

NOVEMBER–DECEMBER 2017

# ARMY SUSTAINMENT

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*Pfc. James Hill, an automated logistical specialist for the 1st Battalion, 68th Armor Regiment, 3rd Armored Brigade Combat Team, 4th Infantry Division, uses a hand-held terminal to process newly arrived parts at a supply support activity in Grafenwoehr, Germany, on Aug. 15, 2017. (Photo by Staff Sgt. Ange Desinor)*

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# Integration Starts With Enterprise Resource Planning Systems

■ By Gen. Gustave “Gus” Perna



**T**his edition of *Army Sustainment* explores materiel management at the tactical, operational, and strategic levels. Materiel management is capabilities-centric; it requires commanders to actively and effectively manage the Army's fleets of equipment.

As the Army's lead materiel integrator, the Army Materiel Command (AMC) is managing excess equipment and increasing supply chain efficiencies. It is doing this while supporting the Army in building brigade combat teams, security force assistance brigades, and equipment-on-hand readiness.

We at AMC must increase supply availability to provide breadth and depth to support formations in the field. Across the materiel enterprise, we are moving 1.2 million pieces of equipment in support of the chief of staff of the Army's strategy to build force structure.

We are constrained by fiscal and arbitrary metrics while readiness demands increase. Successful materiel management will require leaders at all levels to understand processes and ensure discipline in execution.

Synchronize and integrate—those

are my responsibilities as the Army's senior logistician. From research to re-sale and supply to sustainment, it takes the total capabilities of the materiel enterprise to synchronize, integrate, and ultimately deliver materiel readiness. We synchronize our efforts to equip the Army with our partners in the Training and Doctrine Command, the Forces Command, the Army staff, and combatant commands.

Likewise, through our logistics enterprise resource planning systems, we integrate information to provide increased visibility that drives sustainment decision-making. Never before have Army systems provided the access to information and the clear picture of readiness that they do today.

At the strategic level, the Logistics Modernization Program incorporates supply chain, maintenance, repair, and overhaul solutions and integrates business processes across logistics systems Armywide. At the operational level, the Lead Materiel Integrator Decision Support Tool compares the Army's resources with validated, prioritized requirements, essentially matching supply with demand. And at the tactical level, the Global Combat Support System—Army (GCSS—Army) both modernizes and integrates operations within every warehouse, supply room, motor pool, and property book office across the force.

GCSS—Army is the most significant change to Army logistics in decades. Guided by the great vision of former logistics leaders, we have eliminated legacy systems and consolidated their functions into one system. The single system establishes a common operational picture for supply, maintenance, property, and tactical finance.

GCSS—Army ensures auditability, but more importantly, the system

provides a critical capability to allow logistics leaders and units to have visibility of their equipment and readiness statuses. GCSS—Army takes materiel readiness to tactical units and provides them with insight into repair and parts supply statuses. It allows units to make informed decisions to improve Army readiness.

As we continue to field Wave 2 of GCSS—Army, we need commanders' support in prioritizing comprehension of the system. Leaders and Soldiers need to invest intellectual time and energy in understanding the system—the features, functionality, roles at each level, and available reports.

Warrant officers must become our technical experts and be proactive in training on the system across the Army. Users need to know how to best use GCSS—Army's capabilities to increase unit readiness. Only when we collectively become proficient in using GCSS—Army will we truly understand its capabilities and realize its potential to improve readiness.

Time is an invaluable resource, and as retired Lt. Gen. Mitchell Stevenson, a champion of GCSS—Army said, “Managing readiness is all about information.” GCSS—Army provides near real-time data on unit equipment and maintenance and provides critical information on the status of unit equipment.

In the future, we will have business intelligence to get ahead of capabilities requirements. This data integration promotes accuracy and timeliness and allows the materiel enterprise to collectively provide materiel readiness.

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



# Twenty Years in the Making: A Milestone in Materiel Management

■ By Lt. Gen. Aundre F. Piggee

I have some very good news for every active, reserve, and National Guard sustainer in the Army: we are completing the total fielding of the first increment of the Global Combat Support System–Army (GCSS–Army).

This achievement has been 20 years in the making. Every predecessor of mine since the late 1990s has struggled with how to improve materiel management, and they all had a hand in making this game-changing technology a reality.

So did many of you—154,000 users in 1,000 units have embraced and bought into this new capability at every supply support activity, resource management office, property book office, unit supply room, and motor pool throughout the Army.

## A Successful Fielding

From the very first fielding of GCSS–Army to units at Fort Irwin, California, and Fort Bragg, North Carolina, to the last fielding to 3rd Brigade Combat Team, 1st Armored Division, at Fort Bliss, Texas, Soldiers have succeeded in making this the largest deployment of a materiel management information system to the tactical level in the Army's history.

What is most important to me is that the system has been fielded to the total Army—to all components at one time. This is the first time that has been done in recent history. I applaud all of you for what you accomplished.

The best news about the fielding is that it will increase our ability to manage materiel for the Army. This will result in a significant increase in readiness, not only in garrison formations but, more importantly,

during combat operations.

A few months ago, I visited the 3rd Brigade, 25th Infantry Division, in Hawaii, and Warrant Officer Patricia Washington demonstrated how her unit operates with GCSS–Army. She showed me how it improved the timeliness of their receiving, storing, and issuing of repair parts. Their entire supply support activity is mobile. One month, they executed two exercises to ensure that they could move their entire supply support activity in a single lift, and they were successful.

This is the first time we have one system that provides us with a common operational picture from the tactical level to the strategic level. GCSS–Army has improved our ability to predict supply and sustainment requirements, and most importantly, it has been used in combat operations in both Iraq and Afghanistan.

In the coming years, we will field the second increment of GCSS–Army and add 28,500 more users. We will add aviation units, extend it to Army pre-positioned stocks, and provide the Army enhanced business intelligence/business warehouse capabilities. This will move us closer to our goal of achieving total asset visibility so that we can see ourselves in real time.

It could not come at a more important time. Materiel management has always been key to the success of combat operations and readiness, and with increased tensions and uncertainty in the world, it will continue to be crucial in the future.

## Materiel Management Initiatives

At the Department of the Army headquarters, we are taking four other steps to get the Army on the right materiel management track.



The Army is successfully fielding the Global Combat Support System–Army and working on several other initiatives to improve its materiel management capabilities.





## ACQUISITION ADVICE CODES

**A** - SERVICE/AGENCY REGULATED  
**B** - ICP REGULATED  
**C** - SERVICE/AGENCY MANAGED  
**D** - DOD STOCKED AND ISSUED  
**E** - OTHER SERVICE STOCKED AND ISSUED  
**F** - FABRICATE OR ASSEMBLE, NON-STOCKED  
**G** - GSA MANAGED, STOCKED, AND ISSUED  
**H** - DIRECT DELIVERY UNDER CENTRAL CONTRACT  
**I** - DIRECT ORDERING FROM A CENTRAL CONTRACT  
**J** - NOT STOCKED  
**K** - STOCKED FOR OVERSEAS ONLY  
**L** - LOCAL PURCHASE ONLY  
**M, N, P, R, S, W** - RESTRICTED  
**O** - PACKAGED FUELS  
**Q** - BULK PETROLEUM PRODUCTS  
**T** - CONDEMNED, NON-STOCKED ITEM  
**V, Y** - TERMINAL ITEMS  
**Z** - INSURANCE/NUMERIC STOCKAGE OBJECTIVE ITEM

## CONDITION CODES

**A** - SERVICEABLE (ISSUE WITHOUT QUALIFICATION)  
**B** - SERVICEABLE (ISSUE WITH QUALIFICATION)  
**C** - SERVICEABLE (PRIORITY ISSUE)  
**D** - SERVICEABLE (TEST/MODIFICATION)  
**E** - UNSERVICEABLE (LIMITED RESTORATION)  
**F** - UNSERVICEABLE (REPARABLE)  
**G** - UNSERVICEABLE (INCOMPLETE)  
**H** - UNSERVICEABLE (CONDEMNED)  
**S** - UNSERVICEABLE (SCRAP)

## MIGO MOVEMENT TYPES

**101** - GR (GOODS RECEIPT)  
**161** - GR RETURNS  
**201** - GI (GOODS ISSUE) FOR COST CENTER  
**221** - GI FOR PROJECT  
**261** - GI CONSUMPTION FOR ORDER FROM WAREHOUSE  
**309** - TF (TRANSFER) MAT TO MAT  
**311** - TF WITHIN PLANT 2000  
**344** - TR BLOCKED TO UNRE  
**411** - TF SLOC TO SLOC (S-4)  
**412** - TR SLOC TO SLOC (S-4)  
**501** - RECEIPT W/O PO (FOI)  
**502** - RE-RECEIPT W/O PO  
**601** - GD GOODS ISSUE: DELIVERY  
**641** - TF TO STOCK IN TRANSIT  
**643** - GR AT THE UNIT  
**644** - TR TO CROSS COMPANY (REVERSAL VIA VL09)  
**701** - GR PHYS INV: WHSE  
**702** - GI PHYS INV: WHSE  
**711** - GI INV-DIFF: WHSE  
**712** - GR INV-DIFF: WHSE  
**901** - GR WHSE  
**903** - GR FREE ISSUE RECEIPT WHSE  
**905** - WALK THROUGH GR (EXTERNAL CUSTOMER) WHSE

## RECOVERABILITY CODES

**A** - ITEMS REQUIRE SPECIAL HANDLING FOR DISPOSITION  
**D** - REPARABLE ITEM (IF NOT DISPOSE AT DEPOT)  
**F** - REPARABLE ITEM (IF NOT DISPOSE AT DS)  
**H** - REPARABLE ITEM (IF NOT DISPOSE AT GS)  
**L** - REPARABLE ITEM (IF NOT DISPOSE AT SPECIAL ACT)  
**O** - REPARABLE ITEM (IF NOT DISPOSE AT ORG)  
**Z** - NON-REPARABLE

## REPORTS (SUGGESTED)

**DISPATCH CONTROL LOG** - IW28-D1  
**ESR** - Z-EQUEST  
**INB DEL** - VL061 W/UNIT SLOC  
**INB DELTO SSA** - VL061 W/SSA SLOC  
**MWO-MMIS** - IW28-MW  
**ORILS** - YOBUX/ZOEREP  
**ORILS TURN-IN MONITOR** - VL060 FOR PI  
**ORILS TURN-IN MONITOR** - VL060 FOR GI  
**PR REJECTION LOG** - YOSTAT-C\*  
**PRNI** - IW37N  
**SERVICE SCHEDULE** - IW28-PM  
**SHOP SUPPLY INV** - MAT\_SIT  
**ZCON1D** - DEMAND ANALYSIS





### STATUS CODES

**BA** - ITEM PROCESSED FOR RELEASE  
**BB** - BACKORDERED  
**BC** - BACKORDERED/LONG ESD EXPECTED  
**BD** - DELAYED TO VERIFY REQUIREMENTS/AUTHORIZATION  
**BE** - MRO CUT BUT NO ACTION TAKEN  
**BF** - NO RECORD OF DOC #  
**BG** - INFORMATION ON REQ HAS BEEN CHANGED  
**BH** - SUBSTITUTE ITEM WILL BE SUPPLIED  
**BJ** - QUANTITY CHANGED  
**BK** - REQ DATA HAS BEEN CHANGED AS REQUESTED  
**BL** - NOA HAS BEEN FORWARDED  
**BM** - DOC FORWARDED TO NEXT HIGHER ACTIVITY  
**BN** - REQ BEING PROCESSED AS FREE ISSUE  
**BP** - REQ DEFERRED AS PER CUSTOMER INSTRUCTIONS  
**BQ** - CANCELLED AT REQUEST OF REQUISITIONER  
**BT** - REQ WILL BE PROCESSED TO MEET RDD  
**BV** - ITEM PROCURED BY CONTRACT OR DIRECT CONSIGNEE  
**BZ** - BEING PROCESSED FOR DIRECT DELIVERY  
**B1** - ASSETS CURRENTLY NOT AVAILABLE  
**B4** - CANCELLED BY REQUEST (STILL CHARGED)  
**B5** - ACTIVITY IN RECEIPT OF FOLLOW-UP REQUEST  
**B6** - CANCELLED ITEM BEING DIVERTED  
**B7** - UNIT PRICE CHANGE  
**B8** - CANCELLATION NOT SUCCESSFUL  
**B9** - CANCELLATION REQUEST IN PROCESS  
**CA** - REJECTED  
**CB** - REJECTED - QTY REQUESTED NOT AVAILABLE  
**CC** - NON-CONSUMABLE ITEM  
**CD** - REJECTED - ERRORS IN REQUISITION  
**CE** - REJECTED - UNIT OF ISSUE INCORRECT  
**CG** - REJECTED - UNABLE TO IDENTIFY ITEM  
**CI** - REJECTED - ITEM CODED AS OBSOLETE  
**CK** - REJECTED - UNABLE TO PROCURE  
**CM** - REJECTED - NO LONGER FREE ISSUE  
**CN** - NON-CONSUMABLE ITEM  
**CP** - REJECTED - LOCAL PURCHASE OR FAB  
**CQ** - REJECTED - COMMAND REGULATED  
**CS** - REJECTED - QTY ERROR  
**CT** - REJECTED - INCORRECT INFORMATION  
**CU** - REJECTED - UNABLE TO PROCURE  
**C7** - RESUBMIT REQUISITION  
**DB** - REJECTED - NO VALID CONTRACT  
**DE** - CANCELLED - SHIPMENT STATUS INCORRECT  
**DG** - SHIPMENT CONFIRMED

### TRANSACTION CODES

**IP01** - CREATE A MAINTENANCE PLAN  
**IP02** - CHANGE MAINTENANCE PLAN  
**IP10** - SCHEDULE A MAINTENANCE PLAN  
**IP24** - SCHEDULING OVERVIEW  
**IP41** - CREATE INDIVIDUAL MAINTENANCE PLAN  
**IQ09** - DISPLAY MATERIAL SERIAL NUMBERS  
**IW13** - MATERIAL WHERE USED (DCR)  
**IW28/IW29** - CHANGE/VIEW NOTIFICATIONS  
**IW34** - CREATE NOTIFICATION ORDER (INITIAL SCREEN)  
**IW37N** - SELECTION OF ORDERS AND OPERATIONS  
**MB21** - CREATE RESERVATION  
**MB25N** - RESERVATION LIST  
**MB51** - MATERIAL DOCUMENT LIST  
**MD04** - STOCK REQUIREMENT (PR-STO-PO HISTORY)  
**ME21N** - CHANGE PURCHASE ORDER  
**ME51N** - CREATE PURCHASE REQ (ZRL)  
**ME59N** - CONVERT PR TO PO FOR NON-REPARABLE  
**MIGO** - GOODS MOVEMENT  
**MM03** - DISPLAY MATERIAL (FEDLOG MASTER DATA)  
**MMBE** - STOCK OVERVIEW/STOCK AVAILABILITY  
**SU3** - USERS PROFILE  
**VL02N** - CHANGE OUTBOUND DELIVERY  
**VL06O** - CUSTOMER OUTBOUND DELIVERIES  
**VL06I** - INBOUND DELIVERIES  
**YOBUX** - MONITOR RECOVERABLES  
**ZBSU** - CHANGE STORAGE BIN  
**ZEDF** - EXTENDED DOCUMENT FLOW  
**ZEQUST** - EQUIPMENT STATUS REPORT  
**ZMB59** - MATERIAL DOCUMENT LIST HISTORY  
**ZOPID** - OPERATOR PERMIT ID (LICENSE)  
**ZOQM** - DRIVERS QUALIFICATION PROFILE: MASS DATA MAINT  
**ZPEPP** - OPERATOR QUALIFICATION RECORD (348)  
**ZPROSTAT** - ORDER STATUS REPORT  
**ZSPTX** - DISPLAY ORG—FE TABLE FOR RIC LOC

### ADVICE CODES

**1C** - FILL AS REQUESTED, SUB OR REJECT IF ITEM NOT AVAILABLE  
**1J** - FILL AS REQUESTED OR REJECT IF ITEM NOT AVAILABLE  
**2A** - ITEM IS NOT AVAILABLE THROUGH MANUFACTURER, FABRICATOR OR PROCUREMENT  
**2B** - ONLY REQUESTED ITEM WILL SUFFICE, DO NOT SUBSTITUTE  
**2C** - DO NOT BACKORDER, REJECT UNFILLED QTY, SUITABLE SUB ACCEPT  
**2D** - FURNISH EXACT QUANTITY REQUESTED  
**2E** - FREE ISSUE  
**2F** - ITEM IS OBSOLETE BUT STILL REQ FOR IMMEDIATE USE  
**2G** - MULTIPLE USE  
**2H** - SPECIAL TEXTILE REQUIREMENTS  
**2J** - DO NOT SUBSTITUTE OR BACKORDER  
**2L** - THE AMT SHOWN EXCEEDS NORMAL DEMAND, VALID REQUIREMENT  
**2T** - DELIVER TO CONSIGNEE BY RDD, OR CANCEL REQUIREMENT

### HELPFUL WEBSITES

[HTTP://AEPS.RIA.ARMY.MIL/](http://AEPS.RIA.ARMY.MIL/)  
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*Soldiers from the Army Materiel Command conduct equipment layouts during the command's 2017 Best Warrior Competition on July 16, 2017, at Camp Atterbury, Ind. (Photo by Sgt. 1st Class Teddy Wade)*

**Common ASLs.** First, we took an in-depth look at the repair parts that brigades are allowed to keep on hand—their authorized stockage lists (ASLs). When units arrived in theater during the wars in Iraq and Afghanistan, repair parts were usually already on the ground and available. But that will not necessarily be the case in future contingencies.

So, we determined which parts will likely be needed during the first 30 days in combat, and we are building common ASLs for infantry, armor, and Stryker brigades. The equipment on these lists will be fully mobile and transportable by the units.

By the end of this year, we will have completed 26 brigade conversions to the common ASLs; by next year, every active brigade will be converted. We also are discussing implementing this for the National Guard. This is a huge improvement that will have significant positive impacts on the readiness of our brigades for years to come.

**Equipment reduction.** Second, with your help, we are redistributing equipment to where it is needed and getting rid of excess and obsolete equipment that we do not have the resources, personnel, or time to

maintain to standard. This year, the Army removed more than 825,000 pieces of excess equipment from its inventory.

Our goal is to divest ourselves of another 1.7 million major end items in the next two years. By doing so, we will completely eliminate obsolete equipment from tactical-level organizations or move it to fill gaps throughout the Army. As a result of these efforts, more than 20 percent of brigades have already seen increased readiness levels.

**Modern technologies.** Third, we are continuing to look at cutting-edge technologies that will help us better maintain our vehicles and equipment, both at home station and during combat operations. A promising initiative is a condition-based maintenance program that integrates sensors into equipment and enables us to forecast catastrophic failures before they happen. We think this will save millions of dollars by allowing us to repair rather than replace an engine or transmission because we will predict a failure before it actually happens.

We are also exploring additive manufacturing to produce special tools or repair parts. In many cases

when we are in garrison or fighting on the battlefield, we do not have all the tools we need. We could use 3-D printing to manufacture special tools that would allow us to execute the mission. We think this capability would significantly improve our ability to execute maintenance and supply operations.

**Automated equipment issue.** Fourth, we are improving how we distribute organizational clothing and individual equipment. Depending less on brick and mortar facilities will result in significant cost savings. We must do more to automate our central issue facility operations with modern technology that can deliver the right equipment, in a timely fashion, at the point of need.

These tools will help us in our 20-year struggle to improve our materiel management capabilities and boost overall readiness. But tools in the box are only as good as the Soldiers who use them to reshape our Army.

During a recent visit to the 4th Infantry Division Sustainment Brigade at Fort Carson, Colorado, I saw a great example of how a sustainment brigade commander adapted his organization and implemented systems to improve sustainment synchronization across the entire division. GCSS-Army was the enabler to make this happen.

I encourage everyone to read in this issue Brig. Gen. Rodney D. Fogg's article, "GCSS-Army: Providing Big Data for Readiness," for a full description of the enhancements to readiness brought about by these extraordinary efforts.

Most of all, as I continue to visit sustainment units and Soldiers across the Army, I look forward to hearing your lessons learned and best practices for using these tools to manage our materiel.

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.



# Filling the Materiel Management Gap

■ By Maj. Gen. Paul C. Hurley Jr. and Lt. Col. Tracie M. Henry-Neill

Ten years ago, then Maj. Gen. Mitchell H. Stevenson wrote an article for the May–June 2007 issue of *Army Logistician* entitled “Where’s my MMC?” The article described how materiel management would be performed without materiel management centers in the modular sustainment force. His article laid out the vision for materiel management across all echelons and particularly within sustainment commands at echelons above brigade (EAB).

## How It Was Supposed to Work

A fundamental concept of the modular force was the single EAB logistics command and control structure. The goal was a streamlined logistics force structure driven by the Army’s decision to move from a division-centric force to a brigade-centric one. Sustainment capabilities would be pushed forward to create more self-sufficiency at the brigade combat team level.

The vision for how materiel management would work under this new system relied on two premises. First, the system was predicated on the maturation of emerging automated systems such as the Battle Command Sustainment Support System (BCS3).

Second, the solution gave specific logistics planning and execution responsibilities to the division and brigade staffs. The G-4 and S-4s would have robust staffs and assume all the property book functions to include asset visibility roles.

Although not explicitly stated, there was an assumption that the experience levels in sustainment commands would remain the same since they would be taking on some materiel management for forward formations.

## The Problems

Feedback from corps and division

commanders indicates that a perceived materiel management gap currently exists. Commanders are not receiving the same level of rigorous analysis and materiel management that they had with materiel management centers.

Several factors have contributed to this situation. For one thing, the enablers that the Army counted on in 2007 are in some ways still emerging. Legacy sustainment information systems are still being merged into current systems. Additionally, BCS3 was never able to deliver the capabilities that planners expected from it.

The Army also still lacks adequate business intelligence/business warehouse (BI/BW) capabilities to allow for analytic forecasting, a logistics common operational picture, supply chain management visibility, and synchronization from the strategic to tactical levels.

Another key factor has been that the robust staffs required for the expanded G-4/S-4 mission were never fully developed, and then they were even reduced in size. The current division G-4 section is authorized only 80 percent of the staff of the original design. As a result, the staff is forced to focus almost exclusively on day-to-day operations rather than managerial analytics.

On top of the structural issue, mandated grade plate reductions severely reduced experience levels at EAB sustainment units, such as theater sustainment commands (TSCs), expeditionary sustainment commands, and sustainment brigades. Materiel management in the modular force rested on these units.

A final issue is that the Army lacks a clear understanding of materiel management roles, responsibilities, and tasks by echelon.



The Combined Arms Support Command is working to fill a materiel management gap caused by the modular force’s lack of materiel management centers.



*Lt. Col. Andrew Duss, a product manager for Program Executive Office Aviation, explains to Gen. James McConville, the vice chief of staff of the Army, new avionics developments on a UH-60V Blackhawk helicopter during a visit to Redstone Arsenal, Ala., on Aug. 3, 2017. (Photo by Sgt. 1st Class Teddy Wade)*

## Current Initiatives

In January 2017, the Combined Arms Support Command (CASCOM) hosted a session with more than 15 organizations to take a hard look at distribution management and materiel management (DM3). Findings from that session were validated at the DM3 Seminar in June 2017, which included participants from the Department of the Army G-4, the Army Materiel Command (AMC), the Army Sustainment Command, and several TSCs. The participants identified a number of major solutions and the changes required to implement them.

**Doctrine.** Future sustainment doctrine will better articulate the DM3

process, roles, and responsibilities across echelons. CASCOM will publish multifunctional sustainment and quartermaster doctrine by the end of fiscal year 2019. It will also work to make changes to joint doctrine to clarify the DM3 process.

**Organization.** During the examination of the DM3 process, it became clear that leveraging movement control is essential and that grade plate reductions at EAB had hit theater-level movement control especially hard. This led to the development of the theater movement control element (TMCE).

Starting in the fourth quarter of fiscal year 2018, the Army will field six TMCEs to augment TSCs. The

TMCEs will provide movement management, container management, and highway regulation and coordination for personnel and materiel movements.

**Training.** CASCOM has developed an enterprise resource planning (ERP) systems training strategy for Army personnel of all branches and components. Soldiers are currently being trained in the Global Combat Support System–Army (GCSS–Army) and the General Fund Enterprise Business System.

To fully implement the strategy, CASCOM is pursuing a live training environment, which will provide realistic, hands-on training at the operator, middle manager, and senior leader levels. CASCOM will leverage technology to develop content that can be shared for instruction across all three domains of training: institutional, operational, and self-development.

**Materiel.** Since the divestiture of BCS3, the Materiel Common Operating Picture has served as an interim solution for some BI/BW capabilities. Ultimately, full BI/BW capability will reside in the Army Readiness Common Operating Picture (AR-COP). This system will provide commanders at every echelon, both at home station and deployed, a tailorable, integrated, and continually updatable readiness picture.

The AR-COP's dashboard view, which is organized by commodity with near-real-time data, will establish a base for the predictive analytics of the future. The AR-COP fielding will begin in the summer of 2018.

In addition, the Army's Fuels Automated Management System will support petroleum needs within joint combined arms operations. When implemented, the system will vastly improve real-time visibility, accountability, and reporting for ground and mobile storage assets. It will also add a secondary billing capability.

**Leadership.** As materiel management doctrine has evolved, so has leadership education. However, CASCOM will have to examine



what is integrated into professional military education (PME) for all cohorts, considering that courses must have zero growth.

Functional courses can help. The Support Operations Course covers materiel management at the tactical level, and the Theater Sustainment Planners Course and the Joint Logistics Course cover the topic at the operational level. A new GCSS-Army Middle Managers Course is also being developed and is expected to be implemented in fiscal year 2018.

Another functional course may be required to help bridge the gap that PME cannot fill, particularly for noncommissioned officers and warrant officers. However, the institutional domain cannot meet the entire need. Leaders will have to take advantage of experience in operational assignments and self-development to expand their knowledge.

**Personnel.** CASCOM is currently conducting a study to determine the appropriate sustainment automation support management office (SASMO) military occupational specialty to perform duties as access administrator for GCSS-Army and emerging ERP updates.

The SASMO is responsible for providing dedicated automation support to the various logistics automation systems, but the role has not been redesigned since GCSS-Army was implemented. This study will inform force structure, training, and leadership solutions for the future force.

**Policy.** As GCSS-Army is fully fielded, the Army must update the appropriate policies to reflect the impact that enabling ERP systems have on operations. Specifically, the Army will have to update the following publications by fiscal year 2019 to clarify policies that incorporate GCSS-Army:

- Army Regulation (AR) 700-15, Packaging of Materiel.
- AR 710-2, Supply Policy Below the National Level. AR 56-4,

Distribution of Materiel and Distribution Platform Management.

- Department of the Army Pamphlet 700-32, Packaging of Army Materiel.

At the same time, CASCOM, in coordination with the Army G-4, is moving forward to refine the governance strategy for GCSS-Army in fiscal year 2018. The strategy will engage senior leaders and develop buy-in for decisions affecting business areas throughout the Army. The governance process will explore ways to accomplish three objectives: increased leadership visibility, accountability, and communication.

### The Next 10 Years

Advancements in the mid and far terms (2027 and beyond) will continue to provide ways to mitigate challenges within DM3. The goal for decision support tools will be the ability to fuse available enterprise sustainment data and external data and present it within a tailorable dynamic tool. This will enable sustainment integration with the mission command network.

CASCOM will also continue working on predictive analytics within ERP systems to enhance joint interoperability. Truly effective DM3 will require the melding of many manual and automated sustainment systems to feed a joint common operational picture.

These goals will depend on improved sensor technology to develop platform self-reporting readiness capability and artificial intelligence technology to improve situational awareness.

Another critical area for the future of DM3 is the network on which the ERP system operates. The future adversary will likely target and attempt to exploit the network and logistics information to gain an advantage.

ERP systems are particularly vulnerable to cyberthreats. CASCOM is working with both the Mission Command Center of Excellence and the Cyber Center of Excellence to

address the protection requirements for the entire supply chain.

Changes within strategic partner organizations such as AMC will enhance the interface between the operational and strategic levels of materiel management. Establishing the theater readiness support brigade and the Army readiness support brigade will provide the necessary interface between Army forces and AMC. This will likely eliminate the requirement for AMC to develop ad hoc teams to overcome shortfalls in TSC-level staffs for materiel management.

Transformation in the Army is constant; making sure we have the right capabilities to fight and win our nation's wars is difficult as the operational environment continues to change.

Ten years ago, the decision to transition from a division-centric force resulted in a modular sustainment structure that has endured and proven itself in battle. Since then, operational, structural, and technological changes have affected DM3 significantly. CASCOM, in turn, must continue to evolve to provide the ability to manage sustainment to build and maintain readiness.

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*Pfc. Shaqwahn Stanard, a turn-in clerk with the 16th Combat Aviation Brigade, places a pallet into a truck for shipment during exercise Bayonet Focus 17-03 on June 17, 2017, at Yakima Training Center, Wash. (Photo by Staff Sgt. Samuel Northrup)*





# Tactical Materiel Management: Ensuring We Are Ready Now

■ By Maj. Gen. Ronald Kirklin

C-130  
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The Army has moved from having units ready to deploy cyclically to having them always ready. Supporting this model requires changes in materiel management.

Over the past few years, the Army's process for effectively and efficiently generating trained and ready forces for combatant commanders has shifted from the Army Force Generation (ARFORGEN) model to Sustainable Readiness. ARFORGEN focused units on building readiness for known missions and relatively short deployments.

The ARFORGEN model included a programmed reset on the back end of each deployment cycle. The readiness "cliff" that resulted meant that entire formations were unavailable for contingencies when they returned to home station. ARFORGEN was an effective approach under different conditions, but it had to be replaced in practice and in mindset by Sustainable Readiness. Focusing solely on the next assigned unit mission is no longer good enough.

Sustainable Readiness focuses manning, training, and equipping efforts to enable commanders to maintain acceptable readiness levels at all times. We have to reduce the readiness peaks and valleys so that we are ready now to mitigate the risk that accompanies the uncertainty of our environment. We need to be prepared to fight and win our nation's wars when called upon.

The overarching philosophy of Sustainable Readiness is that leaders at all levels will build and sustain readiness at all times, otherwise unit readiness will suffer. From a sustainment standpoint, this fundamental change in the way we manage readiness places greater demand on materiel management at the tactical level. This article addresses key insights of maintenance and supply management that are required to sustain a combat-ready, globally responsive force that is ready now.

### Maintenance Management

Commanders are responsible for maintaining their equipment to standard at home station, during combat training center training, and while deployed. However, based on obser-

vations and trends depicted in data on monthly reports from the Army Maintenance Status System, units are struggling to achieve operational readiness goals. Frankly, units must improve organizational maintenance and the management of operational fleet readiness.

Army Regulation 750-1, Maintenance of Supplies and Equipment, is the regulatory document used to establish maintenance policies and should also be used to guide maintenance programs within all formations. Obviously, the bottom line is that maintenance lets units generate and regenerate combat power to enable training and mission accomplishment.

Equipment is considered operationally ready if it is determined to be fully mission capable in accordance with the standards prescribed in the applicable 10- and 20-series technical manuals (TMs). The Army TM-10/-20 maintenance standard is the only standard for maintaining equipment. It is paramount that units adhere to this standard to ensure fleet readiness. (See figure 1.)

Another critical element for achieving fleet readiness is teaching operators and crews how to maintain their equipment. Commanders must train their leaders and Soldiers to perform preventive maintenance checks and services and scheduled services on their equipment and qualify them on the performance of these skills, no differently than how a Soldier qualifies on a weapon system.

Commanders must allocate time in training schedules and focus manpower resources on maintenance to make this work. We absolutely must re-educate leaders on how to manage organizational maintenance.

Examples of maintenance systems that require oversight at the tactical level include command motor stables, routine executive officer maintenance meetings at the company and battalion levels, and weekly equipment status report reviews by the brigade combat team executive



officer or the brigade support battalion commander. Other examples are maintenance terrain walks and monthly materiel readiness reviews hosted by the division deputy commanding general for sustainment or a similar representative.

Equally important is the ability of the Army's maintenance technicians and noncommissioned officers to execute advanced diagnostics on combat platforms. An article by M.C. "Steve" Cherry in the May–June 2017 edition of *Army Sustainment* highlighted two programs that tactical and operational leaders can use to narrow the gap in the institutional knowledge and experience of our senior maintainers.

The first program is the Unit Diagnostics Immersion Program (UDIP). The UDIP consists of a mobile training team composed of instructors from the Combined Arms Support Command that visits Forces Command (FORSCOM) installations to provide hands-on training using unit tools, test equipment, vehicles, and facilities.

The second program is the Master Diagnostician Training Initiative conducted at the National Guard Sustainment Training Center at Camp Dodge, Iowa. Master diagnostician training focuses on the "why" of diagnostics and troubleshooting and builds on the critical thinking skills and proficiency required to isolate faults and repair vehicles.

The major difference between the two programs is the location: home station versus Camp Dodge. The intent of both programs is to provide maintainers with the knowledge needed to rapidly diagnose problems and provide cost-effective solutions so that units can reach higher levels of readiness.

### Supply Management

To reiterate what has been said by countless leaders before me, disciplined maintenance programs require disciplined supply operations. Disciplined supply operations include the management of authorized stockage lists (ASLs), shop stocks, and bench stocks. Ensuring disciplined demand at the unit level drives readiness throughout the Army's organic industrial base.

Disciplined demand drives down customer wait time and drives up the operational readiness of our combat fleets. At the tactical level, we must protect precious operation and maintenance dollars by validating class IX (repair parts) requirements, cross-leveling excess stock to fill shortages, and imposing logistics policies that prevent waste.

Army Regulation 710-2, Supply Policy Below the National Level, and Army Regulation 735-5, Property Accountability, lay out the objectives and expectations that commanders should use to guide their supply

programs. The bottom line is that getting our ASLs and shop stocks at the right breadth and depth increases our mobility and ability to rapidly deploy, ensuring we are ready now. The right breadth and depth also allows combat formations to function in an expeditionary environment for extended periods of time.

A second supply management topic is that of the supply level or the equipment on hand (EOH). The supply level is a key indicator of unit readiness and is a comparison of the EOH to wartime or primary mission requirements.

Without the right equipment, tactical formations are at risk of not meeting their assigned missions. A trend that I have witnessed across FORSCOM formations is that excess equipment affects the supply level simply because equipment is not in the right formation. I have also observed that when units turn in excess and align their property books, EOH levels increase.

The buildup of excess did not happen overnight; it occurred as a result of multiple deployments, units receiving unauthorized and rapidly fielded equipment for directed missions, equipment modernizations, new equipment fieldings, multiple organizational changes, and some undisciplined supply practices both while deployed and at home station.

Holistically, the sustainment enter-

<b>Basic issue items (BII) and components of end items (COEI)</b>	Ensure all authorized BII and COEI are present or on order.
<b>Modification work orders (MWOs)</b>	Ensure all routine, emergency, and urgent MWOs are applied and reported in the Modification Management Information System.
<b>Scheduled services</b>	Perform equipment services within the scheduled service intervals.
<b>Higher level repairs</b>	Corrective actions requiring higher level maintenance are put on a work order.
<b>Parts and supplies</b>	Ensure parts that are not on hand are on valid funded requisition.
<b>Repairs and services</b>	Complete corrective actions when required parts are on hand.
<b>All faults identified</b>	Use technical manual -10 /-20 check to identify faults.
<b>Fully mission capable</b>	If all are complete, the equipment is fully mission capable.

Figure 1. *The Army Maintenance Standard.*

prise is working diligently to maximize EOH and eliminate actions that generate excess. For instance, before new equipment is fielded, a disposition plan for legacy equipment must be in place. The disposition plan relieves the burden on the unit and commander to maintain two sets of equipment.

The goal is to unburden Soldiers and commanders so that they can focus on training and mission requirements. That being said, the best way for commanders to reduce excess is to ensure EOH matches authorization documents and that a disci-

plined supply program is in place to address all components of property accountability.

### Supporting Systems

The last area that I want to briefly touch on is the use of logistics information systems to influence both maintenance and supply operations. By now, most leaders know that Global Combat Support System-Army (GCSS-Army) is a tactical unit and installation logistics information system that is linked to the General Fund Enterprise Business System.

GCSS-Army replaces the existing

suite of legacy standard Army management information systems, including the Standard Army Retail Supply System, the Standard Army Maintenance System-Enhanced, Property Book Unit Supply Enhanced, and their associated financial management information systems.

GCSS-Army tracks supplies, spare parts, and organizational equipment. The system affects every supply room, motor pool, direct support repair shop, warehouse, and property book office. When fully deployed, GCSS-Army will produce timely, precise, and effective information



*Soldiers of the 2nd Battalion, 7th Infantry Regiment, 1st Armored Brigade Combat Team, 3rd Infantry Division, load an Abrams tank onto a C-5 Galaxy aircraft at Hunter Army Airfield, Ga., on March 28, 2017. (Photo by Lt. Col. Brian Fickel)*



needed by the warfighter in order to move, track, maintain, and account for equipment and supplies.

GCSS-Army will integrate tactical logistics enterprise information for leaders and decision-makers in order to provide a single picture for maneuver and sustainment that they will use to manage combat power. Success will be gained from GCSS-Army only if each echelon, from the operator to commander, knows its role and functionality.

I am hearing from the field that proficiency comes with use, more use, training, and more training. Setting

aside time, maybe multiple times, is vitally important in order to ensure Soldiers and leaders can effectively operate and manage GCSS-Army's functions and management tools. We cannot afford not to maximize the system's capabilities.


Commanders at all echelons must understand the new dynamic environment that comes with Sustainable Readiness and the difference between rotational and surge operations. Leaders must embrace all aspects of materiel management in order to maximize unit readiness.

Maintenance and supply programs are not just logistics programs; leaders must understand and enforce these programs throughout their formations in order to sustain the momentum gained in the past year and to ensure formations are ready to "Fight Tonight" if called upon.

Maj. Gen. Ronald Kirklin is the FORSCOM G-4. Headquartered at Fort Bragg, North Carolina, FORSCOM provides training and readiness oversight for more than 750,000 active duty and reserve component Soldiers.







# Materiel Management of Readiness Drivers

■ By Jerry Figueroa

*Pvt. Adam J. Savard and Pvt. Dakota S. Bohl, Arizona Army National Guard, remove the half-shaft on an humvee during an inspection service on March 14, 2017, at the TACOM Fleet Management Expansion Tactical Vehicle Division at Fort Benning, Ga. (Photo by Staff Sgt. Brian A. Barbour)*





*"The Army Materiel Command and its subordinate life cycle management commands have a national-level responsibility for materiel management. As defined in several places in Army sustainment doctrine, materiel management functions include warehousing, cataloging, requirements determination and validation, prioritization for procurement, distribution, redistribution of excess, and materiel retrograde. Materiel management is the application of all these functions to produce the highest level of readiness within given funding constraints and changing priorities.*

*This article discusses the materiel management of readiness drivers. Readiness drivers can be many things, but for the purpose of this discussion we will focus on repair parts.*

*The TACOM Life Cycle Management Command and its joint partner the Defense Logistics Agency are responsible for materiel management of items associated with Soldier support, ground systems, and weapons. They are also responsible for many associated items for more than 60 percent of the equipment within a brigade combat team and more than 57*

*percent of all Army major end items. TACOM manages more than 45,000 national stock numbers, while the Defense Logistics Agency manages more than 322,000.*

*In this article, the director for readiness and sustainment for ground combat systems at TACOM's Integrated Logistics Support Center will discuss how TACOM performs materiel management of these critical readiness drivers.*

*One way to better communicate this role to supported organizations is through a TACOM-initiated training program called "TACOM 102." This class is specifically targeted to operational- and tactical-level sustainment units that are responsible for executing materiel management functions across the Army. The class is designed to enable those materiel managers to better understand and communicate requirements and problems to TACOM to increase equipment readiness for the force."*

*—Maj. Gen. Clark W. LeMasters Jr.,  
TACOM Life Cycle Management Command*



# The TACOM Life Cycle Management Command performs materiel management of critical readiness drivers such as repair parts and major end items.

The global combat environment has evolved to be dynamic and fluid, requiring today's Army to be nimble and responsive to changing circumstances and emerging threats. Maintaining a high readiness posture is paramount to successful mission accomplishment, especially considering that today's operations are often executed in austere conditions.

Materiel readiness is a complex issue determined by a number of factors including training, maintenance discipline, equipment shortages, and facilities infrastructure. The availability of class IX (repair parts) is most closely associated with maintaining acceptable readiness levels and is a critical element in facilitating successful mission accomplishment.

Materiel managers at the national level are responsible for all aspects of class IX management, but it is unquestionably a team effort. Managers routinely work with engineers, maintenance managers, program managers, and others to ensure accurate coding and up-to-date item configuration data and drawings.

While executing their responsibilities, managers make decisions about demand planning, requirements determination, and distribution. Distribution decisions are critical when availability is scarce; managers must determine the optimal distribution of parts to enable maximum readiness throughout the Army inventory.

## The LMP

The Logistics Modernization Program (LMP) has enabled the Army Materiel Command (AMC) to move into the next phase of enabling combat power and power projection for today's Army. It allows AMC to better execute national-level materiel management.

The LMP is a commercial off-the-shelf enterprise resource planning system that has changed the way AMC's life cycle management

commands manage class IX supplies and supply chains, task organize the organic industrial base, and pre-position supplies to enable global power projection.

The LMP facilitates real-time visibility of emerging trends, allowing managers to anticipate class IX demand and respond by pre-positioning the appropriate supplies to enable uninterrupted operations. The LMP also enables real-time self-assessment of supply chain performance and responsiveness to the Army's support requirements.

## The SMCAT

The TACOM Life Cycle Management Command has developed a number of automated systems that assist secondary item managers with executing materiel management functions. These systems help managers to anticipate field consumption of spares and measure performance against well-established metrics.

The Supply and Maintenance Cost Analysis Tool (SMCAT) extracts LMP data to provide "dashboards" that portray real-time statuses of supply availability and outstanding backorders that are stratified by priority and brigade combat team (BCT). These dashboards have the flexibility to drill down to the individual national stock number level or provide an overview of the health of an entire weapon system.

Additional class IX metrics include disposal actions, Defense Logistics Agency materiel availability, procurement lead times, excess, storage costs, and blocked orders. Materiel managers can review the existing history of quality deficiency reports against individual items of supply, allowing for causative research of premature failure or the pre-positioning of additional assets to account for the commensurate demand spike.

Managers act upon the data in SMCAT and work in conjunction with the TACOM engineering



community to rectify any identified quality deficiency issues and allow for more cost-effective support. The SMCAT capability gives item managers a holistic view of the status of individual supply items in order to execute the optimal support strategy.

SMCAT also allows for support of operations driven by the Sustainable Readiness Model by identifying the class IX status of BCTs entering a training phase or deploying for operations. SMCAT can drill down into a division, installation, or BCT to assess supply availability, backorders, and shortages of authorized stockage list requirements. It also includes working capital financial data, such as sales, credits, demands, and backorders.

SMCAT provides real-time data for class VII (major end items) management to include outstanding Department of the Army Form 2028, Recommended Changes to Publications and Blank Forms, submissions for proposed changes to technical manuals, storage costs, depot inventory, and disposal actions. Organic industrial base metrics include depot “performance to promise,” new orders, revenue, cost overruns, and unfilled orders.

SMCAT enables readiness by allowing managers to assess data in order to make workload decisions to optimize class VII availability and enhance equipment on hand statistics.

### **Sales and Operations Planning**

The LMP enables TACOM to take advantage of best business practices for supply chain management. Such practices include sales and operations planning (S&OP) techniques by which class IX performance is assessed at both the macro and micro levels.

S&OP allows midlevel and senior managers to assess class IX performance and make real-time changes to support strategy as appropriate. The technique is a recognized best practice in industry and has been

a part of the TACOM assessment regimen for more than three years.

S&OP has facilitated positive changes to supply support strategies by identifying demand trends and inventory levels and by forecasting accuracy trends.

The technique allowed TACOM to recognize that its materiel requirements planning process was chronically underforecasting demand for critical items of supply on major ground combat and combat support systems. Managers recognized that operational tempo increases were forcing increased consumption of class IX items.

Through LMP data mining techniques, TACOM identified the items that were causing the problem and took action to align the forecasts with actual demand. TACOM fully anticipates that this one action will provide for a more robust supply chain that is more responsive to field-level requirements.

S&OP processes also allow materiel managers to assess turnover rates for existing inventory. This assessment often leads to the disposal of unnecessary stocks and saves storage costs.

To date, TACOM has been able to dispose of excess inventory worth more than \$200 million. TACOM has more productively used those funds that otherwise would have paid for unnecessary storage costs.

### **Forecasting for New BCTs**

TACOM employed LMP planning scenarios to anticipate authorized stockage list and consumption requirements for the Army’s planned 15th and 16th BCTs and facilitated efforts to begin to fill the supply pipeline. By analyzing historical data of similar BCTs, TACOM extrapolated data generated by those operations into a forecast of class IX requirements for the new BCTs.

Accounting for variances in equipment and fleet densities, TACOM now has an emerging picture of the class IX requirements to support operations in those BCTs.

The analysis has allowed TACOM to engage its contracting community to begin the procurement process for those assets, ensuring their availability when the BCTs stand up.

This technique will also assist TACOM in forecasting repair parts requirements and initial issue quantities for newly fielded systems, such as the joint light tactical vehicle, armored multipurpose vehicle, and mobile protected firepower.

The LMP is a well-established industry standard and has proven to be an invaluable asset for the logistics support of TACOM’s ground fleets. In an uncertain environment, the Army demands a logistics support system that is not only nimble enough to respond to changing conditions but is also capable of anticipating requirements and pre-positioning stocks to meet demand. The LMP is proving to be an enabling mechanism to meet that challenge.

Materiel management at the national level is a team sport; it requires all members of the team to focus on balancing the materiel management functions of warehousing, cataloging, requirements determination and validation, prioritization for procurement, distribution, redistribution of excess, and retrograde of materiel.

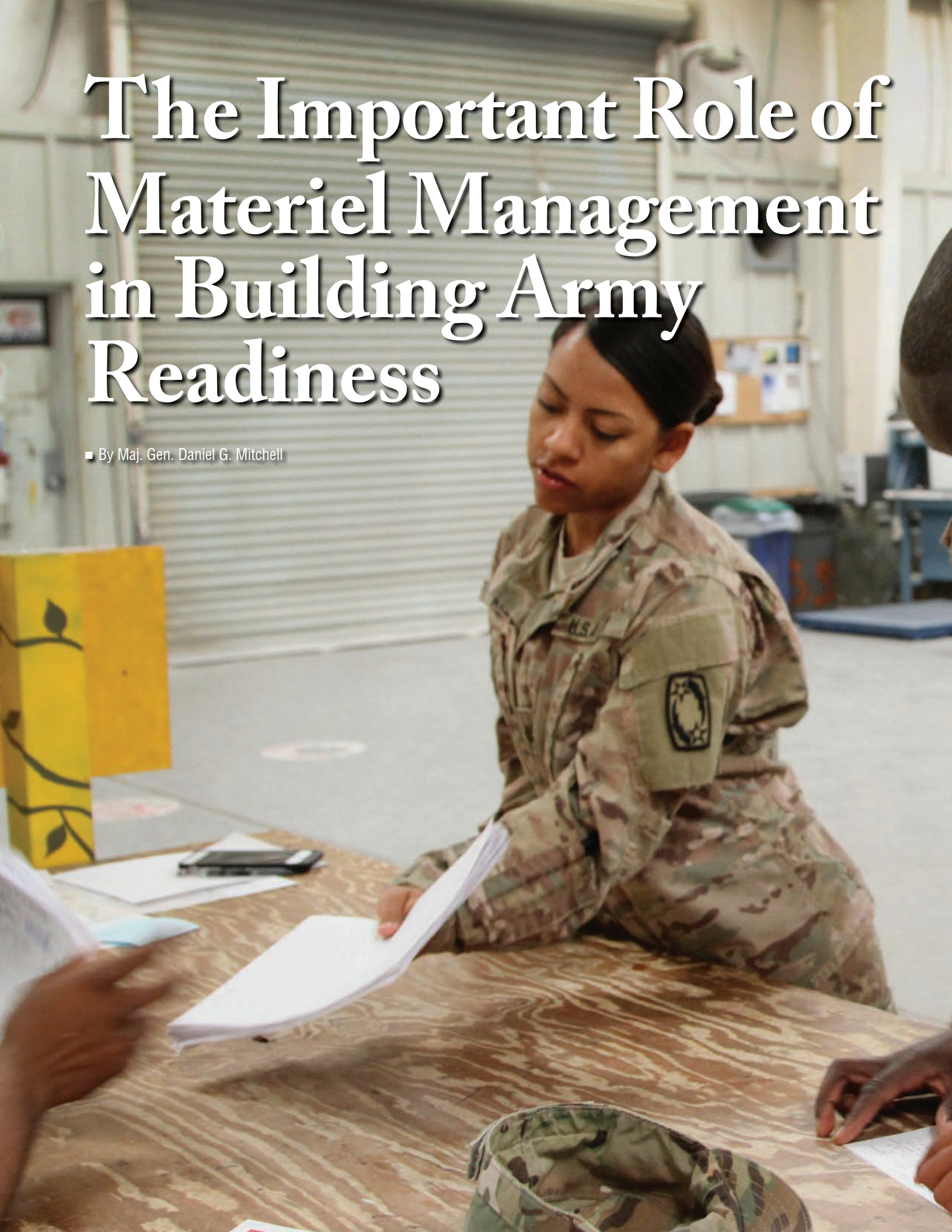
To effectively sustain a supply chain, all members of the team, from the shop stock clerk in an armor company to the item manager at TACOM, must do their parts.

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# The Important Role of Materiel Management in Building Army Readiness

■ By Maj. Gen. Daniel G. Mitchell







*Soldiers submit a parts inventory report to the supply support activity noncommissioned officer-in-charge at a warehouse in Bahrain on May 31, 2016. New automated maintenance management systems can be used at the unit level to manage vehicles and equipment parts, which increases materiel readiness. (Photo by Sgt. 1st Class Naurys Marte)*

# The Army Materiel Command builds and maintains readiness through responsible materiel management and a responsive supply chain.

Readiness is achieved in many ways. When it comes to materiel readiness, the Army Materiel Command's (AMC's) incalculable contribution is confidence. When Soldiers order parts, they expect to receive them in a timely manner. It is AMC's job to ensure that happens. AMC's largest impact on the field is the assurance that warfighters can get the parts and equipment they need when they need it.

Responsible materiel management and a responsive supply chain build Army readiness from the ground up. The way AMC manages its inventory and supply chain from end to end can make the difference between mission success and failure.

Delivering materiel readiness is the end result of elaborate strategies, systems, tools, and actions. These factors provide visibility across the logistics enterprise to help AMC make responsible decisions. The accountability for those decisions belongs to AMC.

AMC maximizes information technology to support and inform materiel management objectives. The information AMC gathers and analyzes from all levels determines its output. From redistribution and divestiture to rethinking its industrial workload, AMC's materiel management system is keeping pace to produce readiness results.

## Capabilities

AMC's information technology tools keep evolving. The visibility AMC has over its enterprise is better now than it ever has been. Therefore, leaders at all levels should understand not only the capabilities but also the possibilities of available systems and how those systems contribute to readiness.

AMC's Logistics Support Activity provides unprecedented asset visibility by leveraging 14 data interfaces, including those for enterprise resource planning, into the Logistics Information Warehouse to form common operational pictures.

At the unit and installation level,

the Global Combat Support System—Army (GCSS—Army) transformed Army logistics much like Facebook revolutionized social media. Just like Facebook implements incremental changes to accommodate users, GCSS—Army continues to advance as it brings together supply, maintenance, and property accountability functions and their associated financial data.

GCSS—Army provides AMC with decisive advantages in logistics and supply chain management. By the end of 2017, GCSS—Army will have as many as 140,000 users.

At the strategic level, the Logistics Modernization Program (LMP) interfaces with more than 80 Department of Defense systems with fully integrated, technologically advanced functionality. LMP supports supply chain management functions across AMC's life cycle management commands and organic industrial base activities.

The program manages nearly \$16 billion in Army Working Capital Fund inventory and processes more than 7 million transactions daily. LMP has more than 22,000 users across AMC and at the Defense Finance and Accounting Service.

At the operational level, the Lead Materiel Integrator Decision Support Tool is a collaborative program that leads stakeholders through the planning and execution of equipment distribution and redistribution by matching equipment demands with available inventory in depots, nondeployed units, and elsewhere. The effective use of this tool enables AMC to eliminate stovepiped operations while enhancing materiel availability and increasing readiness.

AMC's information technology systems are evolving toward an integrated, end-to-end information environment that will continue to improve the Army's materiel readiness. Moving forward, the Single Army Logistics Enterprise (SALE) will provide that broader enterprise information environment.

This comprehensive program merg-



es the installation- and tactical-level GCSS-Army and the national-level LMP to create more efficient, streamlined, and integrated business processes that directly support warfighter sustainment. The synchronized environment will provide commanders and managers with near-real-time visibility of assets, equipment conditions, finances, and supplies anywhere in the supply chain.

AMC's systems are both evolving and complex, and leaders must ensure users are properly trained to guarantee data integrity. The Army also counts on leaders to understand how these capabilities support readiness at all levels and to demonstrate their high priority by incorporating the programs' outputs.

### Redistribution and Divestiture

The clear visibility provided by technology solutions improves AMC's readiness by informing its redistribution, divestiture, and demilitarization decisions. In the way that one man's junk is another's treasure, one unit's excess is another's combat power.

Redistributing equipment to security force assistance brigades and the 15th and 16th Armored Brigade Combat Teams, building equipment on hand in existing units, and modernizing pre-positioned stocks are among AMC's top priorities. Reducing excess through divestiture that, in turn, reduces the resources required to store and care for surplus is also important.

AMC leads divestiture for the Army. Reducing on-hand equipment while synchronizing distribution enhances readiness by meeting the demands of the National Military Strategy. This is no small feat. During the past year, AMC redistributed nearly 800,000 pieces of equipment to improve readiness.

AMC continues to refine its redistribution and divestiture business rules to fill equipment shortages in units. AMC's goal is straightforward: units go to war with their assigned equipment, so AMC must ensure that equipment is ready for the fight.



*Eric Blackwell describes Polaris management principles to Army Materiel Command organic industrial base representatives in Madison, Ala., on Aug. 29, 2017. AMC and industry leaders toured Polaris to see if the Army could benefit from understanding the company's business model. (Photo by Sgt. Eben Boothby)*

AMC's materiel enterprise must be able to react at the speed of war. To that end, the Army organic industrial base is being linked to Sustainable Readiness. It is being optimized to match repair, overhaul, and manufacturing outputs to Army equipping priorities.

With full visibility, AMC is reshaping its arsenals, depots, and ammunition plants into more adaptive and agile entities that modernize equipment and rapidly build combat power to meet global requirements. AMC's transition to a more deliberate, schedule-driven strategy will improve predictability while enhancing its capacity to surge when necessary.

The impact of effective materiel management on readiness is evident at each echelon of deployment and sustainment operations. AMC's materiel management solutions enable the projection of ground forces to forward operating locations to meet commanders' needs.

Continued coordination with strategic partners also guides materiel

management solutions for battlefield sustainment. AMC's goal is synchronization and integration of its distribution and materiel management efforts across the range of military operations.

The command's outputs reflect the careful consideration and analysis informed by its foundational tools. These capabilities improve AMC's ability to manage materiel and improve readiness.

With continuous introspection, assessment, and a commitment to readiness, AMC's materiel enterprise remains aligned with the chief of staff of the Army's priorities and responsive to combatant commanders' requirements. From fort to port, port to port, and port to foxhole, materiel management ensures operational commanders are enabled to achieve their objectives and that AMC remains ready to deliver materiel readiness to the total force.

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Maj. Gen. Daniel G. Mitchell is AMC's deputy chief of staff for logistics and operations at Redstone Arsenal, Alabama.





*Cpl. Eric Adcock, a motor sergeant for the 335th Signal Command (Theater), shows Spc. Andrew Davis, a wheeled vehicle mechanic, how to check the oil in a humvee during preventive maintenance checks and services training at the 335th Signal Command headquarters in East Point, Ga., on Jan. 22, 2017. (Photo by Staff Sgt. Ken Scar)*





# GCSS–Army: Providing Big Data for Readiness

■ By Brig. Gen. Rodney D. Fogg

# The Global Combat Support System—Army provides commanders with materiel management tools that are improving readiness. Using the right strategies will ensure the system reaches its full potential.

Commanders answer the question, “What do we want to accomplish?” They describe the desired outcome and define success. The Global Combat Support System—Army (GCSS—Army) can provide the data and information needed to help meet the materiel management outcomes leaders seek, but only if it is used effectively.

Commanders don’t need to see daily transactional details; they don’t want the forest (readiness) to be blocked by the trees (data). Instead, they need big-picture key performance trends, metrics, and analyses that help to synchronize operations.

Commanders need to be able to visualize the battlefield and see where risks and problems will arise and where decisions are required. Commanders want concise, straightforward, accurate, and current information, and they want that information now.

GCSS—Army can provide this materiel management information and deliver readiness results. Since its inception in 2012, GCSS—Army has been instrumental in flattening and integrating the Army’s processes. GCSS—Army improves readiness by providing a single integrated database with near-real-time information for the functions of supply, accountability, maintenance, and finance.

The system has reduced the amount of data blocking the collective view of readiness by being significantly more accurate and timely than multilayered legacy systems. As retired Lt. Gen. Mitchell H. Stevenson states in his November–December 2016 interview in *Army Sustainment*, “Before GCSS—Army, the systems we were using were stovepipes that did not use a common source of data. So you were constantly having to reconcile [data].”

Now commanders have access to a common source of data, and GCSS—Army allows a much clearer picture of readiness.

## A Single Version of the Truth

Strategic-level logistics organizations such as the Army Materiel

Command, the Defense Logistics Agency, and the U.S. Transportation Command exist, in part, to ensure the Army achieves success at the tactical level. GCSS—Army enables sustainment from the supporting organic industrial base all the way down to Soldiers installing a part on a tank before quickly returning it to the fight.

The integration in GCSS—Army affords a clear pathway that creates a “single version of the truth” that the Army has never had before from strategic to tactical levels. Each commander, leader, and operator can see the same status for a piece of equipment or part.

Storing data in different systems at each echelon is a thing of the past. Commanders and leaders now have full visibility of equipment and the data from the systems that support that equipment for maintenance, maintenance records, serviceability, supply, and accountability. Having full visibility helps commanders to plan for future requirements and to shape readiness.

## Materiel Management Benefits

GCSS—Army is fast. The single database rapidly processes and updates part deliveries, work orders, and maintenance scheduling, which previous programs took several days to do.

Motor pool clerks no longer have to reconcile entries with supply support activities (SSAs), which saves countless man-hours. Authorized stockage lists are automatically replenished as items are issued to customers. Supply sergeants order a part or equipment and receive a screen alert when it reaches the SSA warehouse.

Maintenance control officers can better plan the effective use of their resources by using the GCSS—Army equipment status report (ESR), which provides real-time views of equipment statuses and parts availability. Motor sergeants receive automated notifications of upcoming services and inspection requirements.



Operator and mechanic equipment qualification and permit records are maintained in GCSS-Army. This eliminates the legacy requirement to regenerate this information each time a Soldier arrives at a new duty station. These are just a few of the many materiel management improvements provided through GCSS-Army.

### Let GCSS-Army Fly

GCSS-Army enterprise resource planning (ERP) is like a high-performance aircraft—let it fly! The move to an ERP solution has provided many benefits, including systems integration, more timely and accurate information, and the “big data” analytics used by many industry leaders. But has the move truly enabled better readiness and improved the common operational picture to help commanders understand the battlefield?

Much more can and should be achieved. The Army is using only a small portion of what GCSS-Army is capable of providing. Completing increment 1 fielding and improving GCSS-Army will enhance leaders’ ability to build readiness, but there are ongoing actions, best practices, and ideas underway that can be used right now to put additional wind under the wings of GCSS-Army.

**Accept change.** Some are slow to fully embrace the Army’s leap from the Standard Army Maintenance System and the Standard Army Retail Supply System to GCSS-Army. Many wanted to re-engineer the Systems, Applications, and Products (SAP) software of GCSS-Army to align more closely with old legacy systems and processes. However, full acceptance of the new system and openness to its capabilities are needed in order to allow GCSS-Army to expand and take off.

It is true that GCSS-Army’s industry-based SAP approach will not meet all battlefield requirements. Some customization will be required, but it must be a balanced effort. As the Army enhances the SAP program, changes must be



*Soldiers at a supply support activity warehouse in Bahrain inventory equipment and vehicle parts on May 31, 2016. The parts on hand must match the inventory entered in the Global Combat Support System-Army. (Photo by Sgt. 1st Class Naurys Marte)*

directed by a routine governance process that is the single source of requirements.

Enhancements must be linked to strategic goals that are prioritized and funded, otherwise the Army will find itself re-creating the status quo. The challenge now is putting the mechanisms and funding in place to maximize the full potential of our investment and getting beyond core capabilities. A deliber-

ate quarterly or semiannual release plan for software development and upgrades will move us from the fielded core functionality to enhanced functionality.

The GCSS-Army SAP software has strengths that are not yet fully realized. A synchronized approach of analyzing organizations, processes, and policies that surround GCSS-Army and changing them in concert with a deliberate soft-

ware enhancement plan can provide a leap ahead in capability.

**Task organize for materiel management.** Commanders need to arrange resources to take maximum advantage of systems and existing personnel. For example, III Corps led an effort to task organize existing resources to reinvigorate materiel management by directing the establishment of a corps materiel readiness center and division materiel readiness centers (DMRCs) with positive results.

The readiness center concept re-

ment team and an authorized stockage list management team.

- The Class VII [major end items] Branch, which included a consolidated staff from the division and sustainment brigade property book offices.
- The Research and Analysis/Sustainment Automation Support Management Office (SASMO) Branch, which included the SASMO staff plus a few personnel to execute logistics information systems support and research and trend analysis.

In the long-term, GCSS-Army will be fully integrated into mission command systems and used to clearly understand the battlefield and support the fight.

arranged functions, roles, responsibilities, and authorities to improve commodity management, sustainment synchronization, and materiel readiness across the corps. It also co-located external assets with the division sustainment brigade staffs to further align and flatten organizations and processes.

The DMRC task-organized five distinct sections:

- The Strategic Cell, made up of strategic enablers, included personnel from the Army field support battalion, the logistics readiness center, and the Defense Logistics Agency who were either physically or virtually present.
- The Materiel Management Branch, consisting of personnel from the Materiel Readiness Division of the sustainment brigade support operations (SPO) section and liaisons officers from each brigade combat team to create fleet management teams.
- The General Support Branch, consisting of an SSA manage-

In total, the DMRC has approximately 49 personnel, mostly from the sustainment brigade SPO section. Its small table of distribution and allowances structure includes some dual-hatted personnel who have both DMRC and sustainment brigade SPO duties.

The 4th Infantry Division Sustainment Brigade DMRC quickly increased the oversight of commodity management and sustainment synchronization across the division. The brigade instituted a battle rhythm of boards, cells, and working groups within the DMRC and a protocol for reports to track supply and materiel readiness metrics.

These processes and procedures heavily relied on GCSS-Army reports for materiel management tracking. Using the analysis from the ZPARK and release strategy review, over aged repairable report, inbound delivery monitor, and fill-rate analysis, the sustainment brigade commander led a review and analysis meeting with the goals of reducing downtime, increasing readiness driver fill rates, and im-

proving reporting accuracy.

GCSS-Army enabled the improvement of all of these goals. Over time, the shop stock fill rate increased from 5 percent to 42 percent, over-30-day jobs [not-mission-capable work orders that have been open for over 30 days] were reduced from 165 to 82, the class IX (repair parts) fill rate increased 7 percent, overdue deliveries were reduced by over 1,100, and standard pricing turn-ins accelerated, increasing the division's purchasing power by \$2 million.

**Empower through decentralization.** When you have the power of a system like GCSS-Army, you have to be careful to use its information as intended. GCSS-Army allows leaders at the highest levels to see and review transactions and, in effect, micromanage the decisions made at the lowest levels. This can be good when readiness fundamentals need to be reestablished; however, it can also negatively affect readiness.

Negative effects may occur in the GCSS-Army ZPARK and release strategy policies and in the businesses processes used to review and filter requisitions before they are passed in the supply system. Requisition review processes often are designed to rely on staff decisions at the corps and division levels with very little decentralization.

A recent RAND study estimates that these rules and the centralized review of requisitions have slowed our ability to place critical parts on order by an estimated 5 to 12 percent. Possible solutions range from turning ZPARK off completely to reengineering processes so that high-priority parts below a certain dollar threshold pass through without review.

Decentralizing requisition reviews down to brigade commanders and their support officers and S-8 staffs will empower their materiel management capabilities and their ability to make more decisions and execute mission command as designed.



## Improving Training

Most important to realizing the full potential of GCSS-Army is improving training. The Combined Arms Support Command has worked to develop an overarching training strategy that includes education and certifications from the tactical to managerial levels.

The most recent focus has been to improve advanced individual training by developing a live training environment similar to the actual GCSS-Army that allows hands-on, realistic practical exercises, vignettes, and troubleshooting. This capability will eventually extend to professional military education, other centers of excellence, and installation troop schools.

Another highlight on the training front is the refurbishment of the SSA training warehouse at Fort Lee, Virginia. This initiative establishes an “objective SSA” warehouse that is a fully functioning SSA where new Soldiers, warrant officers, NCOs, and officers train with the newest equipment and GCSS-Army software.

The objective SSA will offer a program of instruction and use the full capability of GCSS-Army with all SSA operational functions, including stock control (materiel requirements planning and procurements), inventory and warehousing, handheld terminals, and the Combat Service Support Automated Information System Interface on a very small aperture terminal.

## A Common Operational Picture

Business intelligence capabilities are resident in GCSS-Army SAP software and are now starting to be realized. Working groups from the Army Materiel Command’s Logistics Support Activity and the Combined Arms Support Command are collaborating and capitalizing on the best practices of the Materiel Common Operating Picture to build business intelligence capability into GCSS-Army.

This capability will include commander and user dashboards that

will be used as decision support tools for brigades and below. The GCSS-Army common operational picture will include combat capability by weapon system, information on how long work orders have been open, long lead-time parts views, readiness data, customer wait times, and other important trends and metrics to assist leaders in understanding readiness risks and goals. Limited user evaluations are in the works.

Future planned additions to GCSS-Army include the ability to track ammunition, fuel, and transportation, which will result in a more holistic logistics common operational picture for the battlefield.

## Logistics Communication

The next step will be to find a way to get GCSS-Army data into the Joint Capabilities Release Logistics and Joint Battle Command-Platform mission command systems for use within maneuver and sustainment command tactical operations centers and vehicles.

As the Army considers fighting near-peer competitors with well-equipped electronic warfare and anti-access/area-denial capabilities, it must think about reducing its logistics requirements on the battlefield. One of the most rapid ways to reduce the logistics footprint on the battlefield is to close the communication capabilities gap between logistics and maneuver units.

A more accurate and timely understanding of logistics requirements would reduce redundancy and the over supply of commodities that stems from over estimation caused by a lack of information and planning. The future Army must make this communication link to materiel management a priority.

We need to emphasize resourcing current technologies such as Condition-based Maintenance Plus [CBM+], retail fuel tracking, and the 6,000 existing Stryker sensors and their associated communications and sensor collection capabilities. These technologies could more

quickly provide a significant reduction of logistics assets on the battlefield by providing accuracy and understanding.

## Key Takeaway

While significant progress was made by replacing aging materiel management systems with GCSS-Army, a need for a cultural change remains in order for a total transition to take place. A culture change will help provide the momentum and resources to fully power GCSS-Army’s ERP software and big data analytics.

The speed, accuracy, and end-to-end capabilities of GCSS-Army can be stalled by a lack of training, enhancement funding, or outdated policies. We need to strive to improve ways of doing business and embrace ways that are less centralized, less bureaucratic, and less risk averse. Doing so will allow GCSS-Army and its inherently flat systems to be fully instituted and work as designed.

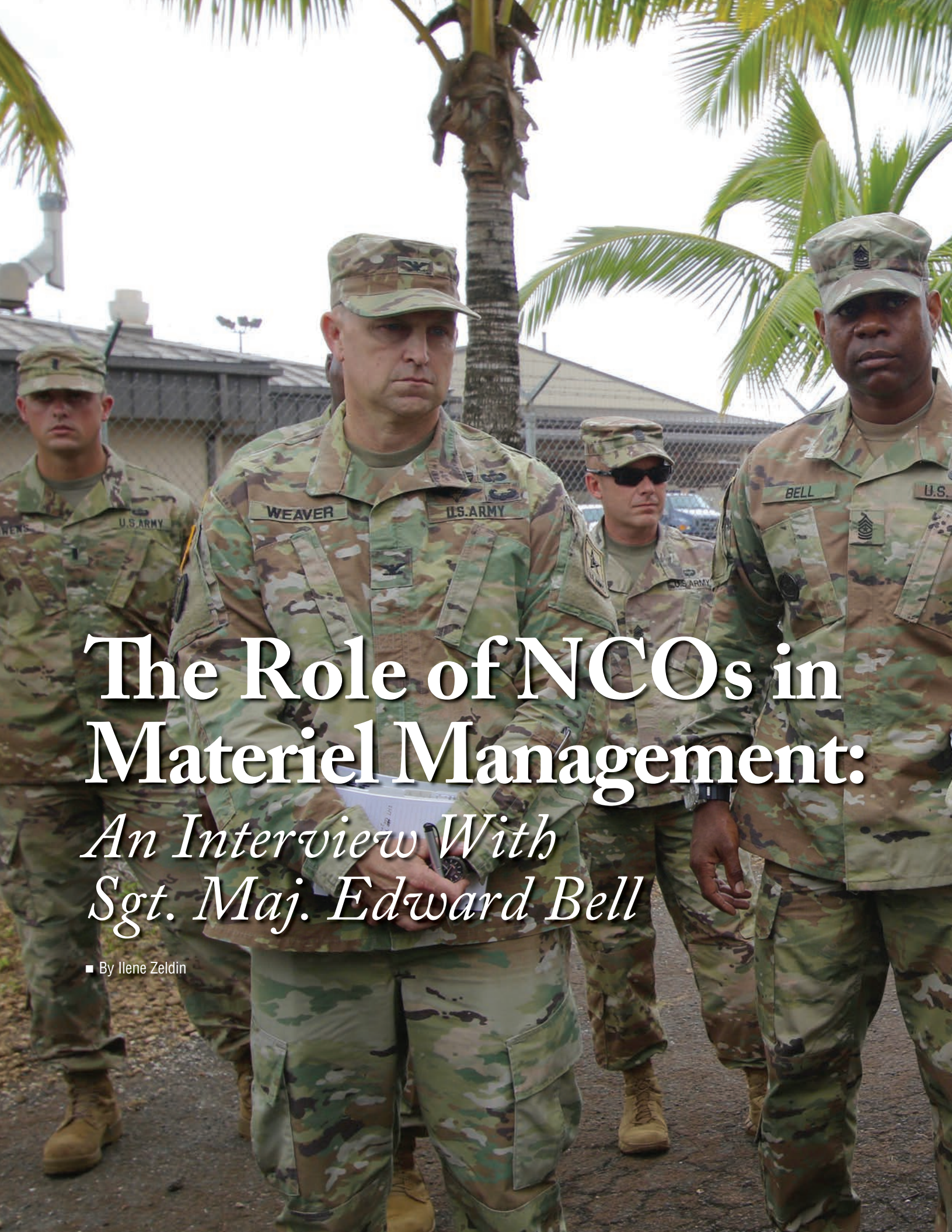
In the near term, units should see reduced costs associated with reductions in reorders and delayed shipments and cost avoidance from right-sizing of inventories. In the long-term, GCSS-Army will be fully integrated into mission command systems and used to clearly understand the battlefield and support the fight.

Envision a GCSS-Army-enabled logistics status report tab in Joint Battle Command-Platform that can be used effectively and seamlessly by both combat arms and sustainment leaders. When the Army has this capability, then we have achieved success!

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# The Role of NCOs in Materiel Management:

*An Interview With  
Sgt. Maj. Edward Bell*

■ By Ilene Zeldin





*Lt. Gen. Aundre Piggee and Sgt. Maj. Edward Bell meet with Warrant Officer Patricia Washington during a visit to the 3rd Brigade Combat Team, 25th Infantry Division, in Hawaii. (Photos by Sgt. Ian Ives)*



## The sergeant major of the Army G-4 explains how noncommissioned officers are playing a larger role than ever in materiel management.

When it comes to materiel readiness, Sgt. Maj. Edward A. Bell, the sergeant major of the Office of the Deputy Chief of Staff G-4, knows that non-commissioned officers (NCOs) are the backbone of the Army's success. In this interview, he discusses the role of NCOs in materiel management and how it has changed as the Army has changed. He also explains how he brings input from Soldiers in the field to his teammates at the Pentagon to ensure that materiel management policies improve readiness.

***What recommendations would you give to enlisted Soldiers about materiel readiness?***

What I advise Soldiers to do is to make sure they are always prepared and technically sound. Listen to your leaders and take advantage of every opportunity. Materiel management is really the foundation for logisticians enabling the warfighter. Without good materiel management we would hinder the efforts of the Army to respond when and where required.

***In the summer you visited the Pacific theater with Lt. Gen. Piggee. What did you see in the field concerning materiel readiness?***

In the Pentagon, sometimes you make assumptions that what you are doing is effective. However, I find that the best method for me to confirm these assumptions is to be actively engaged out in the field.

By spending time with the 8th Theater Sustainment Command, 25th Infantry Division, and the 225th Brigade Support Battalion, we were able to watch them perform their core functions in materiel management operations. We also saw how GCSS-Army [Global Combat Support System-Army] is enhancing our capability and capacity to support warfighters. By talking to Soldiers and leaders, we confirmed our assumptions that sound supply

management systems and processes are key to readiness.

***In November, the Army will finish fielding Increment 1 of GCSS-Army. What is the reaction in the field, and is it making the Army more ready?***

Absolutely. It is making us more ready. GCSS-Army is a great innovation. It gives us real-time data that can be viewed at echelons of logistics operations from unit motor pools, property book offices, and supply support activities at the tactical level all the way up to the theater sustainment command at the operational and strategic levels. The majority of people we talk to are very happy with the system. When there are recommendations and things they think can make us more efficient, they always give us feedback, and we have our G-4 team follow up.

***Early in your career you were a warehouse specialist. If you had used GCSS-Army back then, how would it have affected your job?***

I started out as a [military occupational specialty (MOS)] 76V, which was a warehouse specialist, and then we converted a couple years later to [MOS] 92A, which was an automated logistical specialist. Back then the systems were manual. We would exchange information on a floppy disk. Systems were old. It took an extensive amount of time to conduct common supply functions.

We spent a lot of time on teleconferences or driving across post to confirm supply actions with item managers or the higher source of supply. We could not respond to the demands of our customers in a timely manner. We did not have real-time data. If we had GCSS-Army back then, our customer wait time would have been significantly reduced.

***How has materiel management changed?***

In the past, commanders depend-



ed on the corps and division materiel management centers [MMCs] for the management of materiel. Their mission-essential tasks were to manage all classes of supply, ensure integration throughout every echelon within the supply and maintenance activity, and ensure proper oversight, management, and prioritization for all efforts in supporting mission readiness throughout their organizations.

Manning those units were more than 200 senior-level commissioned officers, warrant officers, and NCOs. They had a wealth of experience, appropriate institutional training, and operational assignments by the time they were assigned to an MMC. No question, early logistics successes in Panama, Desert Shield and Desert Storm, Afghanistan, and Iraq were the result of dedicated materiel management within the MMCs.

Throughout the past 15 years, the Army has transformed several times. This was because of different national defense strategies, budget modifications, and new leadership priorities for a more mobile and lethal Army. These transformations resulted in smaller MTOEs [modified tables of organization and equipment] and grade plate reductions that relied on the same level of expertise and management with less seasoned personnel.

This means the NCO Corps has to play a larger role. We are depending on our NCOs for all aspects of logistics analysis, planning, management, distribution, and materiel management execution.

### ***How are NCOs preparing for the challenge?***

Our NCOs are learning how to stay proficient in their materiel management skill sets through all three learning domains: institutional, organizational, and self-learning. This makes them the best multifunctional logistics assets for operations.

Leader development and required institutional training has enhanced their abilities in conducting logis-

tics analysis, forecasting, and planning. This has aided [the Army] in reducing large on-hand quantities of supplies, and it is making the Army more mobile and cost effective through all phases of military operations.

It is rewarding to watch our NCO Corps. We are called the backbone for a reason. We are making positive impacts on effective materiel management, which enables readiness for our Army and the nation.

### ***How will a multidomain battlefield affect materiel readiness?***

In a multidomain, contested environment, military organizations have to be ready to operate away from their headquarters. Large base camps like Bagram Airfield, Camp Taji, and Kandahar Airfield may no longer exist in future combat zones. Being co-located with supply support activities or being in an area with contractors or contracted carriers delivering supplies will be infrequent at best.

So our NCOs need to be masters of their crafts. They must have the right repair parts and supplies on hand because of possible limited reach-back capabilities.

### ***During your career, you have worked directly with officers and warrant officers. How do they interconnect with NCOs when it comes to materiel management?***

The NCO Corps is empowered through our warrant officers and officers. The warrant officers give us the technical expertise and advice that we need in order to be effective. And our officers have the trust and confidence that gives us the opportunity to extend operations deep into the battle.

Without that trust, support, and confidence we would be limited in our abilities to assist with effective materiel management. This would slow down the process to build and sustain capabilities when and where



*Sgt. Maj. Edward Bell reflects on the role noncommissioned officers have in improving materiel management.*

required. Our success is truly built upon this concept of being a team of teams that empowers.

### ***You were a Soldier on the ground many times in Iraq and Afghanistan, carrying out policies made by senior leaders. Now as a senior leader, how do those experiences help shape your thought processes?***

The thing that I am able to do now is to put things into context and understand how our policies and plans impact our Soldiers. My career has allowed me to have the opportunity to lead and engage our Soldiers in places like Iraq, Afghanistan, Kuwait, and Egypt.

This opportunity to serve in the Pentagon gives me a unique perspective of understanding the second- and third-order effects that our plans have at the tip of the spear. My experiences serving Soldiers in the field shape my recommendations on how we should support them.

Ilene Zeldin is a communications director in the Army G-4's Logistics Initiatives Group. She holds a bachelor's degree from The Ohio State University and a master's degree from the University of Dayton.



*During his career in the Army, retired Maj. Gen. Hawthorne L. "Peet" Proctor served as the 46th Quartermaster General and in several other senior logistics management roles. (Photo by Sam Curtis)*





# Four Decades of Improving Materiel Management:

## *An Interview With Retired Maj. Gen. Peet Proctor*

■ By Arpi Dilanian and Matthew Howard

**R**etired Maj. Gen. Hawthorne L. “Peet” Proctor’s long and distinguished Army career began at Fort Ord, California, and culminated at the Defense Logistics Agency (DLA), where he was instrumental in getting supplies to warfighters during the early days of the operations in Afghanistan and

Iraq. Here are his perspectives on how materiel management efforts have changed in the past four decades and how technology and data analytics will continue to play an increasingly decisive role in the future.

*What are some of the materiel management initiatives you saw in*

*Vietnam and during other early assignments, and what we can learn from them?*

When I arrived in Vietnam in December 1970, we were primarily retrograding supplies and equipment since most of the U.S. forces had re-deployed to the continental United

## A retired general officer with more than 40 years of logistics experience discusses the past, present, and future of materiel management.

States. However, we were continuing to supply the Vietnamese armed forces. As I recall, the Army's retail logistics processes were essentially manual for materiel management as it related to supplying military assistance advisory teams, which was my primary mission.

After the Vietnam War, we shifted our focus to fighting in Europe under the AirLand Battle doctrine. From a materiel management perspective, we saw the introduction of division and corps materiel management centers. With that came the modernization of our legacy system; we moved from using the Standard Army Intermediate Level Supply System and Direct Support Standard Supply System to the Standard Army Retail Supply System and its corresponding unit-level supply systems.

The aim of all professional logisticians is to be prepared for the next war and, where appropriate, apply lessons learned from the previous one. I must say, I am impressed with the manner in which our logisticians are applying what they have learned from the current wars to prepare for supporting full-spectrum expeditionary operations. It is impressive to see the pace at which we are implementing new ideas and capabilities to facilitate global deployment and sustainment of our Army's expeditionary forces.

***You served as the DLA J-3 during 9/11 and when the country went to war. Can you elaborate on the steps you took and the issues you faced?***

We learned a great deal while supporting Operations Desert Shield and Desert Storm. When DLA was called upon to support Operation Enduring Freedom, much had changed in the way we supported the force. We were able to rely more heavily on commercial supply chains. We introduced such programs as direct vendor delivery for several classes of consumables and commercial prime vendor sup-

port for food, medical supplies, and pharmaceuticals.

Immediately after 9/11, DLA was tasked to support the special operations forces in Afghanistan with some unique commodities. Subsequently, we were asked to be prepared to support conventional forces for their employment in Afghanistan and Iraq.

Working with each service and using some of our wartime consumption models, we estimated increases in requirements for consumable items. We determined that DLA would require an increase of about a billion dollars in additional obligation authority.

As a result, we were able to procure new chemical protective overgarments, repair parts, medical supplies, and other items needed to sustain the force.

Let me say that the services worked very closely with our national account managers and ensured that the requisite quantities of supplies were in place. To the best of my knowledge, we had very few materiel shortages as we supported Operations Enduring Freedom and Iraqi Freedom.

***Based on your experiences, can you discuss materiel management for predictable items such as food, fuel, water, and ammunition versus items with variable demand such as repair parts?***

In the 1990s, I was fortunate to serve as the commander of the Defense Personnel Support Center (now DLA Troop Support) that provided the Department of Defense (DOD) with food and related commodities, clothing and textiles, and medical supplies and pharmaceuticals. For the most part, requirements for these items were based on troop strengths, the number of patients that were expected to be treated, and in the case of fuel, equipment density and mission profile.

We relied heavily on the use of commercial supply chains for consumables, often using direct vendor



deliveries or, in some cases, prime vendors. Although this did not eliminate all materiel management functions at or near their point of consumption, in my opinion it made materiel management within units more manageable.

As for munitions, the programs that were developed to sustain a force in combat were sufficient for the processes used to manage ammunition in the early days of Air-Land Battle, and I do believe they are still working well today.

However, there have been instances in which suppliers of select components of some critical weapons systems have gone out of business because of very low or no demand. As we go forward, we may want to pursue the capability to keep the industrial base warm for those critical weapon systems that we will need for full-spectrum, multidomain operations.

Perhaps with the use of enterprise planning and resource management capabilities, the acquisition of and materiel management for repair parts will become less cumbersome, given the end-to-end visibility and management controls that are in place to effect readiness across the total force.

Regardless of class of supply, I believe that speed, visibility, security, predictability, and accountability should be paramount in any supply chain to support full-spectrum, multidomain military operations.

***It has been 14 years since you left the Army, and we have been at war for that entire period. Through your lens, what lessons have been learned that we can apply moving forward?***

We have, in my opinion, effectively integrated contracted logistics support on the battlefield. We are also applying valuable lessons learned as we train our logistics forces to be successful in expeditionary operations. A sterling example is a program called Pacific Pathways. In this program, units deploy to a training

exercise and, upon completion, may be deployed to engage in training on another mission at a different location before returning to home station.

However, as we plan for expeditionary operations, it is essential that we include seasoned logisticians in the initial-entry phase to allow for a smooth deployment and sustainment of follow-on forces. Their knowledge, skills, and abilities to overcome unforeseen sustainment challenges is paramount to the success of operations. I would also encourage the use of intermediate staging bases to provide a location for rotating people or equipment in and out of the area of combat operations.

Lastly, we must remember that the bulk of the logistics forces are in the reserve component. It is essential that they remain trained and ready and that they participate in deployment exercises prior to engaging in full-spectrum, multidomain operations.

***What are your thoughts on how the Army can leverage its investment in information systems and big data?***

I see this as an area of great promise. One way is to improve our use of analytic software in conjunction with condition-based maintenance tools to assist in predicting failures before they occur. This capability exists in the commercial airline industry and other industries, and I believe it would work very well within the DOD.

An example of using big data analytics is perhaps visible in the case of reducing the number of national stock numbers (NSNs) that are maintained in the DOD inventory. In 1973, DLA managed 4.3 million NSNs. By 2003, that number had increased only slightly to 4.6 million. Since 2003, however, that number has risen by roughly 20 percent to about 5.7 million NSNs.

Using today's technology, the services and DLA could, in my estima-

tion, employ big data analytics to significantly reduce duplications and redundancies as well as the number of unneeded items that are procured for our military and allied forces. Big data is also key to establishing a logistics common operational picture from the tactical to strategic levels.

***Are there other technologies that will help the Army's materiel readiness over the next 20 years?***

Absolutely. The concept of 3-D printing or on-demand manufacturing of repair parts at or near the point of need has endless benefits, in my opinion. I believe if the current limitations of cost, establishment of standards for materiel qualification, raw material refinement, and certified parts manufacturing can be overcome, on-demand manufacturing has the potential to provide improved strategic flexibility. Of course, responsiveness will improve while warehousing costs, shipping times, obsolescence, and redundancy in repair parts stockage will all be reduced.

***Any final thoughts?***

With the continuous challenges of manning and equipping our Army, I encourage our logisticians to sustain a culture of ownership, pride, and excellence as they build sustainment organizations that remain trained and ready to sustain forces in a full-spectrum, multidomain battlespace.

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



*Lt. Col. Elizabeth Curtis, commander of the 407th Brigade Support Battalion, 2nd Brigade Combat Team, 82nd Airborne Division, and Capt. Courtney Steele advise Iraqi security forces' members on ammunition storage at an Iraqi army supply and maintenance area near Qayyarah West Airfield, Iraq, on July 23, 2017. (Photo by Cpl. Rachel Diehm)*

## Distributed Sustainment Mission Command in a Manning-restricted Environment

Restrictions on the number of personnel allowed in the U.S. Central Command area of responsibility affect sustainment mission command across the area.

■ By Col. Sidney A. Harris

Contemporary operations can sometimes foreshadow future operating conditions. Present day Iraq reflects the future operational environment and offers Army leaders the opportunity to draw from lessons learned while operating there. Iraq is a possible example of the Army's future operational environment because force manning level (FML)

restrictions there require the Army to use contractors in lieu of Soldiers for sustainment missions.

An FML restriction is a cap on the number of U.S. military personnel allowed in a designated area. In the U.S. Central Command (CENTCOM) area of responsibility, FML restrictions have a significant and unintended impact on

distributed sustainment mission command, which is sustainment leadership that is exercised across geographically dispersed command posts.

Despite the consequences of FML restrictions, the 1st Theater Sustainment Command (TSC) has managed to support four named combat and peacekeeping opera-



tions: Operations Inherent Resolve, Freedom Sentinel, and Spartan Shield and Task Force Sinai.

### The New Reality

Veterans of Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) likely remember forward operating bases supported by a robust sustainment architecture (including infrastructure, materiel, and units) that adequately provided for U.S. and coalition forces. Today, the operational environment in Iraq and Afghanistan is far different.

The current operational environment is still characterized by persistent instability, protracted violence, a lack of international cooperation, and a rapidly changing political landscape. But logistics conditions since the drawdowns have been more similar to those at the beginnings of OIF and OEF than to those at the height of the operations.

The partners operating in the combat zones of Iraq and Afghanistan are now mainly enabled by contracted support from a handful of locations. This starkly contrasts with the robust forward operating bases of the past that were empowered by multiple U.S. sustainment brigades, battalions, and companies.

The reduction of infrastructure during the drawdown of forces from OIF and OEF resulted in a commensurate reduction in the Army's ability to maintain and stock materiel in support of operational units. Furthermore, with FML restrictions in place, sustainers in those locations are heavily focused (nondoctrinally) on contract management to achieve sustainment effects.

### A Widening Gap

FML restrictions exacerbate the sustainment capability gap in the combined joint operations area (CJOA). In Operation Inherent Resolve, FML restrictions applying to the CJOA inhibit the employment of a complete division headquarters to execute missions directed by the combined joint task force.

An operational requirement for a full division headquarters in the CJOA was recognized, validated, and sourced. However, FML restrictions limited the number of personnel allowed and prompted cuts to key sustainment capabilities in the division's personnel, logistics, engineering, medical, and finance sections.

This reduction in the division's sustainment capacity resulted in a heavier burden on other sustainment formations in theater (which are also limited by FML restrictions) to empower Iraqi, tribal, and Peshmerga forces. Additionally, the forc-

es aligned against the Islamic State group's interests in the CJOA rely heavily on U.S. sustainment to remain effective in the field.

Currently, an intermediate-level sustainment headquarters (no more than an expeditionary sustainment command and no less than a sustainment brigade) is required in the CJOA to perform the sustainment tasks normally performed by the division. Until recently, this requirement was neither validated nor sourced, but it was recognized as critical to the effectiveness of forces opposing the Islamic State group.



*Sgt. Brennan Reeder and Spc. Joshua Zamjahn, from the 2nd Battalion, 82nd Field Artillery Regiment, 3rd Brigade Combat Team, 1st Cavalry Division, conduct maintenance inside an M109A6 Paladin howitzer at a tactical assembly area in northern Iraq on Aug. 22, 2017. (Photo by Cpl. Rachel Diehm)*

This deficit was created by the underresourced sustainment staff within the division and exacerbated by the lack of an intermediate sustainment headquarters within the CJOA. The sustainment personnel deficit negatively affected contract management, the logistics advise and assist mission, operational logistics planning, and the distribution management of donated materiel or materiel obtained through the Iraq Train and Equip Fund.

sonnel in Kuwait. These personnel must shift their focus from the theater down to the CJOA tactical level.

This type of management contributes to slow support. The large geographical separation between the customer and the contracting officer representative is not conducive to situational awareness or the anticipation of future requirements.

Other factors contribute to long lead times when using contractors. For example, contractors experience

formations into ad hoc units to execute nondoctrinal missions without the direct supervision of their chains of command. Employing junior leaders in this fashion forces them to operate independently, but within the commander's intent, to accomplish the mission. Typically, these missions are directly related to contract management; therefore, training Soldiers in operational contract support is required prior to deployment.

One of the byproducts of FML restrictions in the CJOA is an almost exclusive reliance on contracted sustainment support.

### Dependence on Contractors

The lack of sustainment architecture within the theater creates an overdependence on contracted logistics during phase III (dominate) operations. One of the byproducts of FML restrictions in the CJOA is an almost exclusive reliance on contracted sustainment support. All classes of supply except for bulk class III (petroleum, oil, and lubricants) and class V (ammunition) are currently contractor-provided.

The Army does not have the sustainment force structure in the CJOA to provide all of the necessary services and commodities required by its allies. This makes contracted support necessary. However, the sustainment forces that are allocated to the CJOA are not robust enough to manage the contracts.

The lack of an intermediate sustainment headquarters within the CJOA has caused contract management to be assigned to the sustainment formations postured at the theater intermediate staging base in Kuwait. This "over the horizon" management of contracts under the Logistics Civil Augmentation Program is augmented by TSC and expeditionary sustainment command per-

problems obtaining visas for their workforces.

Technical skill sets are often not locally available, and talent must be imported. The wait for a visa commonly exceeds several months, and visas are typically applied for toward the end of a long and regimented contract funding process.

The contract funding process is not agile enough to keep pace with changing conditions on the battlefield and contributes significantly to the extensive timeline required to obtain support. This current model of providing sustainment through contract management from afar is suboptimal and does not lend itself to proactively supporting the customer unit's scheme of maneuver.

### Task Organizing

FML restrictions impair sustainment formations. The rapidly changing conditions in the CJOA often require the task organization of specialized teams to achieve battlefield effects. These teams are often small because of FML constraints and comprise junior officers and noncommissioned officers.

The need to source these teams has prompted the 1st TSC to break

The FML restrictions currently in place in CENTCOM create conditions that cause formations to deploy without the capabilities necessary to achieve the desired battlefield effects. These conditions have compelled higher echelon formations, such as the 1st TSC, to seek innovative solutions to enable operations from the tactical through strategic levels, but not without affecting the high operational- and strategic-level tasks that the units were designed to accomplish.

It is important to recognize that conditions in the CENTCOM area of responsibility (and other weakly governed spaces) will remain politically tenuous and violent for the foreseeable future. As the Army gets smaller, FML restrictions and contract-enabled operations will likely become increasingly desirable options for war planners. The Army must apply the lessons learned from this FML-restricted and contract-enabled operational environment.

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*Joint assessment team Soldiers assigned to the 597th Transportation Brigade and the 832nd Battalion, 689th Rapid Port Opening Element, get an arrival briefing at the Port of San Diego, Calif., on Aug. 19, 2017. (Photo by Airman 1st Class Haley Phillips)*

## SEDRE and SPOD Operations

A joint task force–port opening executed a sea emergency deployment readiness exercise and seaport of debarkation operations to prepare for humanitarian and expeditionary operations.

■ By Maj. Dustin A. Menhart and Capt. Robert A. Robinson

Simultaneously executing a sea emergency deployment readiness exercise (SEDRE) and seaport of debarkation (SPOD) operations is a challenging undertaking. To prepare for the challenge, the 597th Transportation Brigade, Military Surface Deployment and Distribution Command, executed a SEDRE and SPOD operations at the Port of Port Arthur, Texas, in April 2016. The exercise was further complicated by a joint task force–port opening (JTF–PO) mission.

SEDRE and SPOD operations heavily rely on a realistic operational design, effective deployment of forces, and a methodical redeployment and retrograde process. The operational framework for the exercise was broken into four phases: planning and preparation, deployment of personnel and equipment, execution, and redeployment and retrograde.

### Phase I: Planning

During the 597th Transportation Brigade's after action review of the

exercise, it identified four areas related to planning and preparation: operational design and approach, the predeployment site survey (PDSS), knowledge management, and the rehearsal of concept (ROC) drill.

### *Operational design and approach.*

Initially, the 833rd Transportation Battalion commander identified the objectives and end state for the exercise. The commander's clear guidance and intent established a thorough understanding of the tools and methods that framed the path forward.

Each unit involved in the exercise had specific lines of effort and a desired outcome that captured the significance of the operational design and approach for this operation. The operational design and approach were shared with all partners and exercised throughout all phases of the operation, particularly during the ROC drill.

According to Joint Publication 5-0, Joint Planning, operational design is “the conception and construction of the framework that underpins a campaign or operation and its subsequent execution.” Operational design requires a unit commander to lead the development of the design, to encourage discourse and leverage dialogue in order to solve ill-defined problems, and to collaborate with higher headquarters to resolve differences of interpretation.

**PDSS.** The PDSS was particularly useful for synchronizing the logistics footprint and sustainment responsibilities at the Port of Port Arthur. The 101st Airborne Division, the 129th Combat Sustainment Support Battalion, the 101st Airborne Division Sustainment Brigade, and the 833rd Transportation Battalion synchronized their concepts of operations and concepts of support to allow for situational understanding and awareness for each higher headquarters objective.

The PDSS provided integration and built partnerships within the separate command organizations. These partnership proved to be important during vessel discharge.

**Knowledge management.** The Department of Defense enterprise system of record, Intelink, was initially developed to be a knowledge management system for reporting procedures across the multiple levels of combatant commands. The 833rd Transportation Battalion has been using Intelink at the Joint Enabling Capabilities Command to train and provide its personnel with best practices for operations. The method and system allowed for timely reports that captured cargo documentation and

ensured end-to-end asset visibility.

Intelink enabled several tools for managing a joint operations center, such as battle drills, commander’s critical information requirements, and significant activities. All information and operational data was promptly accessed using Intelink, which enhanced operational effectiveness across the commands and the multiple joint organizations involved.

**The ROC drill.** Although a ROC drill is not an official doctrinal event, it is a best management practice within the Department of Defense. Prior to the operation, the 833rd Transportation Battalion coordinated with the 101st Airborne Division Sustainment Brigade and the 129th Combat Sustainment Support Battalion to validate the path to the ROC drill.

During the in-process review, a critical path was established for the concept of operation, concept of support, and outline for the ROC drill. A ROC drill briefing and script were generated to describe the four-phased operational approach that was parallel to the operational framework.

By producing the ROC drill briefing and script, the 833rd Transportation Battalion delineated the key tasks and objectives that each unit was required to perform. Through continual in-process reviews and communication, the 101st Airborne Division Sustainment Brigade, the 129th Combat Sustainment Support Battalion, and the 833rd Transportation Battalion continued to refine the operation and receive valuable commander’s guidance. Thanks to collaboration and teamwork, the units recognized gaps before the execution phase.

## Phase II: Deployment

Achieving the chief of staff of the Army’s top priority of readiness was one of the 833rd Transportation Battalion commander’s essential goals. The commander continuously evaluated the unit on readiness efforts during movement working groups

and ensured it applied the four deployment principles during outload.

The precision of the unit move relied on the unit movement officer and the oversight of the battalion’s mobility warrant officers. The synchronization of the equipment and personnel density list occurred during Phase I and continued to be assessed and monitored throughout Phase II for accountability and in-transit visibility (ITV).

The knowledge deployment principle allowed for timely decisions, guidance, and a shared understanding of all essential information regarding unit movements for cargo and personnel. Speed plays a role in force projection, and the efficiencies and processes that allow for speed proved to be instrumental to the organizational movement plan.

Having a tactical standard operating procedure (SOP) and a readiness SOP benefits an organization by providing a collective understanding. Before the SEDRE and SPOD operations began, the 833rd Transportation Battalion aggressively refined its tactical SOP that focused on the unit’s mobility. The work and detailed analysis paid dividends during the deployment and outload.

## Phase III: Execution

If the planning and deployment phases are properly accomplished, the execution phase will be more synchronized. The success of the simultaneous SEDRE and SPOD operations was a direct reflection of the coordination and collaboration of partners exercising the mission.

The focal point of the operation was the *USNS Benavidez*, a roll-on/roll-off vehicle cargo ship. Expeditionary port unit personnel from the Military Sealift Command managed all port liaison functions for the vessel. Sailors from Naval Cargo Handling Battalion ONE provided the stevedore support for discharging the vessel.

The collaboration between the supported and supporting units began once the cargo and equipment start-



ed to come off the vessel. The 101st Airborne Division had a daily vessel offload plan meeting with all the JTF-PO units to ensure the priority of discharge was understood and maintained. The division also provided a port support activity to help the naval battalion discharge cargo from the vessel.

As the equipment came off the vessel, personnel from the 690th Rapid Port Opening Element (RPOE) documented the equipment to validate and monitor the simulated theater distribution plan. The cargo then was moved to the cargo transfer yard, where it was staged in chalk order based on the theater movement plan initiated by the 101st Airborne Division.

Once the cargo was released from the cargo transfer yard, a thorough exclusion of responsibility occurred and the units completed onward movement and integration into the theater of operations.

From the first piece of cargo discharged to the last piece of equipment transferred, the cargo management center, operated by the 690th RPOE and personnel from the 597th Transportation Brigade, provided the documentation and information technology for the seamless transition from intertheater distribution to intratheater movement. The center verified that all plans were well-synchronized and monitored throughout the mission.

Moreover, the JTF-PO SPOD mission command element, operated by the 833rd Transportation Battalion, ensured all port management activities were successfully integrated with port operations and the schemes of maneuver and support.

#### **Phase IV: Redeployment**

Redeployment and retrograde are a vital part of any operation, but they present difficulties. These difficulties are specific to each area of operations and present unique challenges that logisticians must overcome.

SPOD operations require adequate planning to facilitate an effective

and efficient redeployment process. SPOD operations within the JTF-PO environment are fast-paced, which further compound redeployment and retrograde operations. During the exercise, the JTF-PO had to focus on both the scenario and the real-world transfer of equipment and personnel back to Fort Eustis, Virginia.

Shipping equipment to Fort Eustis involved several obstacles. These obstacles included properly marking equipment with military shipping labels and radio-frequency identification tags, adequately documenting hazardous materials, and coordinating with commercial line-haul drivers.

The real-world movement of personnel was accomplished using flights booked through the Defense Travel System (DTS) and Group Passenger Travel. Both Army and Navy personnel were being transported, so Group Passenger Travel was easier because DTS commercial flights required the sharing of lines of accounting (LOAs).

Last-minute personnel changes during the redeployment caused last-minute sharing of LOAs. For future operations, all personnel will have shared LOAs on their DTS authorizations, even if LOAs are not ultimately used.

The redeployment and retrograde operations consisted of notionally returning a few pieces of equipment and signing over the rest of the equipment to the follow-on force. The RPOE rapidly set up ITV and coordinated the throughput of cargo. The JTF-PO was responsible for redeploying all equipment and provided a notional relief in place and transfer of authority, which transferred the remaining on-ground cargo to the 101st Airborne Division Sustainment Brigade.

The redeployment and retrograde operations suffered a few setbacks, but sharing LOAs among all participants, properly marking equipment to ensure accurate ITV, and ensuring proper hazardous materials

documentation will further improve SPOD operations.

The 597th Transportation Brigade used best practices learned from previous SEDRE and SPOD operations to streamline the planning process. Complex logistics operations involving several joint partners can cause problems such as duplicated efforts and missed deadlines.

Early planning resulted in a realistic operational design and approach and facilitated effective communication among all JTF-PO partners. Using the unit tactical SOP and readiness SOP benefited the entire JTF-PO, increasing efficiency and reducing reaction time.

Using knowledge management allowed personnel and the commander to assess the operation in near-real time. A realistic operational design, an effective deployment of forces, and a methodical redeployment and retrograde process were critical to the success of the exercise.

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Capt. Robert A. Robinson is the operations and plans officer for the 23rd Quartermaster Brigade at Fort Lee, Virginia. He previously served as the training officer-in-charge for the 833rd Transportation Battalion. He has a bachelor's degree in history from Penn State and a master's degree in organizational management with a focus on supply chain management from Ashford University. He is currently pursuing a doctorate in business administration focusing on leadership from Trident University International.



*Pvt. Travis Harper, an Apache helicopter mechanic and crew chief assigned to the 1st Battalion, 82nd Combat Aviation Brigade, 82nd Airborne Division, services the tail landing gear of a helicopter on Geronimo Landing Zone during Joint Readiness Training Center rotation 16-09 at Fort Polk, La., on Aug. 27, 2016. (Photo by Spc. L'Erin Wynn)*

## The Role of an FSC in Airfield Seizure Logistics

The forward support company for an airborne battalion broke from its traditional mission and landed on the training battlefield early to provide immediate support for paratroopers.

■ By Maj. Adam A. Scher

**D**ecisive action training rotations at the Joint Readiness Training Center (JRTC) at Fort Polk, Louisiana, allow brigade combat teams to test their combat systems, employ Army doctrine, and experiment with tactics, techniques, and procedures against a complex and talented opposing force. As the forward support com-

pany (FSC) for the 1st Battalion, 508th Parachute Infantry Regiment (1-508 PIR), 3rd Brigade Combat Team (BCT), 82nd Airborne Division, J Company deployed its 51 paratroopers and 26 vehicles from Fort Bragg, North Carolina, to Intermediate Staging Base Alexandria in support of the PIR's JRTC rotation.

The 1-508 PIR's mission to conduct an airborne assault into a contested drop zone, secure the lead edge of the drop zone, occupy key terrain on and near the airfield, and clear the field landing strip (FLS) required the battalion to sustain itself and move repair assets and class I (subsistence) supplies onto the airfield as quickly as possible.



## Traditional and Airborne FSCs

In an article in the September–October 2016 issue of *Army Sustainment*, Lt. Col. Brent Coryell and Capt. Christopher Devenport explain, “Conceptually, each maneuver battalion can carry a one-day load of basic supplies on its combat systems. The FSC is designed to carry the battalion’s second day of supply, and a third day of supply is maintained by the BSB [brigade support battalion] at the BSA [brigade support area].”

For airborne operations, paratroopers are the “combat systems.” The only supplies that paratroopers have when they enter the battlefield are those that they carry under their reserve parachute when jumping. FSC vehicles carrying additional logistics support are available only after a ground line of communication (GLOC) is established to the drop zone.

Coryell and Devenport state that “BCT sustainment planners are generally challenged when conducting ... anticipatory logistics analysis because they are not educated on the science of maneuver warfare and armored tactics needed to estimate well.”

Even before mechanized or motorized formations arrive at the battlefield, sustainment planners in airborne units face the challenge of logistics planning during airfield seizures. These airborne assaults do not permit the FSC’s heavy equipment to arrive on the battlefield in a synchronized fashion.

One area that Coryell and Devenport highlight that applies to airborne FSCs is that “optimal FSC asset emplacement in decisive action requires thorough staff analysis, a complete understanding of FSC capabilities, and clearly defined personnel functions to support the tactical operation.”

## An Airborne FSC in Action

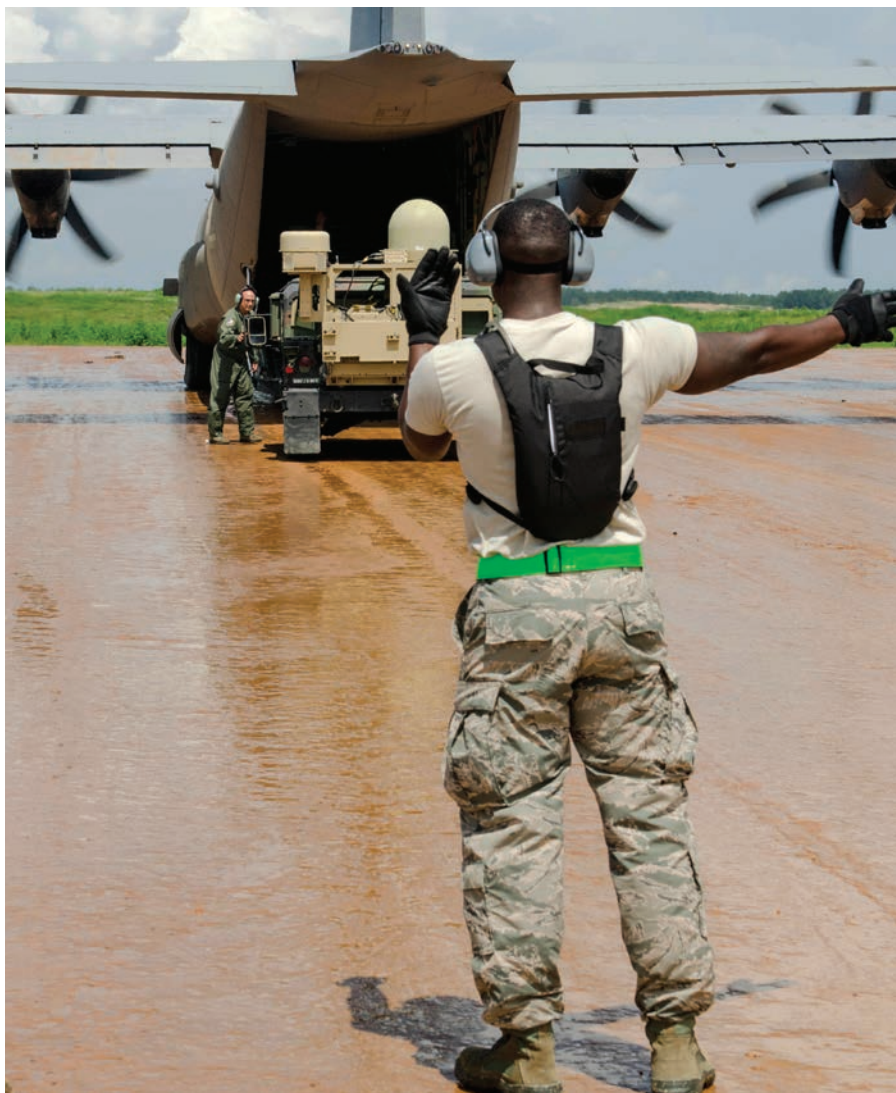
During JRTC Rotation 16-09, the 1-508 PIR determined that FSC personnel and maintenance

equipment needed to arrive on the battlefield during the first daylight airlandings because opening a GLOC was expected to be a lengthy, contested process.

Terrain analysis and intelligence preparation of the battlefield indicated that the enemy could restrict the FSC’s ground movement to the drop zone. The enemy had established mission command nodes and in-depth defenses in several urban areas along the main avenue of approach from the ISB to the drop zone.

According to doctrine, just a few minutes before paratroopers exit the aircraft, the first echelon of vehicles and equipment, also known as the heavy drop, is released from the aircraft. The heavy drop provides follow-on paratroopers with vital combat power such as artillery, bulldozers, and gun trucks.

Immediate airborne objectives include clearing the FLS within one hour of landing and, if necessary, repairing the FLS within four hours. Controlling the airhead line and clearing or fixing the FLS are



*Airmen with the 46th Aerial Port Squadron, Dover Air Force Base, Delaware, along with Soldiers from the 3rd Brigade Combat Team, 82nd Airborne Division, unload humvees from a C-130 Hercules aircraft on Geronimo Drop Zone on Aug. 19, 2016, during Joint Readiness Training Center 16-09 at Fort Polk, La. (Photo by Spc. L'Erin Wynn)*

key to declaring the airfield operational and safe for aircraft landings.

The second echelon of vehicles and equipment arrives on the FLS by C-130 or C-17 aircraft sorties with follow-on forces and equipment to expand the lodgment. During JRTC rotation 16-09, the 1-508th PIR allotted one C-17 to move the FSC commander and two FSC vehicles into the drop zone with the second echelon.

**Preventing heat injuries by keeping paratroopers fed and hydrated allowed maneuver elements to operate at significant distances from the central location of friendly elements on the drop zone.**

The 1-508 PIR recognized the importance of mobility and the dangers of operating in a contested drop zone. The battalion expected some of its vehicles to be either mechanically damaged or battle damaged during the heavy drop. The battalion also expected that the August heat around Fort Polk would force paratroopers to consume large amounts of water in the first six hours after joint forcible entry.

To mitigate the risks from the climate, the simulated heavy drop, and the enemy, the battalion determined that it would need to bring repair assets, water, and meals ready-to-eat to the airfield as quickly as possible. The battalion commander decided to use airland delivery to provide an additional maintenance truck and a supply truck to enhance the immediate combat power of the airborne infantry battalion.

A supply truck filled with class I and a maintenance contact truck, which was prepared to troubleshoot weapons gun trucks, were part of the heavy drop and were responsible for clearing the FLS. The battalion also used 10 vehicles from the BCT's priority vehicle list to simulate a heavy drop of two heavy weapons platoons

and the battalion's mission command vehicle.

A ground assault convoy was scheduled to depart the intermediate staging base in conjunction with the airfield seizure, but the convoy had to traverse an enemy-controlled route, which required the deliberate clearing of two enemy urban strongholds in order to secure a GLOC.

For planning purposes, the battalion assumed that the first combat

ground elements would need the first period of darkness to secure the objectives. In a best-case scenario, logistics resupply vehicles and mission command of the battalion's FSC were expected to arrive 24 to 36 hours after the jump.

### **Lessons Learned**

Deploying FSC assets early proved integral to the battalion's success. Getting class I to maneuver companies during the first daylight hours after the initial seizure allowed freedom of maneuver and a battalion-level attack on a known enemy stronghold during the second night.

Preventing heat injuries by keeping paratroopers fed and hydrated allowed maneuver elements to operate at significant distances from the central location of friendly elements on the drop zone. This sustainment enabled the battalion to push the attack at the forward edge of the battle area into known enemy areas before the GLOC was fully established.

The maintenance repair assets helped ensure the battalion maintained its mobility and lethality against armored enemy forces poised to counterattack and deny

friendly forces the ability to expand the lodgment.

Current Army sustainment doctrine does not state how to employ the FSC in airfield seizure logistics but, instead, allows BCTs flexibility in arraying sustainment forces. The combat power generation and preservation that resulted from incorporating the FSC into the early airlandings cannot be understated. By moving the FSC beyond the traditional role of providing mission command of the arrival/departure airfield control group, the 1-508 PIR exercised FSC flexibility in a dramatic way.

While mission command of the arrival/departure airfield control group needed to be accomplished, the 1-508 PIR found ways, as part of a BCT and with help from the battalion staff, to free FSC assets to focus on the paramount mission of providing maneuver battalion logistics.

Instead of having the FSC wait for the ground convoy to arrive to maintain the offensive initiative and expand the lodgment, the 1-508 PIR directed its FSC to focus on getting supplies to the paratroopers engaged with the enemy. During JRTC rotation 16-09, this tactic worked.

The battalion plans to continue experimenting with this type of task organization in future airfield seizures and battalion and brigade attacks as it assumes the Global Response Force mission. It will refine its methods of getting paratroopers to the battlefield in the safest, most effective, and most lethal way that its junior logistics leaders on the front lines can sustain.

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*Soldiers from the 236th Inland Cargo Transportation Company use a Kalmar container handler to download shipping containers of ammunition at a railhead at the Drawsko Pomorskie Training Area, Poland, in support of Anakonda 2016.*

## Sustainment Mission Command for Anakonda 2016

The 364th Expeditionary Sustainment Command, an Army Reserve unit, ensured the sustainment of units participating in Operation Atlantic Resolve exercises.

■ By Col. Herold J. Hudson and Lt. Col. Kurt Lukins

**A**nakonda 2016 (AN16) was a multinational exercise that demonstrated military cooperation among the United States, Poland, and several other European allies. More than 12,000 U.S. troops and another 12,000 members of allied partner militaries participated in this exercise from May through June 2016. The exercise was held across 15 major training areas

(MTAs) within Poland.

AN16 demonstrated the depth of the Army's commitment to readiness and how it enables units to deploy anywhere they are needed in the world. The 364th Expeditionary Sustainment Command (ESC) provided sustainment mission command and served as the national support element for U.S. units participating in the exercise. This article

discusses the 364th ESC's perspective of various elements of AN16 and provides sustainment lessons learned from the exercise.

### About AN16

Anakonda is part of the U.S. European Command's Operation Atlantic Resolve, an ongoing demonstration of continued U.S. commitment to the collective secu-

rity of NATO and enduring peace and stability in the region. AN16 was the largest exercise to date in Poland and encompassed most of the ground forces supporting U.S. Army Europe's Strong Europe concept.

Operations Swift Response and Saber Strike were two other military exercises held in conjunction with AN16. Operation Swift Response included airborne drops by the 82nd Airborne Division's Global Response Force (GRF). Operation Saber Strike involved the 2nd Cavalry Regiment's Dragoon Ride through Poland and the Baltic States.

The 364th ESC supported these exercises in Joint Operations Area (JOA) Poland, but its primary focus was AN16. The training value of AN16 was its real-world missions. If the 364th ESC failed to deliver, Soldiers would go without food and ammunition.

Large-scale exercises such as AN16 are perfect training venues for ESCs. Doctrinally, the ESC

plans, prepares, executes, and assesses sustainment, distribution, theater opening, and reception, staging, and onward movement operations for Army forces in the theater. The 364th ESC performed all of these tasks for the more than 12,000 U.S. troops participating in AN16 at the 15 MTAs throughout Poland. The requirements associated with supporting so many warfighters provided the ESC with realistic training on a scale close to that of a theater of war.

### The Road to AN16

Prior to AN16, the 364th ESC had planned to participate in Warfighter Exercise 16-05 for fiscal year 2016. However, the unit was notified that it would instead participate in AN16 as the senior logistics command for JOA Poland.

The 364th ESC had less than five months to plan. In order to make up for lost time, an intensive process was initiated that included more than 50 planning meetings, confer-

ences, and a sustainment rehearsal of concept (ROC) drill. U.S. Army Europe and the 21st Theater Sustainment Command were key partners in this process.

Because of the size, complexity, and location of the mission, the planning process required a collaborative effort from all participants. Active duty, Army Reserve, and Army National Guard planners, along with their coalition and strategic partners, worked in harmony to ensure all participants were able to achieve their training objectives and the mission.

### Setting the Theater

The 364th ESC deployed to Poland in early May 2016 and began the process of establishing the early-entry command post. The early-entry command post treated its location as an austere environment with tents for working and living, generators, and field communications equipment. What challenged the ESC most was trying to build its own capability while simultaneously setting



*Pfc. Andrew Hampton, a Soldier with the 10th Brigade Engineer Battalion, tightens a cargo strap to secure boxes before loading them onto a truck in Poland during Anakonda 2016.*



the theater for the maneuver units.

After gaining initial operating capability, the focus then turned to Phase I of the operation, setting the theater. This involved opening mayor cells at all 15 MTAs throughout JOA Poland and providing initial sustainment stocks for these locations. Brigade-and-above units performed mayor cell duties at the MTAs because no regional support groups were used in the exercise.

As the national support element, the 364th ESC oversaw the MTA buildup and worked with the various mayor cells to track fluctuating capabilities. This responsibility encompassed more than sustainment. The 364th ESC also worked with the mayor cells to coordinate force protection and engineer support.

Setting the theater included tracking all inbound planes, trains, vessels, and convoys. The 364th ESC also ensured that reception, staging, and onward movement occurred without delay.

Large elements from 11 different brigades were moved during this phase of the exercise, which made the task of tracking all inbound movements and sustainment extremely challenging. The ESC met those challenges by establishing working groups and boards that brought key people to the table to discuss issues and solve problems.

## AN16 Execution

At the conclusion of Phase I, each unit officially began the exercise and the ESC experienced new and unexpected roadblocks. Executing the plan required attention to details, flexibility, and perseverance. The crossing of multiple international borders created unique challenges typically not faced in most exercises and operations. However, working together with coalition and strategic partners ensured success.

During AN16, the 364th ESC had mission command over several supporting units to include elements of the 16th Sustainment Brigade, the 230th Sustainment Brigade, the

30th Medical Brigade, the 405th Army Field Support Brigade, and the 409th Contracting Support Brigade. The ESC headquarters also had several liaison officers assigned to it from a number of elements ranging from the Defense Logistics Agency to the 4th Infantry Division.

The fact that little infrastructure existed at the 15 MTAs complicated an already complex sustainment

Many of the units arrived at their training areas at different times, so the estimated consumption levels were staggered and depended on the change in troop levels at each location.

equation. Many sustainers worked together to solve problems and developed the concept of support in order to provide operational logistics for the exercise.

The 364th ESC executed the concept by providing mission command for the 230th Sustainment Brigade from the Tennessee Army National Guard and the 16th Sustainment Brigade, 21st Theater Sustainment Command, from Baumholder, Germany.

The 364th ESC and the sustainment brigades provided several classes of supply throughout the exercise and redeployment phases. During AN16, the 364th ESC provided the following class I (subsistence) items: 1,341 pallets of bottled water, 30,048 cases of meals ready-to-eat, 2,899 unitized group rations (option A), and 6,246 heat-and-serve unitized group rations.

The ESC also provided 1.4 million gallons of fuel and 79 20-foot equivalent unit containers of various types of ammunition. The ESC performed 106 convoys into Poland, moved 795 pieces of equipment from the seaport of debarkation using military convoys and host-nation trucks, and moved 1,532 pieces of equipment by rail into Poland.

## Lessons Learned

The following are some of the lessons learned by the 364th ESC during its mission in support of AN16.

**Prepare for reserve component constraints.** Although many Soldiers from the 364th ESC were interested in being present for the whole exercise, most could not get orders for the entire two months. Because

of the reserve component's annual training construct, the decision was made to split the formation into two main-body echelons with similar capabilities; one echelon would start the exercise and the second would finish it. Having key personnel who had been involved in upfront planning participate in the entire exercise reduced friction at the midway point.

**Know all movement approval processes.** Each country in Europe had its own movement approval process that is outlined in the Department of Defense Foreign Clearance Guide. The need to gain full awareness of how convoy approvals are completed in both Germany and Poland and the lead times involved was a significant lesson learned for the 364th ESC and the units that had to convoy from Germany into Poland for the exercise. Understanding these requirements and the timelines associated with them is critical for on-time movement in Europe.

Another movement concern was the process for tracking movements inside Poland. The Polish movement process, codified in Polish Law, requires a "permit to deploy" for convoys that fall into three categories: convoys containing five or more ve-

hicles, convoys including oversized vehicles, and convoys carrying hazardous material.

The normal lead time for requesting this permit is 30 days. The Polish government compressed the lead time to five days for the exercise. At the start of the exercise, the movement control battalion was responsible for consolidating and submitting movement requests to the Polish national movement coordination center. However, shortly before the start of phase II, the process changed. Everyone's effort can be improved if process changes are communicated and understood well before the deployment.

**Have the tools for a common operational picture.** The lack of an existing, sharable, centralized database or process to track movements hindered operations. Each command had brought its own process with them from home station for establishing a common operational picture. However, insufficient coordination decreased the effectiveness of these tools. The lack of a movement common operational picture further complicated the handoff of convoys from Germany to Poland.

**Ensure convoy communication and visibility.** The ESC had both the Blue Force Tracker (BFT) and the Joint Capability Release–Logistics (JCR–Log). However, the benefits of these systems were decreased because not all convoys had these same capabilities. In the future, each convoy should identify its tracking capabilities and make sure that at least one vehicle has BFT or JCR–Log.

**Technology could improve logistics tracking.** Another logistics function that could be improved through a common operational picture is the ability to track the consumption of pre-staged stocks. Many of the units arrived at their training areas at different times, so the estimated consumption levels were staggered and depended on the change in troop levels at each location.

Logisticians learned that a logistics common operational picture is a

moving target that must be tracked and managed. A logistics status report was created and a daily mayor cell working group was instituted to help track logistics statuses. Much of the information already existed in the various logistics information systems used by the 364th ESC. Consequently, this became an additional set of spreadsheets to manage.

An enterprise resource planning system that could pull and synthesize the information for the staff would be more effective than spreadsheets. In the past, this was attempted with the Battle Command Sustainment Support System.

**Plan for DTAS resources.** In regard to manning the force, the Deployed Theater Accountability System (DTAS) posed various challenges ranging from a lack of communications capability to a lack of authorized DTAS users. This shortfall in management processing system capabilities led to spreadsheet-driven tactics. In the future, units should solidify the requirements and capabilities for DTAS at the planning conferences prior to the exercise.

**Liaison officers are vital to partnerships.** Proper employment of liaison officers between the various organizations reduces friction. The 364th ESC's use of this simple tactic, more than any other, allowed the commands to communicate better, understand intent, and accomplish the mission.

While it may be painful to lose a good Soldier in a particular section, choosing one of your "best and brightest" as a liaison officer will be greatly appreciated. The liaison officers were truly the unsung heroes for AN16 sustainment.

**Partner resources ensure success.** The 364th ESC has built an incredible relationship with the Polish army in Warsaw and with the Polish 1st Armored Brigade. The Polish 1st Armored Brigade was extremely helpful in providing life support services for the 1,000 U.S. personnel based at their headquarters. The brigade also provided short-notice

transportation and materials handling equipment support at other locations.

Bringing together land forces to train as one military demonstrated that the alliance is ready and capable. AN16 was a challenging exercise that supported the Strong Europe concept. AN16, the largest exercise in Europe since 1991, has set the stage for future cooperation between the U.S. and Polish militaries. The 364th ESC and the other sustainment units involved proved themselves capable of early-entry operations and sustaining the force.

By working through the challenges of this operational environment and successfully completing the exercise, the 364th ESC improved its own readiness as well as the readiness of the other units that participated in AN16. The lessons learned from this experience will be useful for other ESCs' future deployments into austere environments.

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# Expeditionary Mission Command: Lessons Learned From a Sustainment Brigade's Warfighter Exercise

The 3rd Infantry Division Sustainment Brigade's path to expeditionary mission command was driven by clear guidance and a practical application of mission command as a philosophy.

■ By Maj. John R. Abella and 1st Lt. Alexander F. Yu

In October 2016, the 3rd Infantry Division (ID) Sustainment Brigade (SB) conducted expeditionary mission command and sustainment operations during Warfighter Exercise (WFX) 17-01, a decisive action training environment (DATE) exercise at Fort Stewart, Georgia. The brigade provided direct support for the 3rd ID and provided general support on an area basis to other units.

During the exercise, the 3rd ID SB's mission command element experimented with a tactical configuration that the brigade headquarters used in an expeditionary field environment. The brigade headquarters also used this configuration while jumping the tactical operations center (TOC) several times, as directed by the Forces Command, while continuing mission command both in reality and within the DATE scenario.

Throughout the 3rd ID SB's training progression, the brigade's challenge was to create and design a highly mobile expeditionary TOC that could provide mission command for sustainment operations while being able to disperse immediately or to engage decisively while under threat from enemy forces.

Because the Army has shifted its focus to decisive action fights against near-peer enemies, both the division and brigade aimed to replicate the first 10 days of major combat operations.

## An Expeditionary Vision

During previous division-level exercises and mission rehearsal exercises, the brigade headquarters employed modular tent systems, deployable rapid assembly shelters (DRASHs), and other excessive amenities to establish large footprints, sometimes referred to as "TOC-mahals" or "tent cities." But the practice of setting up an elaborate TOC headquarters is entirely too cumbersome in a decisive action fight.

For example, during the brigade's first postdeployment field training exercise, setting up the TOC to full operational capability required three full days. Almost six hours were required just to unpack and install the flooring.

Observations and lessons learned from the Russia-Ukraine conflict indicated that units involved in that conflict had to displace every 48 to 72 hours during the first 14 days of major combat operations. To replicate that, the 3rd ID SB commander wanted a brigade headquarters that could provide mission command for sustainment operations on the move and under dynamic conditions while being mindful of tactical dispersion and protection in both daylight and limited visibility.

Across the formation, the shared vision was to be able to operate at night with night vision devices, conduct sustainment, and defend in fighting positions to standard with

18 inches of overhead cover. Consequently, the 3rd ID SB's training objectives leading up to WFX 17-01 focused on improving both mission command capabilities and tactical operations.

The ultimate goal was to establish a lean, mobile, and rapidly deployable mission command node that maximized mission command capabilities without the robust footprint of other SB headquarters.

## Staff Integration and Planning

The primary staff, specifically the brigade S-3 and the deputy commanding officer, focused on molding the brigade headquarters into the expeditionary command node that the brigade commander envisioned. To complement and support these efforts, the brigade command sergeant major focused on training and developing individual skills to ensure that staff members could effectively perform tactical-level operations when necessary.

Leaders incorporated communication, camouflage, and concertina wire, known as the "three Cs," into the 3rd ID SB's TOC setup. Significant time was spent at the tactical level to develop the skills required to fight and survive against a near-peer enemy. These skills included fighting and survivability positions, range cards, and tactical dispersion techniques.

During the 3rd ID's command post

exercise (CPX) in July 2016, the staff had trouble disseminating information, creating a shared understanding, and coordinating efforts. These issues were compounded by the implementation of a new TOC setup that used M1087 expansible vans as the platform for the command node.

It was apparent that more integration and training were needed. Despite these hindrances, the S-3 and members of other warfighting functions were able to produce necessary products, including a tactical standard operating procedure, the communication contingency plan, and jump TOC battle drills.

The staff sections improved the expansible van setup by updating internal layouts, codifying packing lists, and identifying maintenance issues. The staff refused to let the physical barriers of the vans preclude its ability to communicate, integrate, and

synchronize, and it continued its march to develop digital integration.

In August 2016, the brigade conducted a nine-day field exercise with the goal of refining the jump TOC battle drills, contingency plans, and staff processes. Simultaneously, the brigade sent individuals to the 135th Expeditionary Sustainment Command, Alabama Army National Guard, in Montgomery, Alabama, to participate in its military decision-making process (MDMP) for WFX 17-01.

Following these exercises, the 3rd ID SB sent the brigade S-2, S-3, and support operations officer (SPO) to conduct a parallel MDMP with the 3rd ID for 14 days to identify tactical- and operational-level sustainment problems and mitigation options.

These events allowed the brigade headquarters personnel to develop

their course of action and concept of support briefings. More importantly, the events allowed them to publish the operation order. With a cohesive operation order, the headquarters could actively participate in several higher echelon rehearsals prior to WFX 17-01.

The 3rd ID SB led the division's sustainment rehearsals. This allowed the brigade to be more creative in its approach to provide direct support for the 3rd ID and further integrate strategic partners such as the Army Field Support Battalion-Stewart and a contingency contracting battalion.

The brigade commander and command sergeant major emphasized the importance of developing the brigade staff's noncommissioned officers (NCOs) in their roles at the brigade headquarters. Throughout the 3rd ID SB's training exercises, junior NCOs were empowered with more responsibility as battle NCOs, convoy commanders, and operation planners.

The results of integrating NCOs into the staff were monumental. Staff officers had more time to focus on future operations across multiple lines of effort. This provided the brigade commander with a better assessment of the operation.

### Liaison Officers

Integration was important, not only within the brigade staff but also among various command nodes. The brigade commander sought to develop liaison officers (LNOs) within the staff. These individuals served as representatives from the 3rd ID SB to other organizations and ensured better cohesion among tactical to strategic lines of effort.

Prior to WFX 17-01, the 3rd ID SB established an LNO academy that prepared staff members to serve as LNOs to other elements. The brigade commander intended his LNOs to serve as his eyes and ears and provide the brigade with the most recent information.

For WFX 17-01, the brigade sent LNOs to the 158th Maneuver En-



*Soldiers assigned to the 24th Ordnance Company, 87th Combat Sustainment Support Battalion, 3rd Infantry Division Sustainment Brigade, attach a package to the bottom of a UH-60 Blackhawk helicopter during an exercise at Fort Stewart, Ga., on April 5, 2016. (Photo by Sgt. 1st Class Ben K. Navratil)*



hancement Brigade, the 3rd ID, and other sustainment commands. Conversely, the brigade commander sought LNOs from the 7th Transportation Brigade (Expeditionary), the 82nd Airborne Division SB, the 1st Armored Division SB, the 330th Transportation Battalion (Movement Control), and the Canadian army.

Integrating with logisticians from different backgrounds gave the 3rd ID SB staff a deeper knowledge of sustainment planning and support operations. Establishing this network of personnel throughout the battlefield allowed the commander to provide effective mission command over the brigade.

### **Mission Command Nodes**

The 3rd ID SB began using three different nodes to provide the brigade with an expeditionary mission command element. These nodes incorporated the brigade commander's three Cs.

The primary mission command node was the newly configured TOC, which consisted of six expansible vans. These vehicles were designated as the command group, the administrative logistics operations center, the future operations center, the current operations center (CUOPS), the network and communications facility, and the liaison office.

The second mission command node housed the SPO staff and acted as an alternate command post that was geographically displaced from the TOC. This node's five expansible vans were designated as ammunition, mobility, the distribution integration branch, the maintenance and equipment readiness division, and general support operations.

These vehicles were configured in a wagon wheel formation and were connected with the TOC through digital communication systems including the Command Post of the Future (CPOF) and the Joint Battle Command-Platform (JBC-P). If the primary node came under attack

or stopped functioning, the commander would have the flexibility to use the secondary node.

The last command node was the 3rd ID SB tactical command post (TAC), which used a collapsible maintenance shelter. The TAC was commanded by the deputy commanding officer and served as a forward command post while the TOC jumped to another location.

Designed to be an autonomous element with representatives from each of the warfighting functions, the TAC could be deployed quickly by ground or air. Throughout the exercise, the TAC was transported by a palletized load system and was accompanied by a Joint Network Node team for communications. During the operation, the TAC deployed forward before any TOC jump and maintained mission command of subordinate elements until the TOC was fully mission capable.

The 3rd ID SB wanted to establish a fully functional TOC with the three Cs within a six-hour period. The brigade staff's initial attempts to meet this criteria were unsuccessful, but standardizing the priorities of work significantly improved the staff's processes. Along with the priorities of work, the staff codified the layout of each of the expansible vans to ensure that workstations were fully mission capable.

The priorities of work were then annotated in the tactical standard operating procedure, validated during the division CPX and the jump TOC exercise, and disseminated to all the staff sections for WFX 17-01. Rehearsals at all levels were imperative to success. Previous driver's training, set-up drills, and night vision device training paid off.

### **Overcoming Problems**

The staff members had to shift their mindset from occupying a robust footprint in a mature theater of operations to arriving with minimal equipment in an immature theater. Through trial and error, the staff realized which supplies were essential

and which could be disregarded.

Another major problem was a lack of communication between the SPO and the CUOPS. When the TOC was housed in the larger DRASH tents, the SPO and CUOPS were co-located in a current operations integration cell (COIC). Because of the shared physical space, coordination between the two sections occurred naturally.

However, with the 3rd ID SB's new configuration, the physical separation between the SPO and CUOPS grew as the vans moved farther apart to achieve greater dispersion and increased survivability.

Because the expansible vans did not provide adequate space for a physical COIC, the brigade staff attempted to mitigate stovepipes by using a digital COIC with chat functions, a digital tracking system, battle rhythm refinement, and embedded support. Both the S-3 and SPO employed LNOs as fusion officers to link SPO future operations with the current operations fight.

### **Systems Integration**

Any structural or operational changes that the brigade incorporated into its tactics, techniques, and procedures would have been pointless if the staff members had been unable to incorporate the systems that facilitate successful mission command. A comprehensive understanding of the upper tactical internet (which includes systems such as CPOF) was indispensable.

When it came to CPOF, the staff had a noticeable knowledge gap. The brigade simulations officer and several battle staff NCOs were proficient in the system, but most of the brigade staff had a severely atrophied knowledge or a complete ignorance of the system.

The staff members needed the opportunity to learn about the CPOF and its capabilities. CPOF training was held in both tactical and garrison environments and included training on other communication systems. To ingrain CPOF into the

daily operations of the brigade staff, the brigade conducted its MDMP, course of action, and concept of sustainment briefings through the upper tactical internet system.

Consistently using CPOF ensured that the brigade commander was informed of events occurring on the battlefield. Eventually, the repeated use of CPOF throughout the 3rd ID SB's multiple training exercises allowed the staff members to become knowledgeable in the upper tactical internet functions used to communicate across the battlefield.

Another problem was the integration between the JBC-P and the CPOF. The brigade commander envisioned his staff as a "swivel chair" between the tactical-level JBC-P and the operational-level CPOF, ensuring that the 3rd ID and the 135th Expeditionary Sustainment Command were constantly updated on sustainment operations.

The JBC-P was present on the 3rd ID SB's modified table of organization and equipment, but it was never fielded in the brigade. The 3rd ID SB mitigated this shortfall by coordinating with other sustainment units across the division and providing the staff with enough JBC-Ps to continue mission command and coordination throughout the battlefield.

During the planning process, the brigade staff developed a battle rhythm for WFX 17-01. As the brigade commander constantly refined the battle rhythm to adapt to the fight, a critical path was developed among warfighting functions. This critical path was an indispensable catalyst that increased the effectiveness and efficiency of the mission command process in the brigade.

Primary staff officers were required to ensure that no members of their sections caused a stovepipe of information within the warfighting functions. To mitigate stovepiped information, staff sections held meetings within their warfighting functions to ensure that everyone had a conceptual understanding of the current operational picture.

The brigade staff's solution was to consistently review the structure of the battle rhythm throughout the operation. By the midpoint review during WFX 17-01, each staff section successfully produced a current operations dashboard, warfighting function-specific running estimates, and accountability for their battle rhythm events.

Additionally, the staff tailored a commander's dashboard that incorporated near-real-time updates to CPOF efforts. The commander's dashboard, which pulled from the staff's CPOF efforts, was a tangible indicator of warfighting function integration and the commander's ability to execute mission command.

### Hurricane Matthew

The exercise was paused on day 4 because of the arrival of the Category 3 Hurricane Matthew. In true expeditionary fashion, the brigade shifted its efforts from a DATE scenario to a defense support of civil authorities mission. The brigade prepared to conduct both sustainment operations in the southwest region of the United States and rescue operations at Fort Stewart.

During the storm, elements of the brigade staff, the 87th Combat Sustainment Support Battalion, the brigade engineer, and the battalion support operations officer provided real-world support to Fort Stewart and Hunter Army Airfield in Savannah, Georgia.

As the storm passed and all personnel were accounted for, the brigade shifted back to the DATE scenario using the tools and lessons learned during the first half of the exercise. The brigade staff's performance was better than expected, and both the TOC and the TAC were fully operational within hours.

The 3rd ID SB's preparation resulted in a phenomenal start for WFX 17-01. The brigade discovered problems with the mission command process and adapted to mitigate these issues and find solutions.

The integration of staff personnel within the brigade headquarters and among the adjacent elements created a cohesive team that could adapt to any current or future operation. The staff's use of equipment and technology provided the 3rd ID SB with a lethal and mobile mission command node that could also provide the synchronization necessary to ensure the success of all sustainment operations.

Faced with real-world and notional problems during WFX 17-01, the staff successfully established and executed expeditionary mission command, validating its ability to plan, coordinate, and provide sustainment in support of both decisive action and defense support of civil authorities operations.

The 3rd ID SB's solutions to the problems experienced throughout the training progression continue to be refined and updated. The goal is to further develop the staff to have not only a deep understanding of mission command but also the capabilities to provide it efficiently and effectively throughout an expeditionary operational environment.

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*Warrant Officer Angel Santiago, the sustainment automation support management officer-in-charge for the 225th Brigade Support Battalion, 2nd Infantry Brigade Combat Team, 25th Infantry Division, monitors very small aperture terminals during the brigade's Global Combat Support System–Army data validation process.*

## Proving VSATs Are up to the Challenge

The 2nd Infantry Brigade Combat Team successfully converted to the Global Combat Support System–Army using very small aperture terminals to complete its data validation.

■ By Chief Warrant Officer 3 Jerry T. Loera

For years the Army has been improving its systems to better serve logisticians and help units track their supplies, spare parts, and equipment readiness. In the 1990s, the Army introduced the Unit Level Logistics System–Ground, a database system that allowed users to send maintenance updates through data packages. Each maintenance section had to learn how to process data and send it to the next higher headquarters.

In 2005, the Army released the Standard Army Maintenance System–Enhanced (SAMS–E). The system supported the Army's transition to the two-level maintenance concept and acted as a bridge to link current systems to the Glob-

al Combat Support System–Army (GCSS–Army).

### GCSS–Army

For the past five years, the Army has been fielding GCSS–Army, a web-based logistics and finance system developed from best commercial business practices. GCSS–Army replaced several outdated information management systems across the tactical logistics environment.

Every system or program conversion requires data migration. Users must prepare and transfer data from the old system to the new one. Each unit's GCSS–Army conversion takes a year of planning and monthly uploads of SAMS–E backup files.

One of the biggest concerns during

a GCSS–Army conversion is the limited bandwidth of the very small aperture terminal (VSAT). The Army uses VSATs to transmit information on the battlefield. Since GCSS–Army requires a lot of bandwidth, logisticians were skeptical about the VSAT having the speed and reliability to support GCSS–Army.

### The Conversion Challenge

During a yearlong data migration, the 2nd Infantry Brigade Combat Team (IBCT), 25th Infantry Division, focused on having the correct information for a smooth transition. Sixty days before the GCSS–Army conversion, the 2nd IBCT initiated the discussion of data validation.

Feedback received from oth-

er units indicated that the VSAT would hinder the validation process and cause GCSS-Army to run too slowly. Because of the limited Non-secure Internet Protocol Router Network (NIPRNET) access in the 2nd IBCT's motor pool, the unit used a combination of NIPRNET and VSAT to migrate data.

The sustainment automation support management office (SASMO) requested that additional NIPRNET lines be installed in a single area for the fielding and data validation. The additional lines would give the support operations maintenance section and the SASMO better control over connectivity, validation, and user issues.

### The Setup Process

The support operations maintenance section and SASMO developed a preconversion checklist that started with the users and ended with a VSAT validation for each unit.

The units started by setting up the VSATs to identify broken or missing parts. Three of the six units identified broken and inoperable VSATs. The SASMO was able to fix two of the three VSATs and coordinated with the VSAT logistics assistance representative to fix the third.

The next step was to identify where the VSATs would be set up during

and after conversion. The direction of the VSAT determines which satellite is available to the system. The SASMO set up a VSAT network hub in the maintenance conference room after the VSAT placements were identified. The internal parts of the VSATs were placed together on a U-shaped table in a conference room. This allowed easy access to the VSATs and the production boxes.

The SASMO collected all of the network routers from the units and configured four production boxes for each of the VSATs. The SASMO was not worried about VSAT ownership but rather keeping units organized for easier management. Once the tactical image was installed on the production boxes, the SASMO placed them on the network and conducted a systems check. All of the required VSATs and production boxes were configured and tested prior to GCSS-Army validation.

### Data Validation

There seemed to be little difference between the NIPRNET's and the VSAT's speed and accessibility to the GCSS-Army website. Both systems experienced lag time when units tried to run full-scale reports without filtering them down to the battalion level.

The brigade successfully complet-

ed its validation on VSATs and the units continued to run GCSS-Army on VSATs with few issues, proving that the VSAT can handle GCSS-Army's bandwidth demands. The brigade was able to "go live" three days ahead of schedule. Going live early enabled the clerks to receive three additional days of over-the-shoulder training.

The brigade maintenance managers learned the importance of maintaining their VSATs. They have incorporated VSAT sustainment training and regular preventive maintenance checks and services on their VSATs.

The brigade also learned that the time of day, weather, and cloud cover likely affect the signal speed and connectivity. For the 2nd IBCT in Hawaii, the speeds of the VSAT and NIPRNET systems increase in the afternoon when units in the continental United States are off the GCSS-Army website.

For any unit preparing for the GCSS-Army conversion, the following checks are recommended:

- ☐ Conduct preventive maintenance checks and services on all VSATs prior to conversion.
- ☐ Configure all routers prior to conversion (match VSATs with production boxes).
- ☐ Connect the production boxes and log in to GCSS-Army for a connectivity check.
- ☐ Centralize all units into one area; this helps the SASMO to identify and fix issues quickly during data validation.
- ☐ Have a VSAT logistics assistance representative present during setup, testing, and conversion.



*Members of the 2nd Infantry Brigade Combat Team, 25th Infantry Division, review and validate their data during the brigade's Global Combat Support System-Army conversion. The brigade used four very small aperture terminals and 16 production boxes to complete the data validation process.*

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*Petroleum supply specialists of the 3rd Squadron, 17th Cavalry Regiment, 3rd Combat Aviation Brigade, fuel a medevac helicopter during an exercise at Fort Stewart, Ga., in February 2017. The brigade recently underwent a General Services Administration survey designed to improve fuel quality and safety. (Photo by Sgt. William Begley)*

## Petroleum, Oils, and Lubricants Survey Lessons Learned

The 3rd Combat Aviation Brigade's FSCs participated in a General Services Administration survey that improved the unit's petroleum, oils, and lubricants program.

■ By Capt. James M. Beebe and Capt. David R. Fennoy

**T**he 3rd Combat Aviation Brigade (CAB) underwent the General Services Administration's Aviation Resource Management Survey (ARMS). As part of the survey, four 3rd CAB forward support companies (FSCs) participated in the petroleum, oils, and lubricants (POL) survey.

The ARMS is not mandated by

regulation or policy, but it helps to ensure units' compliance with the areas associated with the survey. The survey offers observations and recommendations that units can implement to best manage their aviation assets.

The FSCs were the brigade's leads for the POL survey and were the only companies inspected in

their battalions. The POL survey is divided into seven subsections; however, the FSCs were evaluated on only six of them: training program, accountability, equipment, quality surveillance program, safety, and hands-on proficiency. The seventh subsection, facilities, was not surveyed because it did not apply to the FSCs.

The two FSCs supporting the 2nd General Support Aviation Battalion and the 4th Assault Helicopter Battalion failed to achieve a satisfactory evaluation in two subsections: quality surveillance program and safety. This article outlines the FSCs' lessons learned from the POL survey process and shares best practices in order to improve POL program accountability across the Army.

## Quality Surveillance Program

Quality surveillance is critical for the aviation community. How the

FSCs, the standard of submitting fuel samples every 30 days proved difficult to meet. A schedule needs to be followed in order to balance the submission of fuel samples with how many the laboratory is able to process. There should be no gaps in the fuel sample log, but if there are, a reason must be documented. Failure to submit fuel samples is not acceptable.

**Record results.** Record keeping is equally important. The results from every fuel sample must be kept. It is recommended that results be filed in the POL office and also kept with

A schedule needs to be followed in order to balance the submission of fuel samples with how many the laboratory is able to process. There should be no gaps in the fuel sample log, but if there are, a reason must be documented.

quality surveillance program is managed drives safety, the flexibility of the supporting unit, and the capability of the supported unit. Half of the questions in the quality surveillance program subsection are weighted heavily, which reflects the subsection's importance in the entire POL program.

Aviation assets require an incredibly high grade of jet fuel. Poor quality aviation fuel could result in aircraft engine failure and the inability of the supporting unit to provide supplies in a timely manner.

**Test fuel and equipment.** The unit must check the performance of filter separators every 30 days by submitting fuel samples to an authorized laboratory. If a filter separator is not tested, the reason for not testing it needs to be documented. Just as heavy expanded-mobility tactical truck filters require testing, so do advanced aviation forward area refueling system filters.

With a total of 40 heavy expanded-mobility trucks between the two

the tested piece of equipment. This requirement is outlined in Army Regulation 710-2, Supply Policy Below the National Level; Army Techniques Publication (ATP) 4-43, Petroleum Supply Operations, and in Fuels Technical Letter (FTL) 11-02, Filter Effectiveness Program—Millipore Use.

Fuel sample logs must be maintained in accordance with ATP 4-43, FTL 11-02, and Department of the Army Pamphlet 710-2-1, Inventory Management: Using Unit Supply System Manual Procedures.

**Have the right sampling equipment on hand.** In preparation for the inspection, the 3rd CAB transitioned from the 1-gallon sampling method to Millipore sampling. Had the transition been made earlier, the FSCs' filter effectiveness status and number and frequency of samples would have improved. Now that Millipore sampling is the norm, the FSCs can more easily maintain a fleet with nearly perfect filter effectiveness.

**Replace filter separators regularly.** Filter separator elements must be replaced every 36 months or when pressure differential gage readings or laboratory tests indicate filter malfunctions. Pressure differential readings must be part of the daily preventive maintenance checks and services, and the findings must be recorded in accordance with the applicable references.

Filter separators must be marked with a date to identify when filter elements were installed. Projecting and tracking replacement dates on the company training calendar will ensure that filter separators are not used past the intended replacement date. To ensure fuel quality, aqua glow testing should be included in the daily preventive maintenance of fuel trucks, and fuel should not be issued to aircraft if test equipment is inoperable.

## Safety

Safety is inherent to every military operation, so its inclusion in the ARMS was no surprise. Nine of the survey's questions concerned safety, and both FSCs failed the three weighted safety questions.

**Fire extinguishers.** Arguably the single most important part of this inspection was whether the FSCs' fire extinguishers met the standard for size, class, quantity, serviceability, and B:C rating.

The B:C rating specifies the square footage covered by the fire extinguisher once expended appropriately. Fire extinguishers must have a 20 B:C rating at a minimum. A fire extinguisher with a 20 B:C rating should cover 20 square feet.

**Spill response plan.** The company safety officer must update the emergency spill response plan in coordination with the battalion safety officer, and the plan must be present in every truck. Soldiers need to be briefed on, trained on, and have immediate access to this product to ensure proper procedures are followed in the event of a petroleum spill.



**FARP safety.** The forward arming and refueling point (FARP) safety checklists must be completed, signed by the FARP officer-in-charge or noncommissioned officer-in-charge and the safety officer, and updated regularly. The unit's standard operating procedures will outline the response for other critical safety issues, such as a fire on the FARP.

**Protective equipment and personal electronics.** Because the FSCs rarely had issues with Soldiers using personal electronic devices while conducting petroleum operations or not wearing their approved personal protective clothing and equipment while conducting petroleum operations, they readily passed these areas. When the time comes for a survey, however, leaders should do an in-ranks inspection to ensure compliance. These are easy points to earn but also easy points to lose.

There will always be room to improve. These two FSCs worked diligently to ensure they focused on aligning their practices with all applicable policies, regulations, and doctrine instead of focusing heavily on the survey checklist. The survey checklist served as a useful guide to prepare for the survey, but the leaders and Soldiers who conduct and assist petroleum operations were expected to already understand and implement all the necessary requirements.

The ARMS is absolutely valuable to any aviation support company. Best practices include junior leader engagement and continuous training for the personnel who conduct and assist with petroleum operations. Above all, having open lines of communication with the supported unit will allow any program manager to best meet the needs of

such a demanding POL program.

A successfully managed POL program requires a staunch work ethic. If units are actively managing their programs appropriately every day, they will succeed in the survey. Even though ARMS occurs every other year, preparation happens daily.

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Fred W. Baker III, 07 September 2017

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*Michael Williams (far left), president of the Army Logistics University, presented the 2017 Army Logistics University Distinguished Instructor, Instructor of the Year, and Educator of the Year awards on Sept. 26, 2017, at Fort Lee, Va. Of the 14 recipients of the Distinguished Instructor award, four were named Instructor of the Year: Willie Lee Jr., Maj. (Chaplain) Vincent Meyers, Chief Warrant Officer 3 Truman Ward, and Staff Sgt. Troy Johnson. Mindy Perot, Ph.D., was awarded Educator of the Year. The recipients of the Instructor of the Year and Educator of the Year awards will go on to compete at the Training and Doctrine Command competition. (Photo by Stefanie Antosh)*