-protected vehicle, the Stryker family of vehicles, and other combat systems, many of which were maintained by contractors.

Contractor-provided maintenance came at a cost. For example, some leg-

cy fleets, including tanks and Bradleys, were not well maintained. In the end, this maintenance model was not sustainable, expeditionary, or affordable.

The DMRC Concept

Realigning sustainment brigades back with divisions provided an opportunity to rebuild an architecture similar to the DMMC but

much more information-based and readiness-focused.

The DMRC concept is designed to ensure sustainment efforts are integrated with joint force requirements to guarantee unimpeded sustainment in a crisis across all domains without any force structure growth. It also provides BCTs with greater enabling sustainment capacity without taking away any

	Tactical FSC/BSB/GSB	Operational DG4/SUSBDE	Strategic AMC/DLA/AG4	European Theater (RAF)
Maint	<ul style="list-style-type: none"> Operator/field maint Diagnostics Release strategy Z Park (G-8) 	<ul style="list-style-type: none"> Field maint Support maint Co Maint management 	<ul style="list-style-type: none"> Sustainment maint LRC contract maint Depot maint 	<ul style="list-style-type: none"> Sustainment maint Mannheim depot EAS (Forward)
Supply	<ul style="list-style-type: none"> Onboard spares Bench stock Line replaceable units Shop stocks ATF (AMC owned) Standard pricing 	<ul style="list-style-type: none"> Shop stocks ATF Composite supply Co RIC-GEO DG4 supply 	<ul style="list-style-type: none"> LRC ATF AMC depots DLA depots Industry BLSTs 	<ul style="list-style-type: none"> DLA Distribution Germersheim Mannheim depot ATF Grafenwoehr Shop stocks
Information Management	<ul style="list-style-type: none"> ABC Systems JCR Log Battle Command Sustainment Support System SAMS GCSS-Army VSATs 	<ul style="list-style-type: none"> SUSBDE SASMO DG4 SASMO Combat power 	<ul style="list-style-type: none"> LIW LOGSA GCSS-Army Wave 1 SAMS 	<ul style="list-style-type: none"> GCSS-Army Wave 2 Army War Reserve Deployment System (AMC) SAMS (RAF) Distribution Standard System (DLA)
Distribution	<ul style="list-style-type: none"> Trans assets Rotary-wing assets 	<ul style="list-style-type: none"> Division trans office SUSBDE SPO trans Composite truck Co Trans assets SPO distro management 	<ul style="list-style-type: none"> Government-contracted trucks LRC distro assets TRANSCOM strategic-lift assets 	<ul style="list-style-type: none"> TSC distro management Distro contract (DLA) Trans BDE (SDDC) Movement control battalion (SUSBDE)
Procurement Cataloging	<ul style="list-style-type: none"> BDE PBO Excess management Item unique identification code 	<ul style="list-style-type: none"> Division PBO BDE PBO SPO Contracting Class VII management section Retrograde 	<ul style="list-style-type: none"> Installation contracting 	<ul style="list-style-type: none"> Theater Contracting Command-Italy SUSBDE contingency contracting section

Legend			
ABC = Army Battle Command	DLA = Defense Logistics Agency	LRC = Logistics readiness center	SDDC = Military Surface Deployment and Distribution Command
AG4 = Army G-4	EAS = European activity set	Maint = Maintenance	SPO = Support operations office
AMC = Army Materiel Command	FSC = Forward support company	PBO = Property book office	SUSBDE = Sustainment brigade
ATF = Authorized to forecast	GCSS-Army = Global Combat Support System-Army	RAF = Regionally aligned forces	Trans = Transportation
BDE = Brigade	GSB = Group support battalion	RIC-GEO = Routing identifier code-geographic	TRANSCOM = U.S. Transportation Command
BLSTs = Brigade logistics support teams	JCR Log = Joint Capabilities Release Logistics	SAMS = Standard Army Maintenance System	TSC = Theater sustainment command
BSB = Brigade support battalion	LIW = Logistics Information Warehouse	SASMO = Sustainment automation support management office	VSATs = Very small aperture terminals
Class VII = Major end items	LOGSA = Logistics Support Activity		
Co = Company			
DG4 = Division G-4			
Distro = Distribution			

Figure 1. This table provides a view of the areas that the division materiel readiness center staff at Fort Carson, Colorado, focused on integrating for 4th Infantry Division operations.

of their organic capabilities.

To achieve these ends, the Fort Carson sustainment team analyzed successful business models that applied vertical and horizontal integration to increase effectiveness. (See figure 1.) The team explored vertical integration options to reduce stovepipes, integrate systems and processes, and increase information sharing. The team studied horizontal integration concepts in order to increase trust, influence, and collaboration and leverage capabilities.

The team explored options to flatten sustainment processes in order to speed tactical outputs (procurement, distribution, supply, maintenance, logistics, and information systems) and analyzed the integration of these functions by sustainment echelons above the battalion level.

The Fort Carson sustainment team found that integrating functions greatly reduced stovepipes of information, which increased speed, accuracy, shared awareness, and the ability to anticipate problems. These reductions, in turn, increased readiness across the division.

Before implementing the DMRC concept, the division had at least four different sustainment organizations reviewing equipment status reports and researching parts; all reported a different readiness picture.

Using the DMRC concept flattens communications, increases collaboration, builds trust through influence, and helps to resolve problems before they become readiness issues. The concept integrates key readiness functions, such as combat-power tracking, logistics common operational picture generation, reporting, maintenance, standard Army management information systems, class VII, financial management, and combat spares and supply ordering, receipt, and distribution.

The DMRC integrated liaison officers from each BCT with fleet management teams to influence the direction and focus of the BCTs on critical sustainment issues. The fleet management teams, BCT liaison officers, and commodity managers conducted a monthly review and analysis of the entire logistics enterprise to holistically anticipate

and resolve issues and leverage internal and external agencies that can affect readiness.

The DMRC Research and Analysis Cell conducted anticipatory analysis based on the commanding general's priorities. For example, it conducted a detailed analysis of the last four armored BCT rotations at the National Training Center at Fort Irwin, California, to determine the high-demand parts that should be added to logistics push packages or "authorized to forecast" lists prior to rotations. The staff also analyzed recurring faults with long lead times to prime the national industrial base for the next rotation.

In coordination with the 21st Theater Sustainment Command, the Research and Analysis Cell also conducted analysis to assist with the upcoming deployment of the 3rd Armored BCT to support the Operation Atlantic Resolve regionally aligned forces mission. While the BCTs focused on immediate readiness, the DMRC team focused on deep readiness (readiness more than 20 days away) and eliminating systematic problems that adversely affected readiness across the division. For example, the DMRC team conducted in-depth analysis of Fort Carson supply support activities and combat spares to ensure the division was stocking the right number of critical parts in time to ensure readiness of the 4th ID BCTs.

Enabling the Future Fight

In future conflicts, the DMRC would primarily generate readiness from a home-station mission command center or a division sustainment operations center. The DMRC would also have the ability to deploy forward as part of the sustainment brigade headquarters or as a smaller fleet management team focused on generating readiness for a particular BCT.

Under this concept, the forward deployed sustainment mission command element, with mission-tailored commodity management capabilities, would reach back to the DMRC through secure tactical communications. This reach-back capability reduces the requirement to forward-station

large sustainment formations to solve problems. This concept is currently being employed as part of the deployment of the 3rd Brigade, 4th Infantry Division, in support of Operation Atlantic Resolve.

The DMRC provides the forward mission command element with near-real-time problem-solving and access to data. Macrodata is uploaded both from forward and rear locations into an encrypted web-based portal that pulls microdata from a cloud-based system. This decreases the reliance on email and meetings as the primary sources of information. (Aggregating microdata from emails and meetings inherently creates delays.)

Increased reporting accuracy, data sharing, and a shared understanding will greatly enhance the ability of the joint force to generate readiness, project power, anticipate requirements, sustain readiness, and ensure operational endurance. Revitalizing materiel management capabilities at both the corps and division levels is a critical component to generating and ensuring sustained readiness for the next fight.

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Supporting Readiness Through Strategic Sourcing

The Army Sustainment Command is enabling readiness at the tactical point of need by implementing strategic sourcing to deliver a full range of base life and logistics support.

■ By Jerome E. Jastrab

Military operations have historically used some type of contracted support for equipment, supplies, and services. Recent reductions in the Army's force structure have caused more combat support and sustainment requirements to be met through service contracts, most notably for base life support.

Strategic sourcing is a way to leverage national capabilities to generate sustainment both at home station and during theater operations. The Office of the Deputy Assistant Secretary for Procurement is responsible for developing strategic sourcing initiatives for the Army's direct reporting units, Army commands, and Army service component commands.

As the Army's logistics integrator for contingency and sustainment support, the Army Sustainment Command has embraced strategic sourcing in its two largest contracts: the Logistics Civil Augmentation Program (LOGCAP) and the Enhanced Army Global Logistics Enterprise (EAGLE).

From a readiness perspective, supported units expect contracted sustainment support to be responsive and flexible enough to keep pace with a fluid operational environment. From a business perspective, Congress and the Department of Defense expect contracted support to be as cost-effective as possible.

In contracting, achieving maximum flexibility within the scope of work generally results in loosely defined requirements, which can run

contrary to controlling costs. The more risk the Army asks the contractor to assume through loosely defined requirements, the more the government will pay. Strategic sourcing is a way of satisfying these two conflicting expectations; it minimizes risks to operational readiness while controlling costs.

So how does strategic sourcing improve responsiveness while controlling costs? Local command or theater service contracts can take 12 months or more to award, depending on their complexity. Using a strategic source can significantly shorten this timeline.

Because of frequent personnel rotations, overseas acquisition operations often lack personnel stability. Using a strategic source provides critical continuity and enables rotating personnel and units to modify contracts more easily in response to changing requirements.

Strategic sourcing also enables the requiring activity to control costs and ensure consistent contractor performance. By leveraging an established acquisition team that operates off of a contract vehicle that has already reached the best-practice level, units requiring contractor support can consistently receive responsive sustainment at the point of need.

LOGCAP and EAGLE follow the governing regulations for defense contracts that are solicited and awarded in the continental United States and overseas. Both contract vehicles provide Army organizations with readiness to ensure freedom of

action, extend operational reach, and prolong endurance across the full range of military operations.

LOGCAP is a reliable means of integrating operational contract support into theater planning. It provides base life support and sustainment support primarily during overseas deployments in support of contingency operations. EAGLE provides supply, maintenance, and transportation support on Army installations.

The Army Sustainment Command has developed LOGCAP and EAGLE to support the Army worldwide, and these programs currently support garrison and deployed forces in the United States, Europe, the Pacific, Africa, and the U.S. Central Command.

More information about strategic sourcing can be found online in the Procurement Knowledge Management Portal at <https://spcs3.kc.army.mil/asaalt/procurement/Strategic-Sourcing/Initiatives.aspx>.

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Iraqi security forces receive a shipment of 30 mine-resistant ambush-protected vehicles with mine-roller attachments at Camp Taji, Iraq, on July 13, 2015. The 310th Advise and Assist Team, 13th Expeditionary Sustainment Command, and the 1st Theater Sustainment Command supervised the delivery of the vehicles in support of Combined Joint Task Force–Operation Inherent Resolve. (Photo by Chief Warrant Officer 2 Christina Winfield)

Sustaining Operation Inherent Resolve

The 13th Expeditionary Sustainment Command faced many sustainment challenges while deployed to Operation Inherent Resolve, but it succeeded by effectively collaborating with strategic partners.

■ By Lt. Col. Dean A. Huard

After the inception of Operation Iraqi Freedom in 2003, the sustainment community could provide all classes of supply to maneuver forces with few limitations. As the wars in Iraq and Afghanistan matured, the Army maintained high levels of sustainment stocks. Benefiting from plenty of sustainment personnel and well-established lines of communication, warfighters received

their commodities when they needed them to perform their missions. Sustainment operations became routine.

The 13th ESC's Mission

The situation was not routine for the 13th Expeditionary Sustainment Command (ESC) when it had mission command of all sustainment operations in the U.S. Central Command (CENTCOM) area of respon-

sibility (AOR) from December 2015 to August 2016 during Operation Inherent Resolve (OIR).

The 13th ESC's mission in support of OIR was complex and unique. It required junior warrant officers, non-commissioned officers, and officers to use problem-solving and critical analysis skills as well as collaboration with strategic partners and the Combined Joint Task Force–Operation

Inherent Resolve (CJTF–OIR) staff.

The 13th ESC's operational environment had many limiting challenges, including air-centric transportation, diplomatic clearance requirements for flights into Iraq, and a capped force manning level that resulted in a dependence on contractors.

Doctrinally, ESCs are regionally focused on a specific joint operational area. However, during the 13th ESC's deployment, the unit integrated with the 1st Theater Sustainment Command (TSC) operational command post (OCP) and was required to spread its focus across multiple areas.

The 1st TSC is the senior sustainment command in the CENTCOM AOR and reports directly to the U.S. Army Central commander. It is responsible for theater sustainment mission command across CENTCOM and for OIR in Iraq and Syria, Operation Freedom's Sentinel in Afghanistan, and Operation Spartan Shield, the enduring operation for regionally aligned forces supporting contingency operations in the Middle East. It also supports the Multinational Force and Observers mission on the Sinai Peninsula.

The 1st TSC has operational control of sustainment brigades in Afghanistan and Kuwait and logistics elements in Iraq that include an Army field support brigade, a human resources support center, a financial management support center, a theater aviation maintenance group, and a movement control battalion. It also has tactical control of a Military Surface Deployment and Distribution Command transportation brigade.

The mission set had the 13th ESC commander serving as the deputy commanding general for the 1st TSC OCP. However, as the OIR mission proceeded, the 13th ESC commander's emphasis was predominantly on sustaining building partner capacity (BPC) sites in Iraq.

When the 13th ESC arrived in Kuwait, the 1st TSC OCP's mission took a dramatic shift. It went from

ensuring that retrograde equipment was properly accounted for from Afghanistan to the United States to sustaining a total of five BPC sites with all classes of supply in Iraq.

The mission of the BPC sites was to train and equip Iraqi army units in order to prepare them for offensive operations against the Islamic State group.

Sustainment Challenges

One of the first challenges that the 13th ESC faced was that there was no existing ground line of communication (GLOC) established between Kuwait and Iraq other than the one used by a Defense Logistics Agency Troop Support contract for class I (subsistence). It was not possible to use the existing contract to move additional supplies because of the time it would take to initiate the additional features of the contract.

The "Black Jack Express" convoy routes into Iraq that crossed the main entrance from Kuwait (known as the "K-crossing") did not exist anymore because Iraq closed the gate when coalition forces departed in 2011. Most BPC sites required resupply by air, which proved difficult because the airfields' runways were in poor condition.

The Iraqi government had also imposed restrictions such as not flying on Fridays because of religious concerns. The most restrictive policy was the requirement for all flights to have a 96-hour diplomatic clearance, which resulted in waiting an average of 10 to 14 days for personnel and five to 10 days for equipment to enter Iraq. This created turmoil as the requirements to push supplies, Iraqi Train and Equip Fund (ITEF) equipment, and passengers increased daily.

Another challenge that the unit encountered was a force cap that allowed only 3,100 troops on the ground in Iraq. The manning cap limited the ESC's ability to provide adequate sustainment; therefore, it had to rely on contractors and the sustainment brigade's reconfigured forward

logistics elements, which supported the maneuver units at the BPC sites. Most services for classes I and III (petroleum, oils, and lubricants) and life support were contracted.

Unfortunately, the ESC quickly learned that the process was bureaucratic, cumbersome, and not responsive in an expeditionary environment. The command was responsible for more than 200 contracts, and the average wait for funding approval alone was 21 days. The entire process (when all went well) was approximately 120 to 150 days.

To alleviate the challenges of this atypical sustainment mission, the ESC followed these procedures:

- Establish effective boards, bureaus, cells, centers, and working groups (for example, a distribution management board for opening the Iraq GLOC).
- Collaborate effectively with CJTF–OIR strategic partners and sustainment strategic enablers, such as the joint logistics enterprise.
- Prepare to work at the tactical level in order to solve strategic issues.
- Emphasize the importance of adaptation and teamwork.

Back to Iraq by Ground

In an effort to establish a GLOC, the 1st TSC OCP initiated an operational planning team to bring all key agencies to the table. The agencies included the Office of Military Cooperation–Kuwait, the Office of Security Cooperation–Iraq, the Kuwait Embassy, Kuwaiti customs, CENTCOM CJ4 Mobility, and the Combined Joint Forces Land Component Command–Iraq.

There were three main questions about establishing a GLOC:

- What are the processes and procedures for allowing weekly ground convoys from Kuwait into Iraq to deliver nonsensitive cargo for U.S. and coalition forces?
- What is the most feasible border crossing point?

□ Can convoys transport cargo to all BPC locations within Iraq?

The movement of sustainment into Iraq was managed through a weekly distribution management board and various Iraqi equipping meetings that were synchronized among the 1st TSC OCP, CJTFOIR J-4, subordinate logistics and maneuver units in Iraq, CENTCOM staff members, and strategic partners including the Military Surface Deployment and Distribution Command and CENTCOM's Deployment Distribution Operations Center.

Thanks to the efforts of the distribution management board, the GLOC was successfully reopened. Using the GLOC netted a time savings of up to 13 days over the use of air assets and a cost savings of \$3.8 million for the duration of the deployment.

Collaboration

In order to be successful with an uncommon mission, sustainment

professionals need to collaborate and employ the capabilities of agencies and commands within their sphere of influence. The art of collaboration is not always taught and is especially challenging for less experienced logisticians.

When people work within their own unit or department, communicating and completing a common goal are much less complicated. However, the 13th ESC's mission required that Soldiers at all ranks work with many agencies.

In fact, the unit had to collaborate with no less than 30 organizations from the strategic level at the Pentagon, 43 coalition country representatives, and numerous sustainment agencies, such as the Defense Logistics Agency, the Army Materiel Command, CENTCOM's Deployment Distribution Operations Center, and the Army Contracting Command.

One of the benefits of collaborating at this level was that Soldiers

were pushed to work outside of their comfort levels. Junior warrant officers, company-grade officers, and senior noncommissioned officers were working on issues and problem sets that they did not witness in garrison or classroom environments and had to adapt to "being comfortable with being uncomfortable."

Prepare to Be Tactical

Because of the challenges and personnel shortages, the 13th ESC's Soldiers were in a position that required them to coordinate problem-solving from the strategic to the tactical levels. Examples included sending personnel in a temporary duty status to the supported maneuver unit, using contract personnel, and sending teams of maintenance personnel to ensure units understood the ordering system for repair parts.

The mission of ensuring that the Iraqis had their ITEF equipment in a timely manner required the ESC to plan deliberately with the sustain-



ment brigade. It also had to employ the services of the Department of State, which ensured that the Iraqi government received ITEF and foreign military sales equipment.

A High-Performing Team

The Army teaches and preaches about teamwork throughout a Soldier's career. For the mission to support CJTF-OIR to be successful, the ESC had to work as a high-performing team. The common purpose of wanting to sustain OIR in order to eradicate the Islamic State group brought the unit together.

It may seem simple to say that teamwork is important, but the 13th ESC experienced the benefits every day as multiple agencies and countries worked in synergy. During the deployment, the ESC continued its leader professional development and focused on the importance of teamwork and its many benefits to the mission. The ESC learned that high-performing teams are what

make units successful.

Whether the task is to create an innovative product or service or to design a new process or system, teams rather than individuals are assuming more of the load than ever before. The ideal team combines individual talents and skills into one super-performing entity with capabilities that surpass those of even its most talented member.

The 13th ESC's collaboration was possible because its Soldiers trusted each other, shared a strong sense of team identity, and had confidence in their abilities and effectiveness.

The 13th ESC deployment to the CENTCOM AOR was an exciting and challenging opportunity for logisticians. The deployment required logisticians to reopen one theater, retrograde and draw down another, increase the force protection efforts in another, and advise, assist, and equip foreign forces in yet another.

Success required a partnership

with the joint logistics enterprise and partners from the strategic level to the tactical level.

The ESC faced atypical sustainment challenges but surpassed all expectations by collaborating with strategic partners, adapting to each problem set, working at the tactical level when necessary, and emphasizing the importance of being a high-performing team.

Lt. Col. Dean A. Huard was the deputy support operations officer for the 13th ESC while it was deployed to the 1st TSC OCP. He holds a bachelor's degree in political science with a minor in public policy and management from the University of Oregon and a master's degree in public administration from American Military University. He is a graduate of the Quartermaster Officer Basic and Advanced Courses, the Command and General Staff College, the Lean Six Sigma Black Belt Course, and the Joint Forces Staff College.

Mine-resistant ambush-protected vehicles with mine-roller attachments are parked at Camp Taji, Iraq, on July 13, 2015. The vehicles were acquired through the Iraq Train and Equip Fund used to assist in the fight against the Islamic State group. (Photo by Staff Sgt. Brian McDermott)





Students prepare for a theater rehearsal of concept drill at Fort Leavenworth, Kansas. The drill is the final requirement for the Theater Sustainment Planners Program.

The Command and General Staff College Offers a New Theater Sustainment Planners Program

■ By Maj. Thomas E. Goyette and Robert M. Bayless

In 2014, the Army Operating Concept introduced 20 Army warfighting challenges to provide an analytical framework to examine how the Army adapts to an exceedingly complex and changing global security environment.

Warfighting challenge 16 examines how the Army sets the theater, sustains operations, and maintains freedom of movement. This raises the question, how does the Army develop adaptive leaders capable of creating or conceiving solutions to this difficult challenge?

The Program

One way that the Army is developing these leaders is through the new Theater Sustainment Planners Program (TSPP). Starting with the 2017 academic year, students attending the resident Command and General Staff Officer's Course (CGSOC) at Fort Leavenworth, Kansas, have the opportunity to apply for the TSPP.

The Command and General Staff College designed this program to teach sustainment officers to understand the operational environment, design a theater distribution system,

analyze theater sustainment requirements, determine required capabilities, and plan for reception, staging, onward movement, and integration operations.

Multifunctional logisticians who complete the TSPP receive additional skill identifier (ASI) P1, which certifies them as theater logistics planners. Department of the Army Pamphlet 600-3, Commissioned Officer Professional Development and Career Management, states that multifunctional logistics majors with the ASI P1 who complete a subse-

quent utilization tour receive credit for being in a key developmental assignment.

Taking the course also authorizes these individuals to serve 36 months in key developmental positions versus the standard 24 months. An individual will serve 24 months as a logistics planner and 12 months in a tactical-level key developmental assignment. Utilization assignments include key planning positions, coded as P1, in units ranging from sustainment brigades to Army service component commands.

More than 500 positions in the Army require ASI P1. This number includes authorizations in the active and reserve components. About 86 percent of these positions are within theater sustainment commands, expeditionary sustainment commands, and sustainment brigades.

Over the past few years, it has been a challenge for the Army to fill these assignments with certified officers. This challenge recently prompted the replacement of the Theater Logistics Course with the Theater Sustainment Planners Course at the Army Logistics University at Fort Lee, Virginia.

The Curriculum

The TSPP achieves the same learning objectives as the Army Logistics University's Theater Sustainment Planners Course, a 120-hour blended online and resident course. However, the TSPP is structured to enhance the joint logistics and sustainment education provided in the CGSOC curriculum.

The TSPP is a three-phased program that provides students with a concentration in operational logistics. Students who complete all three phases of the TSPP will complete 352 hours of sustainment lessons and practical exercises, including 76 hours of common core lessons, 204 hours in the Advanced Operations Course (AOC), and 72 elective hours.

The TSPP builds upon the sustainment learning achieved during CGSOC's common core lessons and AOC. The core lessons and exercises

create a baseline of understanding and expose all students to key sustainment considerations and concepts that enable unified land operations.

During AOC, sustainers develop these sustainment concepts through

The TSPP is a three-phased program that provides students with a concentration in operational logistics.

practical applications. This gives them the credentials to serve as staff officers within their functional areas.

The Electives

These officers enter the final phase of TSPP, which includes two CGSOC electives: A483, Set the Theater, and A484, Sustain the Force. These elective courses dive into detailed logistics planning at the theater operational level.

During these elective courses, the faculty exposes the students to new tools for estimating sustainment requirements and determining the suitability of sustainment in a selected country. Students use these tools to conduct in-depth analyses of logistics requirements and capabilities for a given task organization and in-depth sustainment preparation of the operational environment.

Students will do more individual and group work in A483 and A484 than in common core or AOC, as this final phase is intended to broaden officers' research and critical thinking skills.

The program culminates with a formal country brief in which students present the results from their sustainment preparation of the operational environment research. They also participate in a theater rehearsal of concept drill based on their requirements and capabilities analyses.

Supporting Army and joint forces

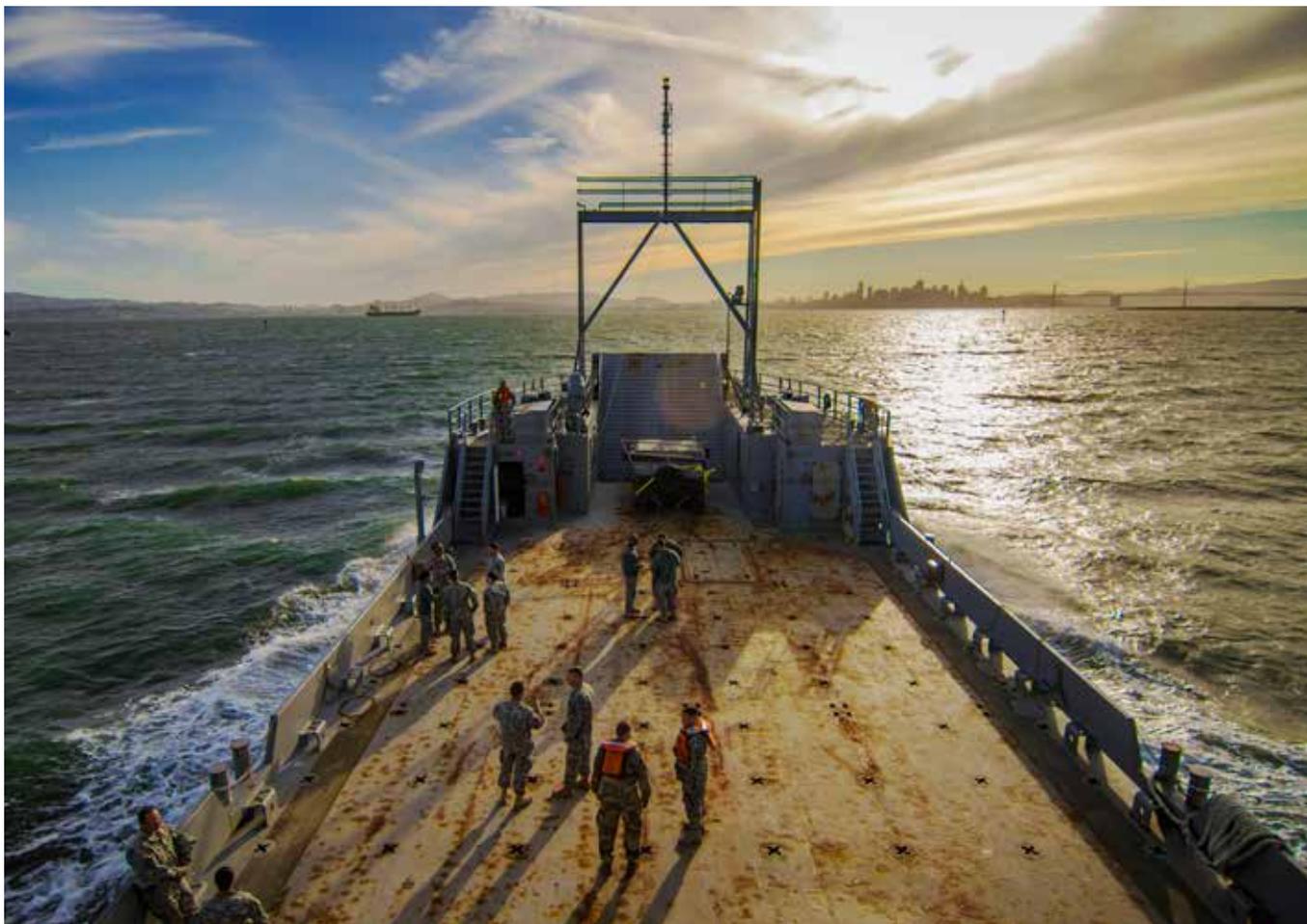
in tomorrow's uncertain operational environments requires sustainment officers to determine how to set the theater, provide strategic agility for the joint force, and maintain freedom of movement and action

during sustained and high operating tempo operations with extended lines of communication in austere environments.

The TSPP offers a practical education experience that supports this colossal task while further developing the professional expertise of tomorrow's sustainment leaders.

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Robert M. Bayless is an assistant professor in the Department of Logistics and Resource Operations and an instructor for the TSPP at the Command and General Staff College. He holds a master's degree in systems management from the University of Southern California. He is a graduate of CGSOC and the Theater Sustainment Planners Course.



Soldiers participating in Big Logistics Over-the-Shore West take the Palo Alto, a landing craft utility, for a maintenance run in the San Francisco Bay on June 16, 2016. (Photo by Cpl. Timothy Yao)

Training Sustainment Soldiers in the Army Reserve

Numerous exercises ensure Army Reserve sustainers are ready for real-world missions.

■ By Lt. Col. Ricky J. Janis

The Army Reserve is composed of maneuver support, force sustainment, and specialized support units. In general, Reserve units operate at the division, corps, and theater levels where they provide area and general support instead of direct support to maneuver forces.

So how does the Army Reserve

train its sustainment forces? The Army Reserve Command (USARC) oversees and routinely conducts and integrates training exercises for both general support and direct support sustainment operations.

Big Logistics Over-the-Shore

Big Logistics Over-the-Shore

(LOTS) is a training exercise for units in multiple stages of Sustainable Readiness. Under Sustainable Readiness, Army Reserve units build readiness progressively over a five-year cycle (four prepare years and one available year).

The focus of this exercise is fourfold:

- To practice planning, directing, and coordinating port, terminal, and LOTS operations.
- To develop and sustain Soldiers' technical skills.
- To perform shipboard and pier-side cargo loading and offloading operations.
- To practice ocean terminal cargo documentation.

Training conducted during Big LOTS is based on mission-essential task lists (METLs), affording units the opportunity to meet their specific Sustainable Readiness training target points.

Big LOTS exercises are conducted at two locations. Big LOTS East is conducted annually near Joint Base Langley-Eustis, Virginia. It uses the installation's Third Port, the Naval Supply Center at Naval Weapons Station Yorktown-Cheatham Annex, and Joint Expeditionary Base Little Creek-Fort Story. This exercise is intended for units in the Sustainable Readiness prepare years 1 and 2.

Big LOTS West is conducted annually in California near Camp Parks, the Port of Alameda, and Military Ocean Terminal Concord. This exercise is intended for units in prepare years 3 and 4.

Movement Control Training

Control Move is a training event that develops and sustains movement control units. The event focuses on training transportation management coordinator skills and movement control team proficiency at home station. This training is accomplished using distributed learning platforms or with assistance from mobile training teams.

Nationwide Move is a training exercise that provides transportation and support units with valuable, realistic training by moving cargo across the continental United States. The focus of the exercise is to develop and sustain Soldiers' technical skills, identify and prepare cargo for movement, and conduct transportation operations.

This training is METL-focused and affords units the opportunity to train and meet individual, crew, team, and squad levels of proficiency in Sustainable Readiness prepare year 2 and potentially prepare year 4.

Nationwide Move transportation assets come from Warrior Exercise and Combat Support Training Exercise troop lists. The assets are tasked to maximize multiechelon training

well as mobile petroleum laboratory operations.

The FPTM provides comprehensive IPDS construction, operations, and maintenance training for Army and joint forces. The training program provides a first-class experience that allows commanders to use METL assessments to develop their training plans in order to maximize hands-on training and tailor

Using training exercises that embody the Army Total Force Policy, the Army Reserve challenges units to meet and maintain the standards set for real-world operations anytime and anywhere.

while supporting equipment moves for those Army Reserve exercises.

Liquid Logistics Training

The Quartermaster Liquid Logistics Exercise is for units in Sustainable Readiness prepare year 1 through available. The exercise focuses on the technical aspects of theater bulk petroleum and bulk water operations, including storage, production, and on-time distribution.

The Quartermaster Liquid Logistics Exercise consists of multiple petroleum and water units operating in multiple locations to provide petroleum support. This support includes actual fuel deliveries to both Defense Logistics Agency Energy and its customers and water deliveries to other customers.

The Forces Command Petroleum Training Module (FPTM) at Fort Pickett, Virginia, provides additional petroleum training. The FPTM offers the only fuel pipeline and terminal operations training for land-based forces within the Department of Defense. Instructors provide training on storage and distribution equipment for the inland petroleum distribution system (IPDS) as

the level and frequency of technical and tactical training to the units' needs.

Mortuary Affairs Training

The Mortuary Affairs (MA) Exercise is for MA units in Sustainable Readiness prepare year 1 through available. The focus of this exercise is to develop and sustain MA Soldiers' technical skills. It is also designed to train MA units to conduct search and recovery missions, set up and operate MA collection points, establish theater mortuary evacuation points, and set up and operate personal effects depots.

This training provides units with the opportunity to practice and meet individual and collective tactical and technical proficiency. The exercise also serves as a venue for multiechelon training, especially for MA Soldiers in theater sustainment commands, expeditionary sustainment commands, sustainment brigades, and combat sustainment support battalions.

Financial Management Training

Diamond Saber is an exercise that provides technical training for fi-

financial management (FM) Soldiers. This premier functional training, held at Fort McCoy, Wisconsin, focuses on FM processes and automated systems.

It includes both classroom-based technical training and interactive mission scenarios. Diamond Saber is designed to provide training for about 533 Soldiers. This event is integrated into the Combat Support Training Exercise, which is coordinated by the 86th Training Division.

Diamond Saber is a multiechelon and multicomponent exercise for echelons-above-corps financial management support centers (FMSCs), company-level FM support units, and FM support detachments. All

of these units are composed of active and reserve component elements.

The 469th FMSC from New Orleans was the USARC action agent for Diamond Saber 2016. The 469th FMSC developed and implemented FM operations and disbursement training. It also coordinated with the Financial Management Command (for commercial vendor services training) and with the Defense Finance and Accounting Service (for military pay training).

The qualified and experienced FM Soldiers who act as role players contribute a great deal to Diamond Saber's success. The exercise replicates the FM operational environment, which requires information systems to perform FM missions.

Every year, Diamond Saber hosts distinguished visitors from the FM community and key leaders from the National Guard and Reserve. Hosting key leaders is important because it allows those outside of the FM community to see the training value and the cost effectiveness of this premier functional exercise.

Human Resources Training

Human Resources (HR) Train is an exercise held at Fort McCoy. Through this exercise, units conduct theater, multiechelon, and multi-functional training.

The exercise develops and sustains HR Soldiers' technical skills by focusing on three HR core competencies: man the force, provide HR services, and conduct HR planning and operations.

The 310th Human Resources Sustainment Center was the USARC action agent for HR Train 2016. The 310th's plans officer oversaw the development and planning of HR Train, which emphasized casualty operations, personnel accountability, and postal operations.

Casualty operations. When casualty liaison teams integrate with the combat support hospital during the HR exercise, Soldiers can practice casualty operations. The liaison teams initiate and track all casualty reports for the units at the base camp. This gives the liaison teams the experience they need in order to become familiar with casualty reporting procedures and timelines.

Personnel accountability. Personnel accountability is conducted by employing a theater gateway personnel accountability team to perform reception, staging, onward movement and integration activities for the exercise. Personnel accountability teams use the Tactical Personnel System and the Deployed Theater Accountability System to account for all personnel arriving and departing the area of operations.

Postal operations. Postal operations entail establishing an Army post office on each base camp and a military



Pfc. Christian Jones and Spc. Mario Weatherby, petroleum supply specialists from the 383rd Quartermaster Company, take a fuel sample on June 18, 2016, at Fort Huachuca, Arizona, during the annual Quartermaster Liquid Logistics Exercise. (Photo by Spc. James Larimer)



Soldiers participating in Big Logistics Over-the-Shore West scan the seafloor for obstructions and take depth measurements to ensure ships can safely maneuver in the waters near the port in Alameda, California, on June 18, 2016. The Army Reserve multiecheloned functional exercise is designed to hone the expertise of transportation units and sustainment commands. (Photo by Cpl. Timothy Yao)

mail terminal on cantonment. The mail terminal serves as the location for actual incoming mail. During the exercise, the base camp post offices become fully functioning post offices conducting incoming and outgoing mail operations.

HR Train was replaced in fiscal year 2017 by HR Warrior. HR Warrior focuses on all four of the HR core competencies, including coordinate personnel support.

Trans Mariner

The Trans Mariner exercise supports Military Surface Deployment and Distribution Command operations at Military Ocean Terminal Sunny Point, North Carolina. The exercise trains port operations units, other transportation units, and ammunition units from the Ordnance Corps on a rotational basis.

The exercise supports Army pre-positioned ammunition afloat,

including vessel download, reception, staging, onward movement, and vessel upload operations. Training tasks include port operations, the movement of containers within the installation, movement control, and logistics support.

Trans Warrior

The Trans Warrior exercise focuses on Deployment Support Command units in Sustainable Readiness prepare year 1 through available. The exercise focuses on Military Surface Deployment and Distribution Command-aligned units and processes.

The exercise develops and sustains Soldier's technical skills. It includes individual automation systems training and culminates in loading planned ship, rail, and air cargo configurations.

So, how does the Army Reserve train its sustainment forces? Using

training exercises that embody the Army Total Force Policy, the Army Reserve challenges units to meet and maintain the standards set for real-world operations anytime and anywhere.

Lt. Col. Ricky J. Janis is the quartermaster and transportation standard requirements code manager for the G-3/7 Collective Training Division, USARC. He holds a bachelor's degree in business administration from West Virginia University. He is a graduate of the Quartermaster Officer Basic Course, Quartermaster Officer Advanced Course, Combined Arms and Services Staff School, and Command and General Staff Officers' Course.

The author would like to thank the team of the USARC G-3/7 Collective Training Division for their contributions to this article.

Improving Diagnostics in the Active Component

The Master Diagnostician Program and the Unit Diagnostics Immersion Program are improving advanced diagnostic skills among Army maintainers.

■ By M.C. "Steve" Cherry

The advanced diagnostic skills of the Army's maintenance technicians and noncommissioned officers (NCOs) have atrophied. This is especially true of advanced diagnostics skills for combat vehicles, such as M1A2 Abrams system enhanced package version 2 tanks, M2A3 Bradley fighting vehicles, Stryker vehicles, and M109A6 Paladin self-propelled howitzers.

Senior leaders throughout the Army frequently remark that combat vehicle maintainers have lost the institutional knowledge and experience that used to be passed from warrant officers to NCOs to Soldiers. Arguably, a large contributing factor to this loss is the overreliance on contracted field service representatives and maintenance contractors to fill maintenance shortfalls within formations.

This reliance on outsourcing has broadened the gap in the Army's institutional knowledge and experience and created a proficiency challenge that it must now work to overcome. The inability of maintenance NCOs and warrant officers to diagnose and troubleshoot system faults results in increased equipment downtime and cost; both have significant adverse effects on readiness.

Master Diagnostician Training

ForcesCommand's (FORSCOM's) top priorities include maximizing readiness, mastering the fundamentals, and strengthening leader development. These three priorities have a common goal of improving the

diagnostic skills of unit maintenance personnel.

To address the troubleshooting and diagnostic capabilities of maintenance organizations, the FORSCOM commander visited the National Guard Sustainment Training Center at Camp Dodge, Iowa, in February 2016. Camp Dodge is one of the premiere training locations for Army National Guard and Reserve sustainment organizations.

The FORSCOM commander was very impressed with the training he observed and directed his staff to work with the Training and Doctrine Command (TRADOC) to replicate this training for the active force. This led to the FORSCOM Master Diagnostician Training Initiative and pilot program at the Sustainment Training Center.

This pilot program jump-starts advanced diagnostics training for FORSCOM units while TRADOC works to incorporate diagnostics training in the maintenance NCO and warrant officer leader development courses at the Ordnance School.

The National Guard and FORSCOM worked together to modify the National Guard technician training contract. This collaboration resulted in eight two-week courses to develop and enhance selected FORSCOM maintainers' advanced diagnostic and troubleshooting skills. Programs of instruction were written for Bradleys, Strykers, Paladins, and Abrams.

The training concentrates on the

why of diagnostics and troubleshooting and builds on the critical thinking skills required to isolate faults and repair the vehicles. Mechanical theory and technical manual information is practiced through hands-on implementation with a wide range of diagnostic tools.

The intent is to provide maintainers with the knowledge needed to rapidly diagnose problems and provide cost-effective solutions so that armored formations can reach higher levels of readiness.

The UDIP

Prior to the Master Diagnostician Training Initiative, FORSCOM collaborated with its partners at TRADOC and the Combined Arms Support Command to create the Unit Diagnostics Immersion Program (UDIP). The difference between the UDIP and the Camp Dodge program is that the UDIP instruction occurs at FORSCOM installations with armored units rather than in Iowa.

The home-station training allows for more training seats and is easily included on units' long-range training calendars. Initial UDIP training started at Fort Carson, Colorado, in February 2016.

The UDIP begins with a weeklong train-the-trainer course at Fort Lee, Virginia, for Paladins and Strykers, or at Fort Benning, Georgia, for Abrams and Bradleys. During this course, NCOs undergo detailed training to become assistant instructors within their formations.

During the week of training at the installation, a mobile training team, composed of Combined Arms Support Command instructors and augmented with the recently trained assistant instructors, provides hands-on training utilizing unit tools, test equipment, vehicles, and facilities. Upon completing the UDIP, the organization receives an exportable training package that facilitates continued training.

Initial Lessons Learned

Both NCO and warrant officer students have expressed great satisfaction with the master diagnostician and UDIP training. In fact, many students requested that the training be lengthened and expanded to include more vehicle platforms. This positive feedback helped get the program extended through fiscal year 2017.

Units can also make improvements. For instance, participating units need

to ensure that they are training their best promotable sergeants, staff sergeants, warrant officers and chief warrant officers 2. The retention of these Soldiers must also be considered. Lastly, in order to maximize the return on the investment, it is imperative that units place trained master diagnosticians in positions that best use their advanced skill sets.

Since the start of the UDIP, 315 Soldiers from across six installations have attended the course. Recently trained Soldiers are making immediate improvements to the overall readiness of FORSCOM ground fleets.

The FORSCOM G-4 is working with the Sustainment Training Center to develop the schedule for another six-month Master Diagnostician Program this spring. Nearly 60 seats will be available to FORSCOM warrant officers and NCOs.

Recognizing that the Master Diagnostician Program is mere-

ly a short-term training solution, FORSCOM will continue to work with TRADOC to place critical advanced diagnostics training back into the Ordnance School maintenance curriculum for a more permanent solution in fiscal year 2019.

The increased availability of ready equipment and the cost savings from fewer misdiagnosed faults have solidified the program for the foreseeable future.

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Warrant officers from III Corps at Fort Hood, Texas, work on an engine while attending the Bradley M2A3 Master Diagnostician Course at Camp Dodge, Iowa, on Sept. 14, 2016.

Finding the Right Planning Tools for Defense Support of Civil Authorities

When traditional Army planning tools were not robust enough for its missions, the 43rd Sustainment Brigade staff developed new tools to meet its needs.

■ By Maj. Peter T. Sinclair II and Capt. Eric R. McGinty

After returning from Afghanistan in November 2013, the 43rd Sustainment Brigade was given the mission to conduct defense support of civil authorities (DSCA) in the event of a large-scale disaster. The legal constraints, environmental variables, and unique nature of this type of mission make planning complicated. The brigade staff realized that the military decision-making process (MDMP) and Army design methodology (ADM) are not well-suited for DSCA missions.

The variety and number of unknowns of a DSCA mission drove the staff to look for another way to plan. To create new tools with a DSCA focus, the staff modified John Boyd's Observe-Orient-Decide-Act (OODA) loop and the "7 Questions" planning method used by the British army. The resulting tools were the DSCA OODA loop and DSCA 9 Questions.

The DSCA OODA loop's purpose is to help the staff quickly frame problems by identifying and recognizing stakeholders and partners that the unit does not traditionally work with. The staff can use the DSCA 9 Questions for rapid crises planning for vague and uncertain environments.

How Traditional Tools Fell Short

The 43rd Sustainment Brigade is the first sustainment brigade headquarters to focus on sustainment support to the U.S. Northern Command while simultaneously supporting daily mission requirements for Joint Task Force Carson at Fort Carson, Colorado. In order to succeed in each

mission, the staff needed to change how they synthesized and acted on information about the operational environment (OE).

When the staff began mission analysis using the MDMP, it quickly realized that countless environmental variables render the MDMP useless for DSCA missions. The variables include but are not limited to the following:

- Each state has its own plan.
- The sustainment brigade could potentially work with various Federal Emergency Management Agency elements.
- Various types of disasters could trigger the sustainment brigade's deployment.
- The roles of other interagency actors could vary.

The staff shifted to the ADM to see if the three frames of environment, problem, and solution would offer enough of a planning framework. At the end of the ADM's design iteration, the staff realized that it had more requests to higher headquarters for information than it had solutions.

The ADM was useful because it instigated further research and forced the staff to realize that it needed a way to plan and solve for a situation that would be governed by unknown factors. The information from the ADM led the staff to conclude that no matter what causes the brigade to deploy, the mission will include the rapid deployment of a self-deploying, self-sufficient quartering party that

can accept and integrate additional forces. This party was later named the early-entry sustainment assessment team. The ADM also led the staff to conclude that there would not be time to use standard planning practices, so something new would be required.

Understanding the Situation

The constraining factor in all major decisions is time. Crisis planning in joint doctrine and the Joint Strategic Planning System consists of six steps: situation development, crisis assessment, course of action (COA) development, COA selection, execution planning, and execution.

These steps culminate in an operation order, but do they actually save time? No, these steps take time to follow and develop even if there is an existing concept of operations plan that must be tailored to the specific event.

The DSCA 9 Questions method leads to a viable COA when time is of the essence. Furthermore, it provides a framework for understanding and planning with non-Department of Defense partners.

The DSCA OODA Loop

The DSCA OODA loop tries to identify all of the actors involved in the mission and to show how the decisions of one stakeholder could impact other actors. The steps include observe, orientation and expectations, decide, and act. (See figure 1.)

Observe. Numerous information feeders assist in developing an understanding of the OE. Planners will understand some information instantly,

but they will have to process other information for hours or days before they fully realize the scope and impact on the OE. The key to this portion of the DSCA OODA loop is constant situational awareness (SA).

Orientation and expectations. All of the categories within the orientation and expectations block are interconnected: demographics, socio-economic factors, cultural paradigms, social and political expectations, historical expectations, and local, state, and federal law.

Boyd conceived his orient step as a place to house biases. By including expectations, the staff accounted for the biases of other actors that the unit would interact with during a mission. If planners do not understand all of the factors within this step, errors will spread into the decide step. Once all expectations and biases are identified, they combine to feed SA.

Decide. The commander makes a decision based on his understanding

of the OE and SA. Actions then are executed to support the commander's decision. Commanders can skip every single part of the DSCA OODA loop, jump right to a decision, and then have the staff start from a decision point.

Act. In the act step, a response is initiated based on the decision made by the commander.

Feedback. Once the decide step is complete, the staff analyzes how the decision and response affected the OE and SA so that it can consider additional actions.

Orientation and Expectations

Several factors affect incident awareness and assessment within the orientation and expectations step of the DSCA OODA loop.

Demographics. In the DSCA OODA loop, demographics refers to population density and where the people are located. The demographics feed the requirements embedded in

any decision cycle. Knowing the demographics allows the unit to provide the right response in the correct area.

Social and economic factors. Different locations have different social and economic factors that will complicate a problem. Many social and economic factors will also fall into the local, state, and federal law section.

Cultural paradigm. Put simply, neighborhoods, towns, cities, states, and regions have different cultural models based upon social and economic factors.

Social and political expectations. The culture of the region can generate expectations at the social and political levels. Many regions expect immediate assistance during a disaster, but there are also many that will try to manage the problem themselves before asking for outside assistance.

Local, state, and federal laws. Understanding the law goes a long way in crisis planning and response. People responding to disasters can be

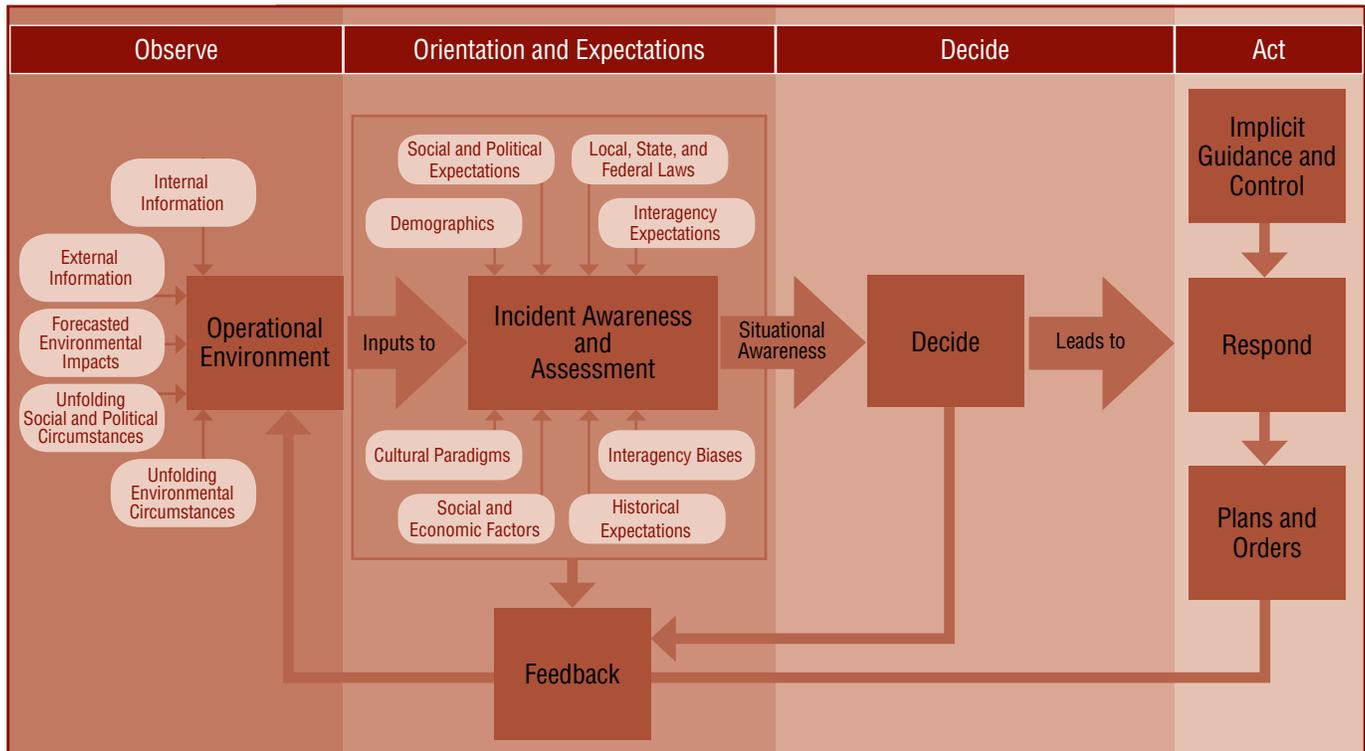


Figure 1. The 43rd Sustainment Brigade staff developed this model to capture information needed to maintain situational awareness for defense support of civil authorities missions. The arrows to feedback represent points in the process where the commander may opt to provide feedback. These points are opportunities to look again at the inputs affecting the process and to improve situational awareness for decision-making.

outsiders who are not familiar with applicable laws.

Historical expectations. Experiencing responses firsthand or studying historical information about past emergency responses can shape a person's expectations. This will be the most ambiguous part of the DSCA OODA loop and will vary from person to person.

All of these biases feed incident awareness and assessment in the decide step. Interagency expectations and interagency biases also affect SA and the decision. Expectations among key partners and stakeholders will also drive decisions on a personal level. The biases will affect what is done or not done in response to current friction with outside partners.

DSCA 9 Questions

The DSCA OODA loop can only take the brigade's planning effort so far. The staff had to look elsewhere for a rapid planning process. It looked to the British Commander's Estimate, known as the British 7 Questions. Using this tool, the 43rd Sustainment Brigade staff came up with the DSCA 9 Questions.

- What are the ongoing and forecasted natural and manmade disasters?
- What (specified tasks) have I been told to do and why?
- What (implied tasks) have I not been told to do?
- What authorities do I have, what authorities do I need, and what can I (legally) do?
- What actions and effects do I want to have on the OE?
- What resources do I need in order to accomplish each action and effect (for example, a request for forces or an operational needs statement)?
- When do I want to take action? (This information is used to create a deployment timeline.)
- Where do I want to take action?
- What control measures do I need to impose, and what control measures have been placed on me?

The intent of the DSCA 9 Questions was to clearly capture the decision-making process and allow the staff to complete a hasty mission analysis that would guide the commander toward a decision for action or response. The questions also served as a bridge to explain to state and local authorities what the unit would need in order to act during a crisis.

While the DSCA 9 Questions can help the commander reach a decision and make a plan during a crisis, it requires continual staff estimates and updates to maintain a common SA that is shared between the commander and the staff.

The DSCA 9 Questions can be answered by one person; the whole staff does not necessarily have to answer them. However, the true speed of the process is only realized by a collaborative effort from a group.

A "driver" is required to keep the questions moving forward in a group session. The driver can be the commander, deputy commander, or a trusted agent with enough rank to move the process forward. Without command emphasis there is a good chance that the staff will become lost in the ambiguity and try to solve unanswerable questions that will be answerable at a later date as the crisis develops and SA increases.

Combining the Tools

The DSCA OODA loop and DSCA 9 Questions greatly decrease the amount of time involved in mission analysis and COA development. This allows the commander to make a decision based on the current situation.

Crises require quick reaction times. Decisions must be reached quickly and efficiently, sometimes with just a 60-percent solution. Commanders armed with the critical information gathered through the DSCA OODA loop and the plans facilitated by the DSCA 9 Questions can make the best decisions when the need is the greatest.

The 43rd Sustainment Brigade has completed multiple iterations of staff training with the DSCA 9 Questions. A key lesson learned is that all parties

must be comfortable with ambiguity and willing to move on with a lack of information. Missing data points will be revisited as the picture of the OE matures.

The staff will begin to use running estimates as the situation develops and decisions are revisited to ensure accuracy. Using the DSCA tools together leads the commander to make correct and timely decisions in an ambiguous, emotionally charged environment.

The DSCA OODA loop and the DSCA 9 Questions are an attempt to be broadly right versus precisely wrong in order to help the 43rd Sustainment Brigade be ready to meet the needs of the public and higher headquarters in a time of crisis. The brigade commander gave his staff the flexibility to develop a method to solve unprecedented problems. The desire is that a disaster will never occur, but in the event that the worst comes to pass, this is the best way to be ready.

Maj. Peter T. Sinclair II is the future operations officer-in-charge for Joint Task Force Ares at Fort Meade, Maryland. He served as the 43rd Sustainment Brigade S-2 during its deployment to Afghanistan. He is a graduate of Northern Michigan University and the School of Advanced Military Studies. He is also a graduate of the Harvard Kennedy School's Executive Education Leadership in Homeland Security program and the Homeland Protection Course at the Massachusetts Institute of Technology's Lincoln Laboratory.

Capt. Eric R. McGinty is the operations officer for the 17th Combat Sustainment Support Battalion at Joint Base Elmendorf-Richardson, Alaska. He served as the support operations planner for the 43rd Sustainment Brigade during its deployment to Afghanistan and as the brigade S-5 assistant planner at Fort Carson, Colorado. He is a graduate of the Logistics Captains Career Course and the Defense Strategy Course.



The Army's Logistics Support Vessel-6, SP4 James A. Loux, 411th Transportation Detachment, sets sail into the Persian Gulf on June 11, 2016, while assigned to the 524th Combat Sustainment Support Battalion, 17th Sustainment Brigade, 1st Theater Sustainment Command. (Photo by Chief Warrant Officer 3 Jason Wade)

A Breakthrough in Army Watercraft Readiness Reporting

■ By Chief Warrant Officer 3 Jason Wade and Chief Warrant Officer 2 Michael Beeman

Army watercraft personnel have struggled to correctly report maintenance readiness to higher echelons since the conversion to the Standard Army Maintenance System-Enhanced (SAMS-E). The crew of the Logistics Support Vessel (LSV)-6, *SP4 James A. Loux*, 411th Transportation Detachment, and personnel from the 524th Combat Sustainment Support Battalion

(CSSB), 17th Sustainment Brigade, 1st Theater Sustainment Command, have created a solution that can benefit Army watercraft personnel operating in the U.S. Central Command and potentially worldwide.

The SAMS-E Problem

SAMS-E is a critical Army logistics information system that supports unit-level equipment maintenance,

field- and sustainment-level maintenance, shop production activities, and maintenance managers at all levels. SAMS-E was introduced in 2004 as an interim replacement for the Unit Level Logistics System. SAMS-E was created for routine maintenance using technical manuals for guidance, and it works for most Army equipment.

The aviation community realized

that SAMS-E would not support its maintenance requirements, so it developed a system specifically for aviators: Unit Level Logistics System-Aviation (Enhanced).

After analyzing the effectiveness of that system for aviation maintenance, watercraft maintainers recognized the need for a maintenance information system specific to Army watercraft.

There are three problems for watercraft maintainers using SAMS-E: reporting, maintenance tracking, and the future conversion to the Global Combat Support System-Army (GCSS-Army).

In 1998, an access-based program called Consolidated Maintenance-98 (CM-98) was developed to improve maintenance tracking for Army watercraft. CM-98 allowed maintenance officers to track and monitor preventive maintenance checks and

services for their vessels.

During a watercraft maintenance audit in 2010, a decision was made to stop using CM-98 because of its inability to integrate with SAMS-E. Because of this failure, units were reporting inaccurate man-hours, maintenance costs, scheduled services, and onboard spares lists.

SAMS-1E, another version of SAMS-E, could not properly report watercraft maintenance issues to the updated SAMS-2E because the reports it generated did not match the commander's property book.

Additionally, the numerous subsystems aboard Army watercraft intensified the SAMS-E configuration problem when maintainers reported and ordered high-priority parts that would deadline a subsystem but not the entire vessel.

The inaccurate reporting generated confusion for higher headquarters

because a vessel would be reported as not mission capable. In reality, the fault was for only a subsystem, and the vessel was still fully mission capable.

Seeking a Solution

Army watercraft maintainers and engineers need a system to track all maintenance tasks and subsystems. An LSV requires 595 maintenance tasks per year, accounting for 25,973 man-hours, which is tremendously more hours than are required for rolling stock. The issue is that SAMS-E was not configured to provide maintenance tracking for Army watercraft.

To remedy this challenge, the Hawaii-based LSV-6 crew created a way to configure SAMS-E to track maintenance, account for man-hours, and develop onboard spares lists. The process involved manually inputting the preventive maintenance



Chief Warrant Officer 3 Jason Wade, the first engineer assigned to the Logistics Support Vessel (LSV)-6, SP4 James A. Loux, and Sgt. Benjamin Acevedo, a supply sergeant with the LSV-6, work on Army watercraft readiness reporting while on board the vessel on July 30, 2016.

nance checks and services tasks into SAMS-E.

However, this did not align the commander's property book with SAMS-E, so the reporting and conversion to GCSS-Army was not possible. While it is possible to have SAMS-E configured for a nearly seamless transition to GCSS-Army, doing so would remove all maintenance tracking capabilities.

The watercraft community can find itself neglected as the Army builds computer and communication systems designed for land-based equipment. Vessels do not have Defense Switched Network phone numbers, reliable internet, or nonsecure or secret internet protocol router network access.

Because of a lack of onboard internet connectivity, SAMS-E cannot communicate with higher echelons from the vessel (while underway or in port), which prevents the ordering and tracking of parts, accounting for man-hours, and processing of work orders.

Putting the Process to Work

LSV-6 engineers worked with the 524th CSSB's automotive maintenance technician to resolve the issues by inputting all vessel components into SAMS-E. The process took about six months. The engineers and the maintenance technician spent the first five months inputting all components of the vessel into SAMS-E. They included service schedules and verified their accuracy using the appropriate military and civilian technical manuals.

The process was time-consuming, but it had to be completed only once. After the entries were put into the system and the service schedules were verified, the hand receipt components were cross-checked with the Property Book Unit Supply Enhanced system and entered into the organizational unit identification code (UIC).

The commander's hand receipt items that required maintenance were also added to the organizational UIC. The equipment that required

maintenance was added to the sub-components of the LSV, allowing the vessel to be reported as not mission capable or fully mission capable.

The 524th CSSB conducted a comparison of the files from Property Book Unit Supply Enhanced and SAMS-1E, which helped the personnel to properly report equipment faults. The comparison identified 1,200 errors within SAMS-1E. These errors were directly connected to a lack of trained SAMS-1E operators.

The Army's watercraft modified tables of organization and equipment (MTOEs) have no military occupational specialty 92A (automated logistical specialist) positions. Instead, operating SAMS-1E is an additional duty for one of the crew members.

The systemic problem of errors in SAMS-1E resulted from vessel subsystems that were not identified on the vessel's property book. This action required the 524th CSSB's SAMS-1E operators to load each component manually into the system. Once the subsystems were loaded into SAMS-1E, deficiencies were corrected and reporting procedures improved.

The 338th Theater Harbormaster Operations Detachment (THOD) is authorized SAMS-1E, but it is not authorized an operator on its MTOE. To mitigate reporting shortfalls, the 524th CSSB consolidated all standard Army management information systems within the 338th THOD and internally sourced a junior 92A Soldier to operate each system. A recommendation for future MTOE modifications is to authorize a 92A for LSV crews and THODs to operate the SAMS-1E.

The problem with communications was solved by routing the system through the Broadband Global Area Network, giving the vessel Department of Defense enterprise email access. This allows the watercraft to send and receive messages while using SAMS-E. Using this method, Army watercraft gain a static internet protocol address that allows mariners to send and receive reports.

Vessel equipment requiring services was assigned to a shadow UIC for the purposes of tracking maintenance, inputting services, and printing service schedules. This could not be completed under the organizational UIC because of the configuration. However, similar to the CM-98 process, reports can be properly accounted for and tracked under the shadow UIC.

The LSV-6 and the 524th CSSB have been operating the SAMS-1E process within the U.S. Central Command area of responsibility and are very pleased with the results. For the first time, the watercraft commander's deadline report accurately reflects the current status of the vessel.

Maintenance reporting is now tracked through the prescribed system, and the unit is fully prepared for the GCSS-Army conversion. The 524th CSSB has communicated with the Army's watercraft leaders at Joint Base Langley-Eustis, Virginia, and provided them with instructions and templates to enable other LSVs to easily configure their SAMS-E systems.

Chief Warrant Officer 3 Jason Wade is the special projects officer for the 7th Transportation Brigade (Expeditionary) maneuver support vessel (light). He has a bachelor's degree in engineering management technologies and an MBA. He has earned the Expert Infantryman's Badge, Air Assault Badge, Parachutist Badge, Recruiting Gold Badge, and Recruiter Ring. He is a graduate of the Prime Power School and Warrant Officer Basic Course, and he was the distinguished honor graduate of both the Warrant Officer Advanced Course and the A2 Marine Engineering Officer Licensing Course.

Chief Warrant Officer 2 Michael Beman is an automotive maintenance technician with the 25th Infantry Division Sustainment Brigade. He is a graduate of the Warrant Officer Basic Course.

The 42nd Military Culinary Arts Competitive Training Event



(Top) Team Hawaii is awarded the Culinary Team of the Year at the 42nd Annual Military Culinary Arts Competitive Training Event (MCACTE), held at Fort Lee, Virginia, March 3-10, 2017. The annual event is the largest American Culinary Federation-sanctioned competition in North America that showcases the talents of military chefs from all of the services. The culinary arts team from Fort Drum, New York, was named the runner-up.

(Above) Sgt. Erica Larsen, with the U.S. Army Culinary Arts Team, plates her dish during the competition.



Staff Sgt. Fabian Murrillo, with Team Hawaii, wipes down a knife as he prepares to compete in the MCACTE.



(Above) Staff Sgt. Kevin Arwood, with the U.S. Army Culinary Arts Team, places batter into a silicone form as he competes in the International Military Competition during the 42nd MCACTE. Arwood and his teammate, Sgt. John Densham, won the international competition against teams from France, Germany, and Great Britain.



(Left) The culinary arts team from Fort Bragg, North Carolina, receives guidance from a judge before competing during the 42nd MCACTE. A main purpose of the competition is to provide culinary arts Soldiers with the opportunity to expand their skill set and learn new techniques from the more experienced competitors.

(Photos by Stefanie Antosh)

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WAVE 2 IS HERE!

- PROPERTY BOOK MANAGEMENT
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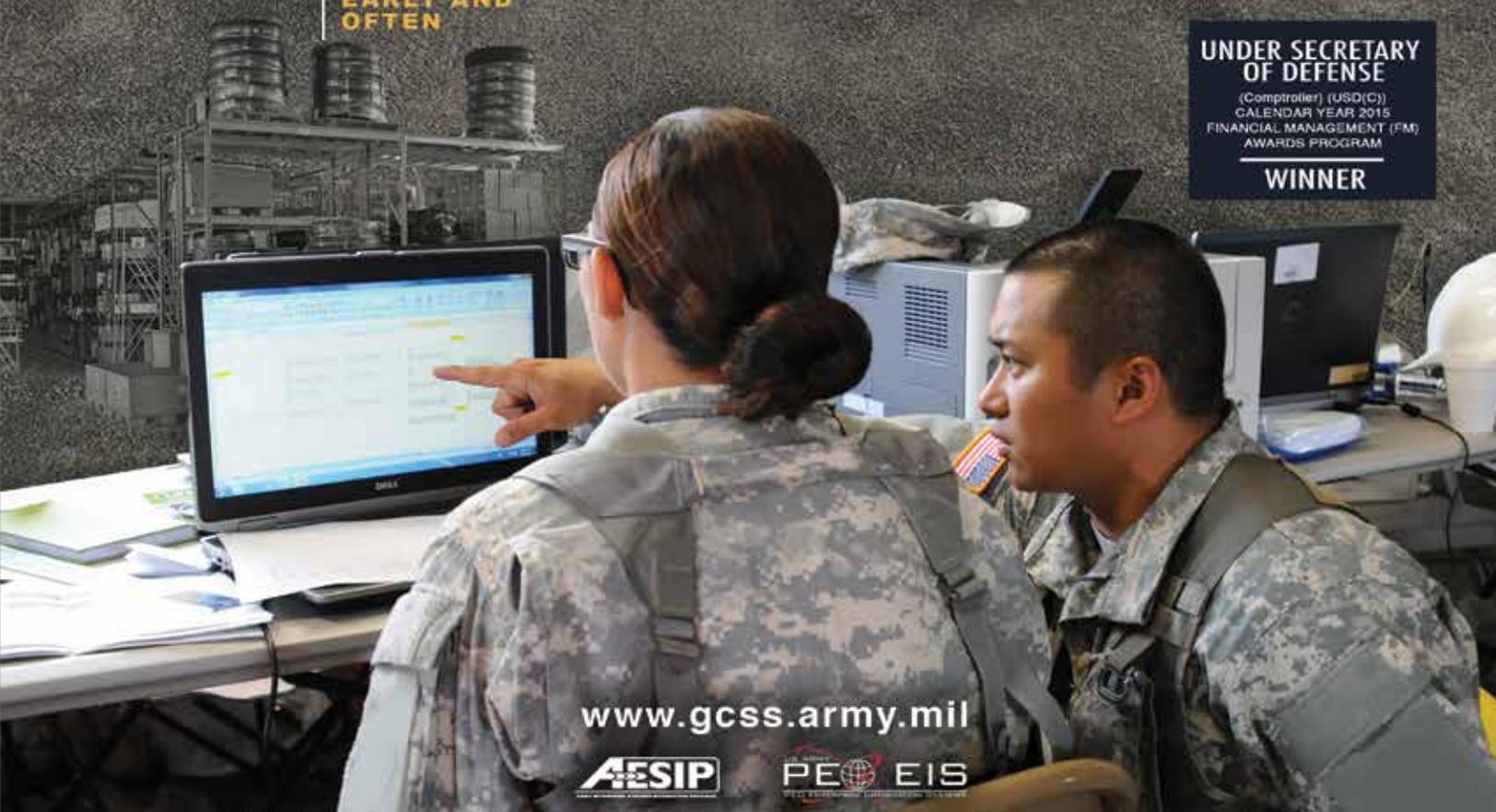
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(This image is a photo illustration; multiple photos were composited for an illustrative effect.)

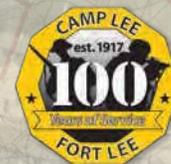
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SUSTAINMENT WEEK

FORT LEE CENTENNIAL ANNIVERSARY



CENTENNIAL DAY EVENTS

The Centennial Kick-Off Troop Run | 10 JULY 2017 | 0600-0730
The Time Capsule and Baton Passing Ceremony | 10 JULY 2017 | 1000-1130
30 Minute Centennial Documentary | 10 JULY 2017 | 1400-1500
AMC Hosted Sustainment Day | 13 JULY 2017 | 0800-1530
Sustainment Ball | 13 JULY 2017 | 1730-UTC

REGIMENTAL DAYS

QUARTERMASTER REGIMENTAL DAYS

Hall of Fame Ceremony | 11 JULY 2017 | 0900-1000
Dedication Ceremony | 11 JULY 2017 | 1330-1430
Quartermaster Reception | 11 JULY 2017 | 1600
World War I Exhibit Grand Opening | 12 JULY 2017 | 0900
Regimental Honors Ceremony | 12 JULY 2017 | 1030
Quartermaster General Update to Senior Leaders | 12 JULY 2017 | 1130

ORDNANCE REGIMENTAL DAY

Hall of Fame Board | 12 JULY 2017 | 0900-1400
Hall of Fame Induction Ceremony & Reception | 12 JULY 2017 | 1600-2000

TRANSPORTATION CORPS REGIMENTAL DAY

The Distinguished Member of the Regiment | 12 JULY 2017 | 0900-1130
The Transportation Corps "Of the Year" | 12 JULY 2017 | 0900-1130
The Deployment Excellence Award (DEA) | 12 JULY 2017 | 0900-1130
The Transportation Corps Hall of Fame | 12 JULY 2017 | 1130-1400

2017 marks the Centennial Anniversary of Fort Lee. Construction of Camp Lee commenced in June 1917 with the U.S. entry into World War I. Home of the 80th Division in 1917, Camp Lee later became the center of Army Quartermaster training during World War II. With the arrival of the Ordnance and Transportation Corps in 2009, Fort Lee became Home of Army Sustainment. On July 10, 2017, Fort Lee will celebrate the Centennial and look to the future!

For more information regarding Sustainment Week events please visit:
www.lee.army.mil

