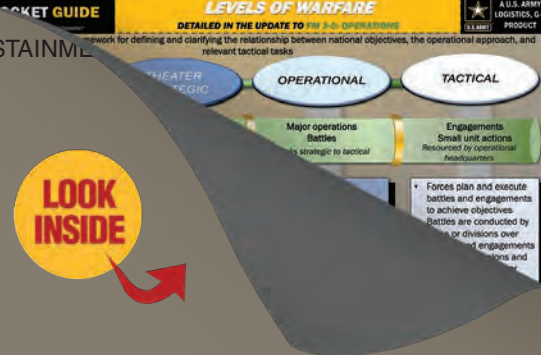


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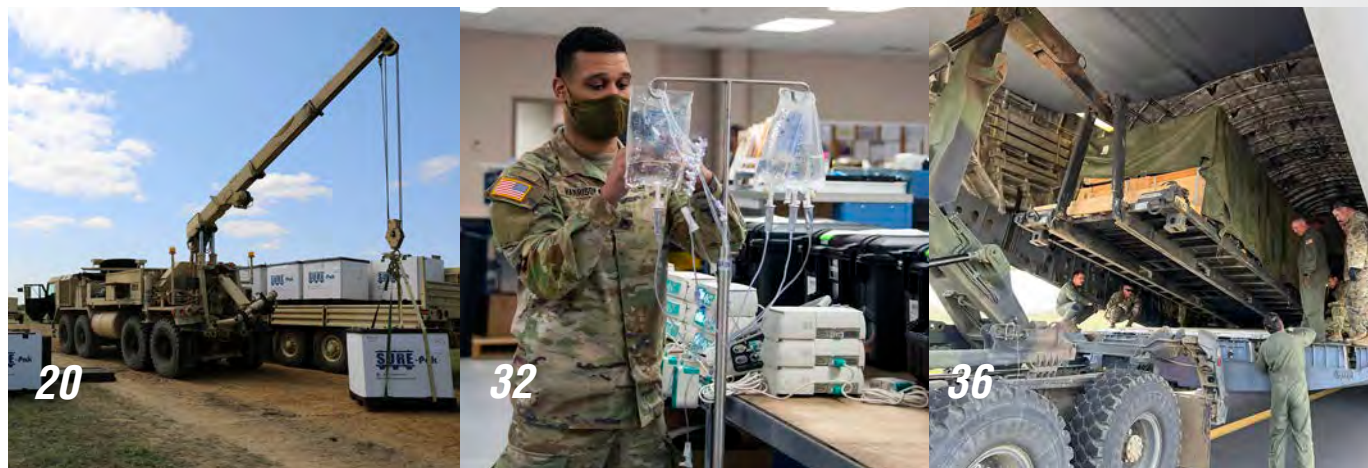
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ARCTIC

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"To defend the Far North and homeland in crisis and conflict while building Arctic multidomain operations, we must be ready to project and sustain power across vast, contested distances."

Lt. Gen. Charles R. Hamilton

Capt. Aaron Albin, battalion personnel officer, 4th Special Troops Battalion, 4th Sustainment Brigade, 4th Infantry Division, checks the oil as he performs preventive maintenance checks and services on his Humvee on March 2, 2022, in the motor pool on Fort Carson, Colorado. (Photo by Sgt. James Geelen)

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ON THE COVER

Arctic Sustainment is the theme of the Fall 2022 *Army Sustainment Professional Bulletin*. An M88 Armored Recovery Vehicle lifts a truck off the snow in Hanover, New Hampshire, on Aug. 31, 2017. (Photo courtesy of U.S. Army Cold Regions Test Center)

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Sustainment Operations in Harsh Climate Key to Arctic Dominance



■ By Gen. Ed Daly

Chief of Staff of the Army Gen. James McConville emphasized the need for regaining Arctic dominance when he noted the Arctic is “an opportunity to rapidly employ the speed, range, and convergence of cutting-edge technologies being developed for multidomain operations (MDO) to strengthen our deterrence capabilities in the region.”

The materiel enterprise is at the forefront of Army transformation efforts to build the Army of 2030, with a focus on the Arctic with updated doctrine, modernized equipment, and revamped training to sustain large-scale combat operations in a contested environment.

Since the Army released its strategy on Regaining Arctic Dominance in early 2021, we have forged a deliberate path toward improving our extreme cold weather (ECW) and high altitude sustainment capabilities by identifying current and future requirements across all three geographic areas: the Pacific, Europe, and North America. This effort will enhance our ability to rapidly generate and globally project multidomain forces that are specifically trained, equipped, and sustained to control contested space in an ECW environment and rugged conditions over the long term. This requires first understanding the challenges, identifying and building

capabilities, and then taking deliberate actions in support of units in the region.

The Arctic strategy acknowledges that as the Army fields multidomain task force-enabled units, we need to understand the nature of maneuver and sustainment in harsh conditions with limited accessibility posed by the conditions. Sustainment is challenged by the Arctic environment due to increased transportation required to sustain widely dispersed units through limited lines of communication, special handling and storage requirements to cope with harsh Arctic conditions, and lack of commercial and military infrastructure. While every theater has its own challenges in sustaining the force in a contested environment, the Arctic is unique in the severity of its additional natural impediments to traditional maintenance and distribution operations.

Our sustainers are vital in extending operational reach to geographic

combatant commanders. We must adequately plan and develop resupply and sustainment requirements for Arctic-specific equipment, which involves having the right sustainment force structure and infrastructure in place through the Total Army Analysis process and long-term Facility Investment Plan (FIP) programming. The FIP allows us to identify, analyze, and prioritize Army facilities investment requirements across a 10-year horizon to support the warfighter.

Another critical and required Arctic-specific capability is conducting long-range, enduring sustainment operations in ECW conditions. This requires a modernized, agile supply chain that can sustain small and dispersed forces, even in extreme temperature, mountainous, and high-latitude environments.

Army Doctrine Publication 4-0, Sustainment, emphasizes survivability and the capability of military forces to withstand hostile actions or environmental conditions while retaining the ability to fulfill their primary mission. In an Arctic context, survivability is even more challenging, as environmental conditions often disrupt the flow of sustainment. To ensure survivability, we must develop and employ sustainment capabilities and alternative support plans and adapt to environmental conditions that might degrade our sustainment support.

Arctic-capable units are defined as those enabled by doctrine, trained

at echelon, equipped sufficiently, and manned by Soldiers with the appropriate knowledge, skills, and abilities to successfully operate in the Arctic. Ensuring units have the right equipment is a critical first priority for sustainers. To that end, we recently completed the movement of Strykers, previously positioned in Alaska, which lacked the right capabilities for the conditions in theater. The dwindling fleet of outdated small unit support vehicles that no longer have the required maintenance base for upkeep is being replaced by cold weather, all-terrain vehicles capable of operating in extreme conditions and mountainous environments, with amphibious components to traverse coastal waters. Arctic units are also testing Cold Temperature and Arctic Protection Systems, an innovative multi-layer clothing system designed to be lighter and more durable while increasing warmth and comfort. With the Army’s recently activated 11th Airborne Division in Alaska to lead Arctic operations, we’ll continue to validate our support capabilities to supply, maintain, and sustain weapon systems to allow for uninterrupted operations in sub-zero conditions.

The Secretary of the Army recently tasked the sustainment enterprise to conduct a comprehensive review of existing experiments, wargames, studies, planning scenarios, exercises, and operations, viewed through the lens of contested logistics. The review will serve as the framework to further assess and continue developing the Army’s critical role in contested logistics across the continuum of conflict and all phases of joint

operations supporting the joint force in the Indo-Pacific Command theater, a key component of the Arctic region. This will enable the Army’s efforts to remain consistent with the National Defense Strategy and will inform the Army’s investments into the sustainment warfighting function.

The Army will regain cold-weather and high-altitude dominance by adapting how we generate, posture, train, and equip our forces to execute extended MDO in extreme conditions. New systems, processes, and equipment necessitate new perspectives. As we modernize the Army sustainment warfighting function capabilities, our sustainers and logisticians are at the forefront of adapting long-range plans to changes in the environment to reestablish Arctic dominance for a current and future MDO-capable land force.

Gen. Edward M. Daly serves as the commanding general of the U.S. Army Materiel Command (AMC). He served three years as the deputy commanding general of AMC in his previous assignment. He managed the day-to-day operations of the Army’s logistics enterprise and served as the senior commander of Redstone Arsenal, Alabama. He served as the commanding general of Army Sustainment Command at Rock Island Arsenal, Illinois, and as AMC’s deputy chief of staff, overseeing the roles and functions of the headquarters staff.

OPERATING IN THE EXTREME:

Sustaining the Arctic Army and Joint Force in Competition, Crisis, Conflict



■ By Lt. Gen. Charles R. Hamilton

When the United States acquired Alaska from the Russian Empire in 1867 for \$7.2 million, a paltry \$0.39 per acre, the Army's 9th Infantry Regiment was there to raise our flag over the southeastern port city of Sitka. There were certainly

some naysayers doubting the procurement when then-Secretary of State William Seward negotiated the terms of purchase with his Russian counterpart. Back then, the territory's true strategic worth remained unknown; "Seward's Icebox" was largely accepted as barren land that felt wholly separate from the contiguous states to its south. While the Army didn't begin construction on what is now Joint Base Elmendorf-Richardson until 1940, presence in the region would grow rapidly throughout the second World War. After significant transformation in the early 2000s, which saw the activation of two brigade combat teams, the Army in Alaska again transformed in 2022 with its reactivation as the 11th Airborne Division to unite roughly 12,000 Soldiers and best support our Arctic strategy. In this Arctic-themed edition of *Army Sustainment*, you can learn more

about what that process has meant to Soldiers and their families, thanks to the keen insight provided by Maj. Gen. Brian Eifler, the 11th Airborne's commanding general.

Published in January 2021, the Army's Arctic strategy—titled "Regaining Arctic Dominance"—nests within the broader DOD strategy to ensure our secure and stable land dominance across a complex region that spans three geographic combatant commands. The Arctic is a shared region, adding layers of geopolitical complexity and heightening the potential for strategic competition. Coupled with an extreme climate whose challenges do not necessarily abate as the weather warms in the summertime, it's no secret an Arctic-capable and dominant Army are critical to joint force readiness in competition, crisis, and conflict. In our end state, we, as the Army's

Sustainment Enterprise, are called to rapidly generate, project, and persistently sustain multidomain forces equipped to fight and win across the frigid, mountainous Arctic expanses. Regaining Arctic dominance clearly outlines the ends, ways, and means by which we will sustain the Total Army and joint force to defend the homeland and ensure our regional readiness.

To improve our Arctic capability, we must ensure materiel readiness so Arctic-capable units can conduct extended operations throughout the region. Those units will be prepared to operate for multiple days at a time, so our commitment to precision logistics for the mission at hand will be a key focus. If you've spent any amount of time in a region dominated by extreme cold, you'll surely have a firm understanding of how that environment impacts equipment, supplies, and overall readiness. Training and educating units on the damaging climate-based impacts to their materiel readiness ensures each Soldier effectively anticipates and mitigates risk borne from the cold and snow, as equipment must be ready to perform at temperatures reaching a frigid -65 F.

To compete in the Arctic and globally, we must consistently work alongside our allies and partners to drive sustainment interoperability. The Arctic is a shared region with an intricate geopolitical makeup, so strengthening these partnerships ensures our ability to set Arctic theaters. I truly believe the Army

Sustainment Enterprise's strategic readiness is a competitive advantage leveraged by the entire joint force. Persistent engagement, training, and information exchange alongside our allies and partners in the region only serve as a boon to these capabilities across all domains.

To defend the Far North and homeland in crisis and conflict while building Arctic multidomain operations, we must be ready to project and sustain power across vast, contested distances. Central to that overarching effort is our ability to validate our sustainment capabilities into maneuver formations, and ensure the collective ability to winterize, deploy, and employ our most critical assets. Alaska itself sits at the northernmost edges of both Indo-Pacific and Northern Command. Its location at that nexus affords us the geographical posture from which we can project power where and when necessary. Our ability to set the theater and conduct reception, staging, onward movement, and integration is part of our short-term muscle memory. To maintain that strength, we continually stress and develop those capabilities through training and exercises, which shape resourcing decisions while expanding our operational reach. Regaining and maintaining Arctic dominance is not solely the responsibility of Arctic-specific units. Our posture to enable non-Arctic unit operations throughout the region will be improved by exploring the potential for

additional Army pre-positioned stocks in-theater for use by those units responding to mission needs.

The strategic importance of the Arctic region has been firmly established as the Army executes the doctrinal transition from counterinsurgency to large-scale combat operations in multiple domains. Potential contestation from near-peer adversaries could greatly limit access and impede U.S. interests across an area of vast distances and divergent geopolitics. Our operations in the Arctic are inherently challenging due to both adversarial competition and the extreme climate. However, we as sustainers will be ready to respond in competition, crisis, and conflict by continually providing targeted support to our warfighters from anywhere and in any environment now and in the future.

Lt. Gen. Charles R. Hamilton currently serves as the Deputy Chief of Staff, G-4. He most recently served as the assistant deputy chief of staff for operations, G-4 3/5/7. Hailing from Houston, Texas, Hamilton enlisted in the U.S. Army. Upon completion of basic and individual training, he was assigned to Fort Hood, Texas. In February 1988, he graduated from Officer Candidate School as a distinguished military graduate and was commissioned as a second lieutenant in the Quartermaster Corps. He earned a Bachelor of Science in Business Administration from Virginia State University and Masters' Degrees in Public Administration from Central Michigan University, and Military Studies from Marine Corps University. He also is a graduate of a Senior Service College Fellowship—Secretary of Defense Corporate Fellows Program.

Aligning the Sustainment Warfighter Function with FM 3-0



■ By Maj. Gen. Mark T. Simerly

Strategic competition is an enduring condition. Army service component commands (ASCCs) significantly contribute to the joint force in conducting unified action during competition. The new edition of Field Manual (FM)

3-0, Operations, dated October 2022, adds a fourth level of warfare to highlight the roles of ASCCs during competition. FM 3-0 also describes the strategic framework that provides the construct in which the Army conducts operations. The purpose of this article is to discuss the levels of warfare, the strategic and operational frameworks, the sustainment implications at the theater strategic level, and Combined Arms Support Command's (CASCOM) approach to align the sustainment warfighting function (WfF) with the theater strategic level of warfare described in FM 3-0.

Levels of Warfare

The levels of warfare provide a framework for defining and clarifying the relationships among national objectives, the operational approach, and the tactical actions

to achieve national objectives. FM 3-0 displays the levels of warfare and highlights the expansion of the strategic level of warfare into national strategic and theater strategic. The expansion is necessary to highlight the distinct differences between actions at the national level and those unique actions conducted by an ASCC within a theater.

The national strategic level of warfare focuses on developing and formulating national strategies and strategic military plans that inform combatant commanders' strategies and identify capabilities and the sustainment to support those strategies and plans. Headquarters, Department of the Army, and Army commands focus on the tasks and functions as part of the generating force to deliver capabilities for employment by the combatant commands.

The theater strategic level of warfare focuses on the combatant commander's vision for conducting continuous theater campaigning to set conditions for operations. ASCC, as the land component, focuses on the tasks and functions to set the theater and conduct operations that contribute to unified action through multi-domain operations in support of the combatant commander.

Strategic and Operational Frameworks

The strategic framework shown in Figure 3-2 includes four areas (strategic support area, joint security area, extended deep area, and assigned operational area) that account for the connection of strategic capabilities to operational- and tactical-level operations. The strategic framework highlights the importance of the joint security area in relation to the intratheater area of responsibility (AOR) designated to conduct large-scale combat operations (LSCO). It also identifies the importance of the connection of the AOR to the strategic support area, defined as any area outside of the designated AOR known as the intertheater area.

The operational framework distinguishes assigned operational areas at any echelon by identifying the deep, close, rear, and support areas required to conduct operations. This representation identifies the requirement to address tasks and functions regarding the battlefield geography

that may include contiguous or noncontiguous operational areas. Assessing the framework based on the operational environment from a sustainment perspective allows for formulating an operational approach that provides a unifying purpose to focus operations.

Sustainment Implications

The implications to sustainment in terms of the identification of the fourth level of warfare and the refinement of the strategic and operational frameworks require aligning the operational requirements with the sustainment functions at echelon to ensure continuous sustainment operations in support of LSCO. In the short term, it is important for the sustainment WfF to set conditions during competition below armed conflict to help enable the potential for transitions to crisis and armed conflict. While setting a theater, it is important to look at the capabilities, tasks, and functions of the current task-organized theater sustainment command (TSC) capability assigned to the ASCC to provide operational-level sustainment support within an assigned AOR.

The TSC integrates and synchronizes sustainment operations for the Army theater, including all Army forces forward stationed, transiting, or operating within an AOR. This equates to setting conditions to perform the four operational sustainment responsibilities to support forces in theater: theater opening, theater distribution, sustainment, and

In the short term, it is important for the sustainment warfighting function to set conditions during competition below armed conflict to help enable the potential for transitions to crisis and armed conflict.

theater closing. With the current force structure, the forward stationing of capabilities and host nation agreements are essential to building the support infrastructure and sustainment nodes required to conduct LSCO.

Medium-term sustainment implications focus on the importance of developing the connection of support functions and tasks at the national and theater strategic levels in a contested multidomain operational environment and the challenges of executing sustainment over distance, in an information

cyber-centric battlefield, from the national industrial base to the theater of war. The ability to see, manage, and sustain military power requires unity of effort, visibility, and rapid and precise response through hardened networks that hinder the enemy's ability to interdict. This relies on the ability and skill of sustainment operations to understand when they have become targets of opportunity and how to react to those challenges in a contested anti-access area denial operational environment.

The ASCC and the TSC assigned to each geographical

combat commander must focus on the tenets of agility, convergence, integration, and synchronization, as described in FM 3-0, when establishing sustainment support at the theater strategic level of warfare. The long-term sustainment focus should consider the ability to coordinate and deconflict the flow and movement of sustainment support over time and distance in a contested dynamic autonomous/semi-autonomous battlefield environment. The ability to secure the information and cyber domains to support the flow of sustainment while maintaining connectivity and

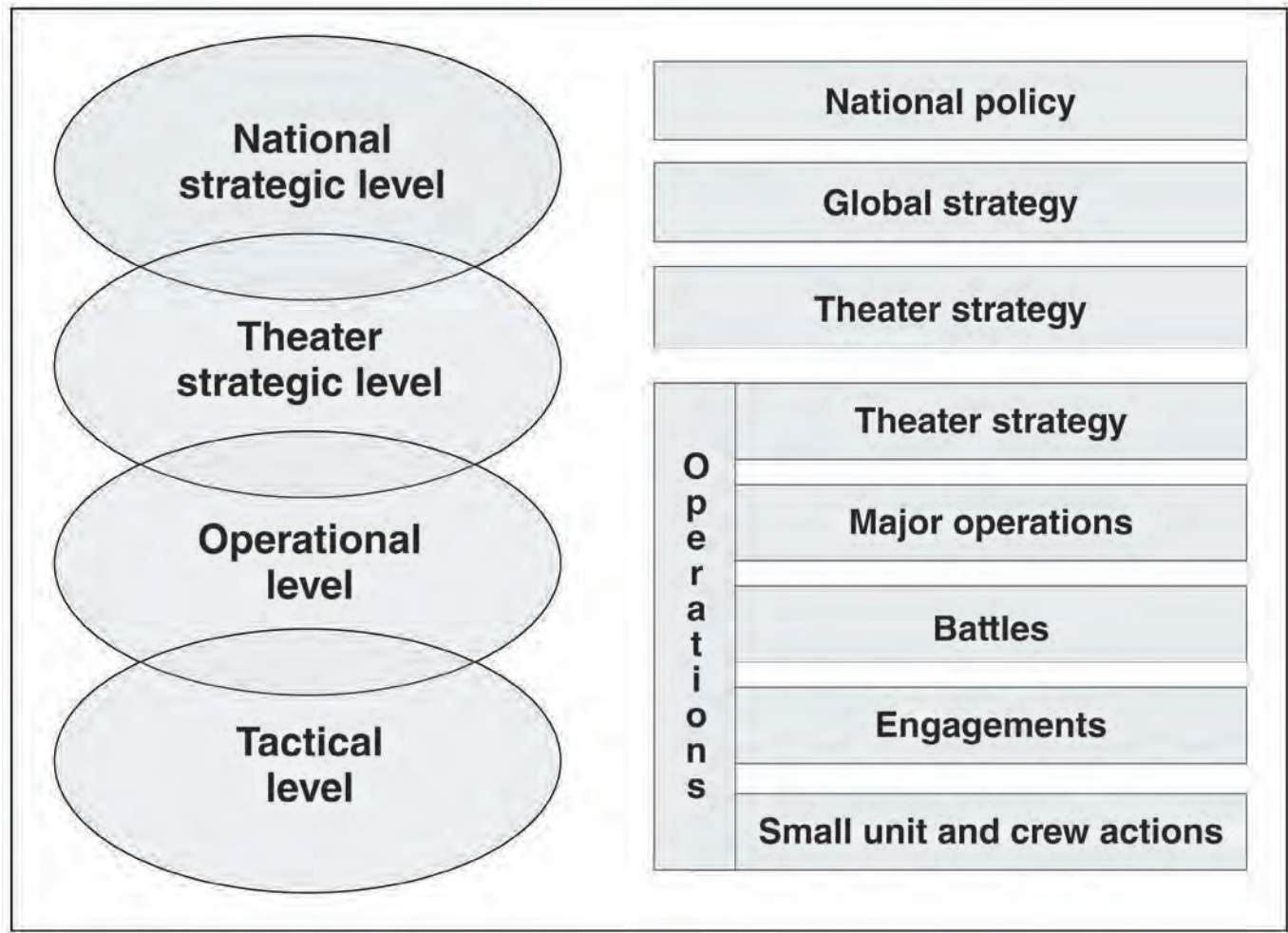


Figure 1-2 of FM 3-0. Levels of warfare. (U.S. Army Graphic)

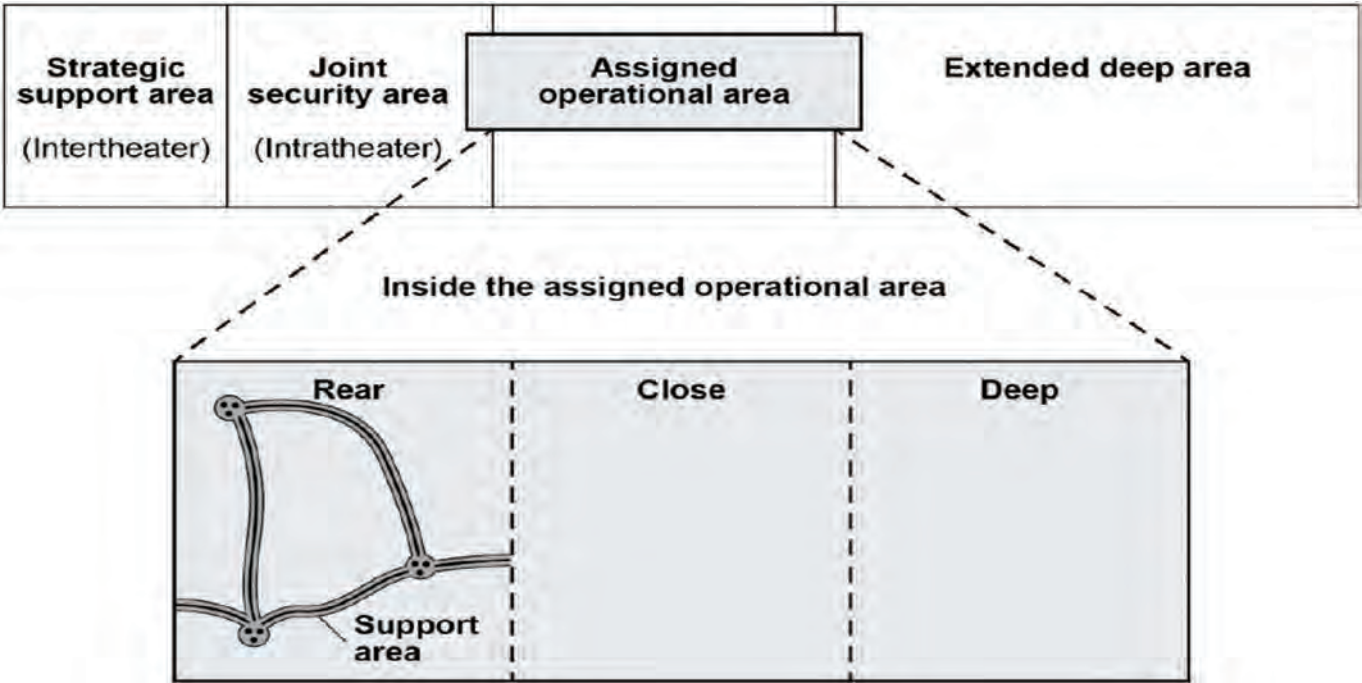


Figure 3-2 of FM 3-0. The operational framework in the context of the strategic framework. (U.S. Army Graphic)

reducing the demand for supplies forward is essential to sustaining a future fight over distance.

Aligning the Sustainment WfF with the Theater Strategic Level of Warfare

To address the theater strategic level of warfare, CASCOT focuses on developing the five sustainment lines of effort: resilient and integrated sustainment mission command; assured rapid power projection; set the theater; industrial base modernization; and sustainment for distributed operations. The development of the echeloned doctrinal manuals that include Army Techniques Publication 4-93, Theater Sustainment Operations, and the revision of FM 4-0, Sustainment Operations, focuses on the purpose of sustainment operations based on

the level of warfare by identifying the roles and responsibilities of organizations to conduct sustainment tasks and functions for each element of the sustainment WfF (logistics, finance and comptroller operations, personnel services, and health service support).

The Army, in multidomain operations, focuses on identifying the tasks and functions required to conduct operations. To set conditions for success in competition, the Army draws a distinction between the national and strategic levels of warfare. This allows the sustainment WfF to identify the tasks and functions to provide seamless sustainment operations across the levels of warfare. This highlights the connection of the operational framework and the importance

of the continued development of sustainment lines of effort and doctrine to support the warfighters.

Maj. Gen. Mark T. Simerly serves as the commanding general of the Combined Arms Support Command at Fort Lee, Virginia. He previously served as the commander of the 19th Expeditionary Support Command. He was commissioned as a lieutenant of Air Defense Artillery and awarded a Bachelor of Arts Degree as a Distinguished Military Graduate from the University of Richmond. He holds a Master of Science in National Resource Strategy from the National Defense University and a Master of Military Arts and Sciences Degree from the Army Command and General Staff College.

Meeting the Arctic Challenge

An Interview with Maj. Gen. Brian Eifler

■ *By Mike Crozier*



The 11th Airborne Division traces its roots back to World War II, when it was first activated to assess the potential of large-scale Army airborne formations. With just one parachute and two glider infantry regiments to its name, the Arctic Angels first saw combat in the Philippines as part of the XXIV Corps conventional infantry before playing a pivotal role in the Liberation of Manila near the war's end. While the 11th Airborne has had its colors cased since 1965, current Army senior leaders sought its reactivation in May of this year. Just one month later, on June 6, U.S. Army Alaska (USARAK) was reflagged as the 11th Airborne Division, reigniting its storied history as it seeks to carry out guidance set forth in the Army's Arctic strategy. While this year has been one of stark transition for Maj. Gen. Brian Eifler, the 11th Airborne's commanding general made time to sit down with *Army Sustainment* to discuss the strategic, operational, and tactical challenges and opportunities an Arctic environment presents to the Army and joint force.

This June, the Army activated an airborne division for the first time in 70 years and redesignated U.S. Army Alaska as the 11th Airborne. Even though changes to force structure won't be immediately realized, how has this new identity impacted your team's mission and culture?

Everyone who joins the Army does so because they want to be a part of a team with a unique mission that demands your very best in support of your country. Reflagging as the 11th grants us that firm identity and helps ensure our collective purpose and mission. Looking back on our days as USARAK, we found ourselves seeking to act like a division even though we didn't technically have the label. That misalignment didn't seem to make sense to Soldiers or Army senior leaders, so bringing the 11th back from its history of World War II excellence created quite the flare up here in Alaska; we can serve as another airborne division in a strategically unique setting. This reflagging felt like a reckoning of what we actually have, are capable of, and will be asked to do for the Army. We have an extremely unique mission set. Not only do we support our partners in the Pacific, but we are also called to be

the Army's extreme cold weather and mountain experts who will pilot, test, and help develop the force structure and equipping concepts for an Arctic division. This has certainly created a buzz that has been felt throughout the ranks here that goes beyond just an updated patch. Many of our most critical force structure initiatives are in motion. An example is our division staff. USARAK itself was largely a garrison staff with limited operational capability. To build the division's operational capability, we will forge a division sustainment brigade. Furthermore, we await the arrival of division artillery assets and an aviation headquarters. We're full steam ahead with the metamorphosis from garrison to division headquarters to develop and exercise the Arctic capabilities required for future conflict.

Has that transition played out as expected?

In many ways, yes, but this transition has extended backward from June 2022. In my first 90 days at USARAK, before we became the 11th, our team completed an assessment to identify what our strengths, weaknesses, challenges, and opportunities were in consideration with some of the issues present up here in Alaska, like those of mental health and substance abuse. We did this to gain a clearer picture of those challenges and their impacts on Soldiers and their families. What could we do to fix those behaviors? We kept coming back to the ground truth that USARAK needed a stronger sense of its identity, purpose, and mission. Was the answer clear to transition towards a division? Not necessarily, but it became clearer as a way forward further on in the analysis. Our mission up here in the Arctic is unique, important, and extremely challenging, and it takes a certain level of grit and perseverance to succeed in this environment. With that in mind, we needed something significant to unify all of us around that mission and circumstance. Frankly, reflagging as the 11th was even a bit more than I had hoped for, and I give immense credit to Gen. Charles A. Flynn (commanding general, U.S. Army Pacific) and Lt. Gen. Xavier T. Brunson (commanding general, I Corps) for their advocacy of our division status to most effectively serve the Army across such a vast distance. We also believe this transition will really operationalize the Army's Arctic strategy, and those wheels were in motion well

before June. This winter, we hosted a Joint Pacific Multi-National Readiness Center exercise where we tested and verified our units' and partners' ability to deploy, fight, and win in this extreme environment. We're now focused on maintaining that momentum since the transition has been made official, but we have a long way to go. For so long, we were rotating back and forth to Iraq and Afghanistan, so we really didn't focus on the Arctic. However, we're back training in that climate, redeveloping our calluses again and getting back our ethos to do what we need to do with our missions both in the Pacific and the Arctic.

What will the 11th Airborne need to be successful as a division?

We're going to have to develop a modification table of organization and equipment (MTOE) that's a bit different from other divisions. We recognize this will come with its own set of challenges, but I don't believe we can just carbon copy other airborne or light infantry MTOEs; a unique Arctic-specific set should be something to seriously consider. This means change, which is challenging, and even more so when you're trying to splice by division. A lot of what works elsewhere in the lower 48 may not work up here in the winter, and we're committed to being the Army's cold weather and mountain warfare experts. Other Arctic countries like Norway, Sweden, and Finland want to work with an Arctic U.S. force that trains and is an expert in the conditions pertinent to the environment, and we certainly fit that bill. The next, and enduring, step is to ensure we secure resources to match our requirements. As I mentioned earlier, the best case for demonstrating that need is by simply experiencing the Arctic. That environmental harshness should help us clearly prioritize what we need to be successful compared to divisions in the lower 48 or elsewhere.

In 2021, the Army released its Arctic strategy, "Regaining Arctic Dominance." The document outlines the need for sustained "robust logistics" to achieve the Army's operational and strategic objectives. How does the 11th Airborne define robust as it postures and trains for large-scale combat operations against a near-peer adversary?

Every logistics task has its own unique set of challenges in the Arctic. In fact, right now our logistics force is split between bases. There are 350 miles between Fort Wainwright and Joint Base Elmendorf-Richardson, and we have a large combat sustainment support battalion (CSSB) split between those two disparate locations. That's a challenge in itself, but it becomes an even bigger deal when our winters are in full force. Frankly, it can be lethal and extremely high risk, so you must be robust in this sense by having contingency plans for any routine task or movement that is made difficult by our conditions and distance. Right now, we do not have a sustainment brigade, which hampers our ability to resolve complex sustainment problems within a dedicated staff. When we have that structure in place, everyone will benefit, including those of our brigade combat teams. We'll be able to effectively and efficiently break down some of these more complex logistics problems and execute our required tasks as we modernize in tandem. From a logistics perspective, we'll continue to rely primarily on aerial delivery to preserve offensive momentum, extend operational reach, and hold terrain. We will have some over-the-snow capability as that develops, and that will include sustainment and resupply capabilities. It's a fantastic undertaking that we're a regional combat training center now, but there are challenges that arise without a dedicated sustainment brigade to support its operations, like the 916th Support Brigade at the National Training Center. While our CSSB is certainly carrying its weight, standing up the sustainment brigade in the future will add a lot to our robust capability set as our command-and-control element aligning those smaller units within the CSSB currently.

When compared to your time at the 10th Mountain and the 25th Infantry Divisions, what's different about training and equipping the 11th in an Arctic environment as you drive toward a point of being Arctic capable and dominant?

The Arctic environment is probably the harshest on the planet—if you can train, operate, and lead here, then I believe you can do so anywhere. Serving in the tropics or jungle, as the 25th is called to do, comes with a suite

of extreme challenges as well, and the same can certainly be said for the 10th when you throw frigid mountain ranges into the equation. What each does well in unison, I believe, is focusing training and equipping priorities to meet and exceed their environment's demands. Up here in Alaska, considering the great forests and mountain ranges around us, we've changed our whole training mentality to fit the environment. Training seasonality ensures we're leveraging the coldest months to make our training more realistic and demanding, since normal tasks in different climates are anything but up here. In the Arctic, changing a windshield wiper in -50 F temperatures is absolutely a significant event. Essentially, we must be innovative in everything we do that may seem like standard day-to-day elsewhere. When I was at Fort Drum, New York, with the 10th Mountain, we liked to refer to ourselves as a blue-collar division, and I think the same ethos is felt with the 11th. We can't just go out and train for the sake of it in many cases, as you have to think differently. The conditions are hard to experience until you're in Alaska and feel that intense cold on a winter's day. The speed of war has already accelerated, but that doesn't alter the challenge of our environment. We have to be ready no matter what, and that starts with training that stresses us in all the right ways to achieve that expected dominance.

Quality of life issues for Soldiers and their families have been front of the collective mind the last few years. What are some of the key initiatives you are pursuing for the Arctic Angels to connect Soldiers and their families while they are serving in the unique Alaskan environment?

The most important thing that's come from this transition is our new shared identity. Without that, it's hard to build cohesive and lethal teams. Our largest and most impactful program, Mission 100, has had its greatest effect at the smallest unit level possible, its key byproduct being that troops have complete trust in each other and their leaders. Mission 100 is our campaign to connect 100 percent of our Soldiers and leaders with each other—leaders contact 100 percent of our Soldiers' spouses or next of kin, and 100 percent of our Soldiers receive a wellness check from behavioral health or

military family life counselors. We've seen a large drop in the number of suicides this year, but our work on this cannot stop until that number is and remains zero. The Army recognized a problem here, and they surged the resources necessary to get after its root causes. What's been so enduring about Mission 100 is its uptake and buy-in at all levels, which is just so critical. We've made this a priority across the division. In fact, it's more important than anything. Everyone went to a counseling session to help us defeat the stigma of receiving help, and we're seeing that about 25 percent of people got help that would not have received it otherwise without this program. The second- and third-order effects of this are playing out, too, which is a huge boost. Soldiers know they have a safe place to talk to someone and they can bring their families into that when needed, too. Outside of that specific programming, we were able to get most of the division out in the field for training this winter, which was a huge positive for our readiness. Soldiers were excited for the challenge, and they're excited for more. If you're seeking a challenge, this is the place to be. I believe Soldiers recognize that while also understanding that the Army is ready to support them to the fullest extent possible while they're in Alaska ensuring our Arctic force is ready now and for the future.

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

Feature Photo
Maj. Gen. Brian Eifler, commanding general of U.S. Army Alaska, conducting a battlefield circulation and talking with Soldiers, encouraging them for their efforts during a force-on-force exercise with their Norwegian allies during Exercise Swift Response, May 11, 2022, at Setermoen, Norway. (Photo by Spc. Kendall Lewis)

Water Mitigations in the Arctic

JPMRC 22 Offers Sustainment Lessons Learned

■ By 2nd Lt. Nathan Bedel

Joint Pacific Multi-National Readiness Center (JPMRC) hosted its first Arctic Regional Combat Training Center (CTC) rotation in March 2022 at Fort Greely, Alaska. This first-ever Arctic Regional CTC faced harsh winter conditions, with temperatures ranging as low as -30 F, and exposed a critical capability gap in the U.S. Army's current doctrine and tactics, techniques, and procedures (TTP) regarding bulk water storage and distribution. Building on lessons learned during Arctic Warrior 21, the 725th Brigade Support Battalion (BSB) experimented with several solutions to overcome extreme cold weather (ECW) to keep bulk water liquid. Some of the battalion's

innovative approaches were more successful than others. All of them come with operational costs that commanders and planners must understand and balance when planning sustainment in ECW. This article describes ECW effects on Army bulk water sustainment, describes implemented solutions and their efficacy, and proposes a different approach to bulk water sustainment that is worth exploring.

ECW Effects on Water

Keeping any quantity of water liquid under ECW conditions is extremely hard, if not nearly impossible. In 2021, 4th Brigade Combat Team (Airborne), 25th Infantry Division executed Arctic Warrior '21—a battalion task

force with enablers conducting an airborne assault at Donnelly Training Area near Fort Greely, Alaska—and saw ambient temperatures as low as -65 F and sustained sub-zero temperatures ranging between -35 F and -10 F. The 725th BSB established a forward logistics base supporting the exercise and struggled to maintain liquid water throughout the operation. Load handling system compatible water tank racks (Hippos) and the unit water pod system (Camel) were simply overwhelmed by the elements. The BSB main and forward support companies were forced to completely drain their water tanks once distribution was complete, resulting in an unrealistic overreliance on the forward logistics base's water point.

The BSB experimented with placing a Hippo in a heated maintenance tent and saw mixed results as even a heated maintenance tent struggled to provide enough warmth at -65 F.

While JPMRC 22-02 did not see such extreme lows, it did face sustained sub-zero temperatures that challenged both Soldiers and equipment. Put simply, current Army bulk water storage containment systems cannot cope with these extreme temperatures and are quickly overwhelmed, resulting in frozen bulk water. Water Buffalo and CamelBak water systems in U.S. Army Alaska (USARAK) are modified with the addition of fuel-fired heating systems for ECW operations. While these additional heating systems help retain liquid water in extreme cold, they have limits. Water Buffalos freeze at 20 F, Hippo at 10 F, and Camels at -2 F. Frozen water wrought havoc on the Hippo, specifically the plastic distribution components. Residual water in distribution pipes quickly freezes, causing ball valves to freeze and plastic handles to break. Our Hippo training student guide calls for preheating an empty Hippo and draining water from distribution valves before and after water distribution. This alleviated some issues but did not resolve broken handles and some other damage. Other modifications, such as using insulation blankets wrapped around distribution pipes, are less effective. Insulation blankets under true ECW conditions freeze quickly and do not provide adequate insulation, resulting in damaged equipment. The guidelines seem more suited for winter conditions

in temperate locations. A complete relook at ECW guidelines may be required.

Mitigation and Experimentation

725th BSB mitigated some of the mentioned shortcomings by enclosing one Hippo in a heated tent. In this instance, A Company placed the Hippo at the desired location and established two 20-foot A-frame shelters end-to-end, with floors removed, over the Hippo. Bullet heaters and Easyheat pipe heaters, a commercial off-the-shelf (COTS) government purchase card (GPC) purchase, were installed. This created a climate-controlled environment capable of maintaining an average of 56 F and kept water liquid. A short-term solution would be to request U.S. Army Tank-automotive and Armaments Command authorization to drill a small hole in the top door to insert internal heaters and sanitize.

Placing Hippos in tents proved effective, but this solution comes with operational costs. First, mobility is inhibited because it takes time to set up and tear down the location and achieve adequate temperature. It took approximately 90 minutes to establish the site with tents and heater. However, breaking the site down took approximately five hours because the warm tent melted snow that then froze the tent to the ground once the heat was turned off. Soldiers had to break the ice to move the tent, which was time consuming and laborious. Additional equipment is required (two tents per Hippo, plus generator and heaters), which requires space on

vehicles for transport. Current tents and heaters being utilized are either the common table of allowance or COTS, meaning units are not funded to purchase or maintain these items. Long-term solutions under this model require the table of organized equipment changes. Another material solution is improving the Hippo capabilities to effectively function at -60 F temperatures, thus eliminating the requirement for tents, heaters, generators, and truck space.

Ice

Another approach to bulk water challenges is to work with nature instead of against it and ship bulk ice instead of attempting to keep water liquid. Other arctic counties, such as Norway, distribute ice on trucks and line units thaw it forward. USARAK Soldiers are already trained to melt snow for supplemental drinking water, so training them to melt bulk ice would be an easy transition. Additionally, ice is far more efficient at producing water than snow because snow consists mostly of air, whereas ice is nearly a one-for-one, i.e., a gallon of ice produces a gallon of water. Experimentation is required to develop doctrine, equipment, and TTPs such as what vehicle is used to move the ice, what sized ice blocks are best suited, where ice is formed and thawed in the supply chain, and how it is sanitized for consumption, but the basic concept of moving ice is fairly simple.

One proposed method is to freeze ice in cylindrical shapes less than 2.5 inches in diameter



Heating equipment for the Hippo is placed inside a shelter during Joint Pacific Multi-National Readiness Center 22-02 rotation on March 25, 2022. (Photo by Sgt. Equonie George)

and 8.25 inches long. This shape and size allow the ice to be placed directly in the Soldier's canteen with insulated carrier. Enough space remains between the bottle and carrier to place a commercial hand heater powered by either batteries or a chemical reaction. The specific amount of energy required to melt the ice is to be determined. Cylindrical molds could be produced in a modular rack system that could be transported on a containerized roll-in/roll-out platform, in a medium tactical vehicle, or on a towed sled to the company trains and stored or distributed there. Soldiers then use their canteen and heater combination to produce potable water.

Another solution is to produce 5-gallon blocks of ice cylindrical in shape that could melt over a modern burner unit in an Assault Kitchen. This would produce ice more efficiently but would also weigh more than 40 pounds per block. Other solutions exist; these are simply two to begin the creative thinking process.

Moving forward

Bulk water operations in ECW conditions are much more difficult than in temperate climates. Even with integrated fuel-fired heating systems, the cold quickly overwhelms current bulk water assets. While 725th BSB's experimentation creates solutions, they are still flawed. Bulk water must be able to quickly react

to the operational environment, and COTS or GPC purchases require initial investment and support.

Solutions to bulk water in ECW include adopting Norway's ice strategy or improving the operating temperatures of current equipment. Other viable solutions remain unexplored, but our question remains: what is the best way to get potable water to line units in ECW?

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OPERATION NORTHERN STRIKE

Provides
Realistic
Rigorous Sustainment Training

■ By Col. Carrie Perez, Lt. Col. Matthew Fronek, and Maj.
Victor Lauersdorf



In August 2020, the 36th Sustainment Brigade (36th SB) command and staff began searching for a realistic training event to prepare for the fiscal year 2022 mobilization. When forward deployed, the 36th SB bridges the gap between strategic and tactical sustainment. After assessing the mission requirements of a solitary sustainment brigade supporting an entire geographic combatant command, one training event met all the requirements.

The 36th SB selected Operation Northern Strike (NS) 21-2 at the National All-Domain Warfighting Center (NADWC), Camp Grayling, Michigan. With 148,000 acres of dedicated maneuver space, 337 kilometers of restricted airspace, a railhead, an Army airfield with two 5,000-foot runways, garrison facilities, and large ordnance range complexes to match the best any installation has to offer, Camp Grayling stands alone. The facilities, coupled with multifunctional, multicomponent, multiagency, and multinational annual training events requiring committed sustainers, was too hard to resist. Ultimately, NS presented the best live, virtual, and constructive training environment to facilitate a brigade headquarters external mission essential task (MET) evaluation and replicate the rigors of forward sustainment operations before mobilization.

NS also facilitated an external MET evaluation of the sustainment brigade headquarters and presented the most operational environment

variables in live, virtual, and constructive formats for mobilization validation. First Army Division West provided the observer controller—trainer (O/C-T) personnel to validate Department of the Army directed METs. The 1st Theater Sustainment Command (1st TSC) and First Army Division West played critical roles by scripting training scenarios based on current U.S. Central Command (USCENTCOM) sustainment operations.

Exercise Creation

The exercise planning and coordination actions leading to NS 21-2 execution proved vital to ensuring necessary collaboration between supporting and supported units. All units, including 36th SB, collectively shaped the exercise scope and structure to meet all command training objectives through deliberate coordination and partnering. This was not just a happenstance. The NS operations team, a full-time contingent of the Michigan Army National Guard (MIARNG), manages the planning, initial support, and collaboration between exercise participants through a deliberate scheme of programmed pre-execution events. These collaborative planning events begin twelve months before each annual iteration of NS. The planning cycle value for the command and staff and the MIARNG support to assist units in meeting their training objectives cannot be overstated.

These events allowed collaboration with all exercise higher, adjacent, lower, supporting, and supported participants in shaping the brigade's

overall training requirements to most effectively prepare for forward deployment. Throughout the planning, the brigade included elements of the 1st TSC acting as a higher command element and First Army Division West providing O/C-T personnel and equipment support for external mobilization validation MET assessments.

Exercise Partners

After completing necessary coordination with and through the support of the MIARNG NS Operations Team, the 36th SB participated in NS 21-2 from July 27, 2021, to Aug. 14, 2021, serving as the theater opening, distribution, and sustainment element for Joint Task Force (JTF) 85. For NS 21-2, JTF-85 assembled a ground maneuver task force of more than 3,400 multiagency, multi-compo, and multinational personnel engaged in a decisive action training environment built to replicate the rigors of large-scale combat operations (LSCO). The JTF-85 capabilities included infantry, field artillery, medical, combat aviation, signal, and special forces elements assembled into brigade-level elements from the Active Army, Army Reserves, Army National Guard, United States Marine Corps (USMC) Reserves, Latvian army special forces, United Kingdom defense force, Liberian army, and Taiwanese army. The 36th SB served as the sustainment command and control (C2) element to execute expeditionary sustainment support for JTF-85, ensuring flexibility and operational reach during the LSCO scenario.

Expeditionary Deployment

Participation in NS 21-2 required the brigade to conduct a modified table of organization and equipment deployment over 1,500 miles from the home station utilizing a combination of rail, air, and over-the-road lines of communication to forward deploy more than 250 pieces of equipment and 500 personnel to the JTF-85 division consolidation area. This capacity allowed the brigade to build theater sustainment infrastructure supporting the operation's combat power generation and initial commodity stocking objectives. This operation emanated from Fort Hood, Texas, and Gray Army Airfield, stressing the unit's ability to project sustainment capability forward in preparation for deployment. In just under 12 hours, 36th SB offloaded the same pieces of equipment safely with only two ramps at the Camp Grayling rail spur.

Joint Reception, Staging, Onward Movement, and Integration

Once at the NADWC, 36th SB established theater gateway operations as part of the theater opening requirements by employing the unit's organic sustainment troops battalion and subordinate human resources, finance, cargo transfer, and medical capabilities. Higher staff coordination elements successfully executing joint reception, staging, onward movement, and integration (JRSOI) included the 36th SB S-1, S-4, and support operations (SPO) human resources operations branch (HROB). Without the synchronization and resourcing across brigade and battalion staff,

critical requirements of the JRSOI could have proven immensely challenging.

Understanding the time-phased force deployment data and equipment density arrival dates to the NADWC allowed the HROB to facilitate JRSOI of forces and equipment packages that arrived on schedule and more easily adjusted to late arrivals. The 36th SB JRSOI operations supported combat power generation of 20 units, over 3,400 personnel, and more than 2,000 pieces of equipment ready to project forward into the fight.

Establishing Sustainment

Concurrent with JRSOI actions, the brigade established theater stocks of Class I, III, and V to ensure seamless support to JTF-85 during the operation. The 36th SB managed stockage levels and anticipated requirements by using logistic management tools to calculate burn rates collected during a series of pre-execution logistics planning meetings. Before arrival, the brigade developed and published a multi-compo, multiagency task organization, ensuring subordinate sustainment units were aligned and postured to support battlefield requirements.

After the theater sustainment task organization was established and the initial theater concept of support drafted, the 36th SB conducted a final theater sustainment rehearsal of the concept with all supporting and supported units at Camp Grayling. The event proved critical in describing and refining the optimal theater concept of support. Before execution,

the 36th SB SPO staff established a logistics common operating picture to facilitate command and subordinate unit situational understanding while managing limited resources to facilitate freedom of maneuver.

During this expeditionary deployment and theater opening phase, the NADWC effectively turned over complete control of all base support nodes to the 36th SB. The brigade managed the JTF-85 support area Class I breakpoint, ammunition supply point, fuel farm, railhead, central receiving and shipping yard, motor pools, pass-back maintenance bays, supply support activity warehouse buildings, as well as garrison medical, housing, and administrative facilities. This decision enabled the SPO section to gain invaluable experience managing real property facilities and conducting physical commodity management. The NS exercise director's decision to allow 36th SB to physically manage properties and commodities resulted in increased training and readiness as the unit postured for forward success in the USCENTCOM area of responsibility (AOR).

Theater Distribution and Sustainment

During NS, the 36th SB was tasked to run the JTF-85 division support area in a dynamic and complex operational environment with near-peer enemy opposing force enablers, including hybrid threat, cyber, electronic warfare, air defense, and intelligence-surveillance and reconnaissance elements. The SPO ensured theater commodity levels

did not drop below the levels needed to sustain combat operations in this non-permissive threat environment.

Exercising boards, bureaus, centers, cells, and working groups (B2C2WG) along the SPO's critical path during the daily logistics sync, distribution management boards, and operations sync proved critical in managing the flow of supply pipeline commodities and effectively managing theater distribution systems throughout the AOR. Unlike a warfighter exercise (WFX) or any previous training exercise in which the 36th SB participated, real situations and problems stressed the staff to conduct deliberate analysis and develop courses of action. These challenges tested the limits of the sustainment brigade SPO staff and led to internal process improvement gains and experience that cannot be understated.

One example of a complex theater commodity management and distribution challenge was the late addition of a USMC Reserve rotary wing unit two days before execution. This additional unit impacted the theater Class III bulk projections, causing distribution and bulk holding capability challenges. The USMC rotary wing unit's platforms, four CH-53E Super Stallion heavy-lift helicopters, required 15,000 gallons of fuel every 48 hours. As the theater bulk storage capacity was only 30,000 gallons and average ground forces bulk fuel consumption was 10,000 gallons, only 5,000 gallons would be left in reserve after D-Day, and host nation bulk fuel delivery was on a 48- to 72-hour window. This

situation threatened to deplete theater Class III stocks within 48 hours and immobilize the task force. To overcome this possible Class III shortfall, the SPO staff cross-leveled all 30,000 gallons of bulk fuel from the theater fuel farm to organic mobile platforms and scheduled host nation bulk deliveries every 48 hours. This reset the theater fuel capacity to 60,000 in static and mobile platforms and ensured that Class III bulk stocks remained in sufficient quantities to sustain the fight. Several similar realistic challenges occurred during the operation, testing the SPO staff's flexibility and management acumen.

Due to the rigors of NS, definitive gains were realized in the SPO staff's understanding of the critical path B2C2WGs, SPO SOP updates, internal section synchronization, and overall staff capability. The 36th SB ordered, managed, and distributed over one million pounds of physical bulk commodities by ground and air, including Class I, III, IV, V, VII, and IX, to support NS 21-2. No WFX, command post exercise—functional (CPX-F), or other virtual/constructive scenarios can replicate the actual physical supply management and distribution experience, the physical field service execution, or the maintenance and recovery experience that NS provides for sustainment elements at the NADWC.

Deployment of the Brigade Early Entry Command Post

When deployed, sustainment formations require agile and flexible sustainment and expeditionary command post capabilities. During the

exercise, and while providing seamless sustainment support, the brigade staff forward deployed the brigade early entry command post (BDE EECP) by conducting a tactical road march using USMC mobile assault squads as convoy escort teams, leveraging multi-unit training opportunities. The BDE EECP team completed a tactical road march and established the BDE EECP to full operational capability within four hours of occupation. The training experience and capability proved critical upon deployment. While deployed, the 36th SB seamlessly established an expeditionary command post using air and ground lines of communication in the Kingdom of Saudi Arabia to support 1st TSC initiatives and in support of Exercise Native Fury 22.

Innovation and Emergency Resupply Training

The 36th SB also had the unique opportunity to plan and participate in two non-standard distribution missions during NS 21-2. These opportunities provided the staff experience with innovative approaches to overcome unique distribution challenges the unit may face in the USCENTCOM AOR. First, the SPO staff planned a Class V resupply mission supporting an Army Futures Command commissioned study. This mission evaluated the current Army supply system's ability to resupply the new M1299 Extended Range Cannon Artillery (ERCA) platform, helping to find resupply solutions due to the ERCA higher rate of fire. The SPO materiel management, transportation, and distribution integration branches worked in tandem to plan, organize,

and execute a 155mm resupply mission utilizing multiple transportation and material handling equipment resources. The Alion Group, contracted to complete the study by Army Futures Command, praised the effort and fidelity of data collected.

Secondly, the SPO mobility and distribution integration branches planned and resourced the first sequential heavy-drop aerial resupply executed solely by compo 2 forces (Army and Air National Guard). The aerial delivery mission required emergency resupply of two M997 high mobility multipurpose wheeled vehicles and two meals ready to eat pallets to maneuver forces from the intermediate staging base at Selfridge, Michigan, to the drop-zone at Grayling, 214 miles into the joint operations area. The mission proved highly successful and demonstrated the SPO staff's ability to support emergency aerial distribution operations before mobilization.

Innovation and modernization are critical for future sustainment. Numerous advances in supply chain management are rapidly occurring with innovative distribution and autonomously driven vehicles such as leader-follower technology. The modernized sustainment force structure could employ these innovations at scale and in practical application. Operation NS should be a model for the design-to-fielding cycle within the training frameworks afforded by this exercise.

Primary Staff Training Gains

Success at NS demands the full commitment of every section of the

sustainment brigade. Again, unlike average collective training field problems or virtual/constructive events like a WFX or CPX-F, NS truly tests a unit's ability to function as a collaborative team in a wholly expeditionary environment without any sort of garrison base-stock of commodities, support directorates, or home-station facilities to run back to and save the day when something is forgotten or goes wrong. There is no room for error when executing NS, just like in the forward deployed environment. If you forgot to bring it or didn't coordinate for it to be delivered, you aren't going to have it during the fight when it is most needed. The staff sections continuously refine SOPs and improve efficiency through rigorous and parallel operations such as JRSOI, theater human resource operations, BDE EECP deployment, tactical operations center battle drills, mass casualty events, and continuous sustainment operations.

Brigade Commander's Assessment

The NS 21-1 rotation presented the optimal training opportunity for 36th SB. Specifically, culminating training events or WFX rotations lack the robust, realistic demands of supporting units engaged in operations. The NS 21-2 rotation prepared a sustainment formation, specifically at the brigade level, for the demands of forward deployment with physical units requiring support due to engagement in a rigorous scenario all set in a multidomain environment. NS 21-2 provided realistic and modern operational environment variables for the training audience. NS 21-2 also

provided a consistently demanding environment to build the staff and challenge leaders. NS 21-2 provided the opportunity to profoundly impact brigade staff and leader development in a rigorous, multidomain environment at the sustainment brigade. NS 21-2 included a higher command capable of stressing the sustainment brigade headquarters with the 1st TSC participation to replicate and inject the geographic combatant command requirements. The rigorous training demands of NS coupled with realistic support dilemmas are the best way to train and stress a staff before mobilization. Operation NS should be programmed as the exercise for sustainment force headquarters at the brigade and battalion echelons.

To access the full 36th SB NS 21-2 after action review and gain more insight into planning and executing a NS rotation for other units, contact the authors for the full AAR.

Col. Carrie Perez currently serves as the 36th Sustainment Brigade commander. Perez graduated from the U.S. Army War College and Joint and Combined Warfighting School.

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Feature Photo
Members of the Texas Army National Guard with the 36th Sustainment Brigade offload equipment in preparation for Northern Strike 21 at Camp Grayling, Michigan, on July 30, 2021. (Photo by Staff Sgt. Charles Robertson)



Setting Theaters for Multidomain Operations:

A Continuous, Cross-Continental Process

An Interview with Maj. Gen. James Smith

■ *By Mike Crozier*

Maj. Gen. James Smith serves as the commanding general of the 21st Theater Sustainment Command (TSC), the Army's largest sustainment command located overseas. A 1992 graduate of Christopher Newport University who commissioned as a chemical officer and was most recently the Chief of Transportation, Smith now leads the 21st TSC and its 10 subordinate units executing

all sustainment activity rendered in support of U.S. Army Europe and Africa. *Army Sustainment* sat down with Smith, who assumed command in June 2021, to discuss the challenges central to setting and resetting the European and African theaters for future conflict as well as opportunities the Army is undertaking to posture itself for contested and dispersed operations in varying environments across all domains.

We're over two years removed from Defender-Europe 20 and are preparing for its 2023 iteration. What were some of the key operational and tactical sustainment lessons learned borne from those exercises?

We've been running the Defender series since 2020. While its first iteration was truncated due to the onset of the COVID-19 pandemic, the exercise still generated readiness for participating units. Some units weren't able to deploy in 2020, so we ensured a more normal Defender in 2021 and 2022 to account for any potential atrophy. For us, we use Defender and linked exercises to demonstrate our ability to aggregate U.S. based combat power in Eastern Europe, build unit readiness in a complex joint, multinational environment, and leverage host nation capabilities to increase operational reach. I mention multinational and host nation because interoperability is foundational to everything we do and one of the most important sustainment lessons we continue to reinforce.

Realistically speaking, 21st TSC will continue to work by, with, and through our allies and partners in theater. Whether performing executive agent functions for other services, leveraging host nation support, or integrating logistics capabilities from multinational forces, it will not be a unilateral approach, in my opinion. The Defender series provides us with those opportunities to work closely with our allies and partners to expand our interoperability in all domains through technical, procedural, and human aspects. Perhaps obvious, but another function of Defender is demonstrating the expanded geographical area of operations here in the European theater. If you look back 20 or 30 years ago, our lines of communication weren't as long as they are

right now. We focused on the western portion of Europe, primarily in Germany. Over time we've expanded our mission sets from the Scandinavian countries, through the Baltics, all the way down to Greece. Our lines of communication and support that we're tasked to provide for units operating across that vast geographic area represent an immense undertaking. Being on the ground and understanding the movement corridors has given me a profound appreciation of the scope and scale of Team 21's daily sustainment mission.

The Defender series also allows us to rehearse large movements and exercise use of Army pre-positioned stocks (APS) to form the basis of another key lesson learned as we continually assess how we set the theater and leverage pre-positioned stocks in varying locations. What we're really asking ourselves is: are we effectively locating and utilizing our APS? By asking and answering this, we gain greater insight into where APS can increase our readiness and capacity for deterrence. Having units inventory, sign for, and employ APS exercises the equipment and builds muscle memory as we set the theater, especially on a fast timeline.

It seems like these key lessons are continuous in nature. Is that true?

I certainly think many of them are continuous; they are more constant refinements than major upheavals in many cases. One that's unique to our theater and one I didn't even have a great appreciation for until I spent some time here is the amount of coordination that has to happen when you're talking about cross-country boundaries. As I mentioned earlier, in some instances, we're moving from the High North all the way down to Greece. With this comes a wide array of considerations you have to keep front of mind, from diplomatic clearances and host nation support to escort requirements. There are a lot of policies, regulations, and guidelines that we have to follow to move equipment in and around the European theater, and even more considerations when we start talking about moving ammunition and explosives. We've got to work within the confines of the respective country's laws and policies, and as recently demonstrated, we have to be able to do all of that at the speed of war.



Sgt. Arnie Sampayan, 260th Transportation Detachment, 39th Transportation Battalion, 16th Sustainment Brigade, left, explains how the Distributional Retrograde Adaptive Planning and Execution Management Program is tracking all of the equipment being offloaded from the port in Esbjerg, Denmark, on April 6, 2022, to Capt. Zachary Zanetti, commander, 260th Transportation Detachment, 39th Transportation Battalion, 16th Sustainment Brigade, center, and Maj. Gen. James M. Smith, commander, 21st Theater Sustainment Command. The ability to deliver 3/4 ABCT equipment through port facilities in Alexandroupoli, Greece; Vlissingen, Netherlands; and Esbjerg, Denmark, demonstrates the strong relationships the U.S. Army has with allies and commercial partners in ports across Europe. (Photo by Eleanor Prohaska)

There is a lot of discussion in the transportation space about leveraging our infrastructure, such as seaports, to our logistic advantage through deception operations. From the 21st TSC perspective, how do you approach and operationalize that posture across the European theater in consideration of contested resources that have, historically, held firm as a key strategic advantage for the Army and Joint Force?

We frame that problem set with one guiding question in mind: how can I offer the combatant commander options for execution? From this, I have to ensure that they have enough options and flexibility to expand decision space to achieve their objectives. Part of developing options is, of course, port diversification. This boils down to our ability to identify where it makes the most sense to flow forces and associated equipment into the European theater. It's not just a matter of deploying to the continent on a

regular, predictable cadence and location. We're ensuring a deliberate port selection process, rehearsed during Defender under the assumption that we may have to do this in a real crisis. In addition to providing more options to the combatant commander, port diversification also allows us to assess a port's capabilities, to include determining infrastructure and reception, staging, onward movement, and integration (RSOI) requirements that are mutually beneficial to the 21st TSC and our partners and allies.

With the Army's shift toward a multidomain mindset comes the assumption of operating within and from a contested homeland. What does this new dynamic mean for theater-based operations undertaken by the 21st TSC? Does this alter the approach to setting the theater or receiving deployed combat power?

This assumption certainly upends the status quo. We are at a point, at least at the TSC level, where we're preparing to fight in multiple domains simultaneously. In a certain sense, we're already doing just that. Historically speaking, projecting cargo and personnel from the homeland has been mostly unrestricted, but this uninhibited capability most likely won't persist. We should assume that we're operating in a contested environment. From cyber threats to labor-based port disruptions, things certainly aren't business as usual. In the joint security area alone, which includes the theater's sustainment stocks and varying sea and aerial ports of debarkation, we're anticipating similar kinetic and non-kinetic threats. In response, we've established a joint security coordination center to integrate and effectively leverage each warfighting function to ensure we can sustain the fight across contested terrain and over time.



Maj. Gen. James M. Smith, commander, U.S. Army 21st Theater Sustainment Command, shakes hands with Denmark Lt. Col. Claus Klaris, officer in charge of port operations at the port of Esbjerg, Denmark, on April 6, 2022. (Photo by Navy Lt. Lauren Sucher)

Outside of port diversification, what are some other key interoperability initiatives central to sustainment?

As our Army transforms into a data-centric force, 21st TSC and the greater sustainment enterprise are also making great strides in this space. Pushing the mission partner environment down to lower formations across the 21st TSC extends collaboration at echelon amongst our NATO partners. Additionally, year over year, we're enhancing interoperability using logistic functional area services to synchronize multinational movement data and prioritize the use of critical transportation assets.

Sustainment interoperability also extends into the command and control domain. The 21st TSC works closely with the Joint Support Enabling Command, an entity under the NATO force structure charged with commensurate RSOI responsibilities for NATO. As I mentioned, a TSC does not operate alone, so having that visibility of our collective equities within NATO comes as a force multiplier with activities central to setting the theater.

Arctic or extreme-cold environments present challenges to force sustainment operations the Army may not have needed to prioritize since World War II. What are the most fundamental sustainment challenges in these environments? How are we, as an Army Sustainment Enterprise preparing ourselves to ensure our capabilities remain a key strategic advantage in the future fight?

There's much to consider on the sustainment side as we reframe our posture in the Arctic. One aspect that isn't necessarily unique to that region, but will certainly be front of mind, is how we sustain over vast distances. Can we identify and take advantage of avenues and key movement corridors to support units operating far north of the equator? Further, how can we extend our operational reach and ability to sustain those forces primarily from our Central European theater base? Again, setting the theater is a continuous

process. That won't change with new requirements in the Arctic, but the ways in which we execute our sustainment support that far north will have to account for the harsh environment. Everything from ensuring our Soldiers have the right cold weather gear to how we deliver and consume Class III products will come with environmental nuance.

21st TSC is focused on Europe, and its Arctic needs moving forward, but it also maintains joint security and support responsibilities to U.S. Africa Command's (USAFRICOM's) operations when directed. How are you balancing varying demands from two largely different areas of operation?

Our equities in USAFRICOM are, environment notwithstanding, similar to those in Europe. We're well-postured to provide exercise support and crisis response based on how we survey, set, and reset both theaters. The lessons learned I discussed earlier are, frankly, theater-agnostic in that sense. Partnering with and supporting Southern European Task Force—Africa keeps us nested with sustainment equities on the African continent.

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Feature Photo
Col. William Temple (center), 50th Regional Support Group (RSG) commander, gives a tour to Army Maj. Gen. James Smith (left), commanding general for the 21st Theater Sustainment Command, of completed and ongoing projects at Forward Operating Site Powidz, Poland, on Sept. 24, 2021. The 50th RSG is a Florida Guard unit from Homestead, Florida, deployed to Poland in support of Atlantic Resolve. (U.S. Army Guard photo by Sgt. 1st Class Shane Klestinski)



GROUND TRUTH

Senior Enlisted Soldiers Offer Perspective on Reshaping Medical Logistics

■ By Sgt. Maj. Monnet Bushner, Sgt. Maj. Francis Famularcano, Retired Command Sgt. Maj. Tony Flanagan, Sgt. Maj. Joel Lara-Baeza, and Master Sgt. Wesley Ladlee

Logistics is a strategic and methodical operation that takes effective planning, preparation, and future forecasting at all echelons to maintain and sustain readiness. While most aspects take place at the strategic level, it is the tactical environment where lives are saved or lost. As with all commodities, the backbone of medical logistics is people—a dedicated workforce of Soldiers and civilians. Among this group, the noncommissioned officers serve as the “ground logisticians” that enable combat medics, doctors, and nurses who render first aid and battlefield care, as well as the maintainers who ensure medical devices work and tactical units are integrated into the end-to-end medical supply chain. Senior enlisted leaders represent the commander, communicating the commander’s goals and direction to the enlisted workforce while simultaneously representing the enlisted personnel’s views and concerns to the commander. With that voice, they bring a unique perspective to medical logistics because they have experienced both the best and worst of delivering and sustaining health care in the operational environment. This article focuses on how U.S. Army Medical Logistics Command (AMLC) is working to tackle four Class VIII challenges, including education and training, information systems, acquisition and sustainment, and customer support.

Education and Training

The Army needs to do a better job of codifying Class VIII processes and training Soldiers. Part of this effort is updating doctrine, but it also

requires evolving training. Today’s Soldiers may pick up a copy of their standard operating procedures, but they probably would prefer a video. So, AMLC is developing how-to videos that break down different aspects of the medical logistics process. Additionally, various educational and cross-training opportunities will be promoted to the workforce. For deploying units, training is offered directly to operators before they go into a theater to assess capabilities and address gaps. Sometimes, additional hands-on training is necessary. Teams can be deployed to forward operating locations to assist operational units and connect them with the right medical materiel centers to ensure they meet their resupply needs.

Information Systems

Currently, the Army medical logistics information technology systems are not optimized or integrated with the other supply classes. Medical units use multiple systems for tracking different types of equipment and supply, and they do not always communicate directly. This issue is actively being addressed as part of a wider effort to consolidate these systems under one umbrella within the Global Combat Support System—Army, enabling access for all users and allowing the AMLC and other key leaders to monitor and track readiness metrics. A consolidated data system will improve synchronization, while enabling the end users and higher command stakeholders to better understand what’s happening at the operational level. Along with educating the customer base and sharing how AMLC can support the wider Army mission, a primary goal is

to streamline processes that consider and synchronize medical materiel with other classes of Army supply.

Acquisition and Sustainment

One of the biggest misconceptions about medical logistics is that there are giant medical supply warehouses and a supply chain that delivers Class VIII medical supplies and equipment to the warfighter is readily available. Medical logistics is complex because the Army relies on the same commercial vendor base that outside private-sector and nongovernmental entities use. This creates competition for equipment and supplies, including durables, expendables, potency, and dated items, in addition to other challenges related to the commercial supply chain. New technologies and best practices also create a constant cycle of modernization, requiring units to adapt and evolve how they support the fight. The rapid cycle of change creates a moving target in the world of medical logistics, which is often a misunderstood commodity from a customer standpoint. Not only are there delays, interruptions, or complications, but a less-than-ideal acquisition process has created wider impacts, ranging from sustainment challenges for older devices and supply items to the lack of oversight on important data and metrics used to justify certain military occupational specialties (MOS) throughout the force, like 68A or Biomedical Equipment Specialist. 68As, for example, are vital to ensuring medical devices are well maintained, ready, and able to support the warfighter at a moment’s notice, from a simple patient monitor to a highly specialized CT scanner. These are in-

demand jobs that require extensive skill and expertise. Without adequate sustainment planning on the front end of the acquisition phase, it can lead to problems later in the lifecycle of a device, such as needed operating system updates or ongoing repair needs that can lead to added downtime. 68As must be involved from the start of the capability development. Under the AMLC structure and in development with the materiel developer, U.S. Army Medical Research and Development Command, we are working to identify and mitigate sustainment issues. In just the last few years, several issues have been addressed and resolved—some that would have created challenges for units once fielded to the force. AMLC continues to work on new equipment being fielded while simultaneously addressing known issues with older legacy devices still in use.

Customer Support

With the establishment of AMLC in 2019, the customer support landscape has vastly improved. As the Army’s “home for medical logistics,” AMLC serves as the Class VIII Life Cycle Management Command (LCMC), delivering readiness to the force while executing the medical materiel management functions for combatant commands in order to set and sustain operational medical capabilities in all phases, including large-scale combat operations and multidomain operations. AMLC’s primary goals are to close communication gaps, improve processes throughout the entire life cycle of medical materiel from factory to foxhole, and serve as the single point of contact for all things related to support and sustainment for global

medical logistics. As the executors of this mission, AMLC’s renewed vision is a welcome change in operational tempo, specifically in ongoing improvements that impact many noted challenges seen at the tactical level in the past. Perhaps the most important capability that AMLC’s creation brings the medical logistics community is a consolidated voice and, in many cases, a seat at the table in wider Army processes, like the acquisition process. As the LCMC for medical materiel, AMLC is now part of the process from the start when new capabilities are developed and fielded to the joint force, helping to consider different aspects of the sustainment puzzle. This includes repair parts, manuals, and other sustainment needs to help operators in a deployed setting. AMLC is now the single entry point for all things medical logistics supporting the operational force. Gone are the days when one had to know someone connected to a nearby hospital or fixed-base medical operation to get the needed supplies. AMLC now coordinates that capability. Restructuring in recent years has changed the way the Army operates in the realm of medical logistics by moving and reorganizing different capabilities to new commands. AMLC preserves customer service continuity by breaking down communication barriers, creating processes that work for all, ensuring accountability of current assets, and enabling predictability of future demands.

Final Thoughts

The senior enlisted leaders within Army medicine are encouraged by the changes happening within Class VIII. U.S. Army Materiel Command

empowers AMLC to go after issues and find solutions. Enlisted Soldiers are a huge part of that effort because they know the ground truth. The message to all readers today is to keep striving for improvements within the Class VIII commodity that align with readiness and taking care of people.

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Master Sgt. Wesley Ladlee currently serves as the noncommissioned officer in charge of the Integrated Logistics Support Center, under U.S. Army Medical Logistics Command. He also serves as the senior enlisted leader for the Army’s Biomedical Equipment Specialist (68A) MOS. Ladlee’s military education includes the Medical Equipment Management Course, Instructor Training Course, and Master Resiliency Trainer Course, among others.

Feature Photo
Staff Sgt. Cody Harrison, a biomedical equipment specialist stationed at the U.S. Army Medical Materiel Agency’s Medical Maintenance Operations Division at Hill Air Force Base, Utah, on Nov. 30, 2021, works on a portable transfusion pump. (Photo by Katie Ellis-Warfield)



Rapid Resupply in the Joint Expeditionary Environment

■ By Maj. John B. Raynor

“Steeped in tradition, our U.S. military has had a love-hate relationship with innovation and change. And while military leaders will enthusiastically embrace tactical innovation on the front line ... during peacetime leadership is hesitant to support tactical or strategic innovation, especially in organizations more distant from the fight.” Dr. Rod Korba, Small Wars Journal, Nov. 22, 2016

This quote from a Small Wars Journal contributor addresses logistical dilemmas on the modern battlefield. Traditional means of sustaining and transporting the force are challenged daily as the American military engages in an ever-changing global fight. How we, as logisticians, approach sustainment problems abroad and embrace innovation is the determining factor in achieving adversarial supremacy. Creating new methods and innovative solutions is never easy, especially when synchronizing many different organizations.

When it comes to war, the U.S. military is always playing as the visiting team. Over the past 125 years, most U.S. conflicts have been in distant places far from American shores. For units aligned to the U.S. Pacific Command (USPACOM) area of responsibility (AOR), places such as China, Russia, and North Korea are all nearly on the opposite side of the globe. The vast Pacific Ocean keeps these adversaries thousands of miles from U.S. shores.

Sustaining a forward presence in the USPACOM AOR across such distances is challenging. The wide variety of terrain in the USPACOM AOR spans from mountain peaks to dense jungles, often making ground lines of communication nonexistent. Despite enormous advances in surface vessel and strategic airlift technologies, distance remains the key challenge for the U.S. Army in the Pacific.

Earlier this year, the 17th Field Artillery Brigade commander charged the support operations (SPO) team with solving a critical sustainment task that had yet to be addressed: in an austere environment, how does an M142 High Mobility Artillery Rocket System (HIMARS) battery or battalion offload critical Class V from fixed and rotary wing aircraft when no organic material handling equipment (MHE) exists? The task was simple but would prove difficult to solve. In a matter of months, U.S. Army Pacific would begin participating in annual exercises with partner nations in the Pacific. The brigade would soon be deployed to various isolated islands dispersed throughout the region. Leaders had to solve this problem creatively and efficiently, leveraging existing capabilities while integrating joint and multi-compo organizations.

Solving the Problem

A field artillery (HIMARS) brigade support battalion (BSB) differs from a brigade combat team in capability and structure. Key among the shortfalls was the inability of the forward support companies (FSCs) to provide MHE support for their respective batteries. The only MHE capability in the brigade lies in the BSB and is limited to two 10K ATLAS forklifts. To support lift requirements for both firing battalions simultaneously, the BSB is dependent upon external organizations for MHE support. The inability to provide MHE organically is compounded as batteries and platoons are dispersed

to deliver surface-to-surface precision strikes in support of joint task force operations.

To solve the given problem, we had to be innovative in our approach. Again, attempting to execute offload and resupply methods for the first time adds to certain anxieties at all levels. Making the proof of concept realistic, feasible, and repeatable were the key factors in addressing the situation. Assets organic to the brigade centered around the M1084 Resupply Vehicle (RSV), while assets organic to the firing battery included the M985 Heavy Expanded Mobility Tactical Truck (HEMTT) and M1120 Load Handling System (LHS) with the M3 container roll-in/out platform (CROP) (organic to the FSC and BSB) loaded with four rocket pods. These were the three assets in which the unit used to solve the problem. In addition to using the assets organic to the brigade, recreating the vast distances of the Pacific Ocean was another area to be addressed to reflect the realism of solving the problem. Utilizing both the Yakima Training Center (YTC) and training areas at Joint Base Lewis-McChord (JBLM), we sought to create two separate “islands” for the delivery of munitions via aircraft. To incorporate realistic situations in which our brigade may encounter dispersed, we planned simulated firing point resupply via rotary wing and FSC and BSB ammunition transfer holding point resupply via the fixed wing. Each echelon of rocket pod resupply would encounter one, if not both, methods that were tested. The proof-of-concept was dubbed



Shoring created to facilitate rocket pod offloading from a CH-47 Chinook aircraft at the 308th Brigade Support Battalion motor pool, Joint Base Lewis-McChord, Washington, on April 17, 2022. (Photo by Sgt. Joshua Oh)

Operation Island Hopper. Utilizing a Cargo Helicopter 47 (CH-47), the unit tested an offload method using an RSV crane at JBLM training areas. At a landing zone at YTC, the unit tested its ability to offload rocket pods from a C-17 utilizing the HEMTT and LHS only.

The Game of Inches

In the film “Any Given Sunday,” Al Pacino refers to life and football as a game of inches due to the margin of error in both being so small. One step too early or too late, too slow or too fast, and someone won’t make it. This quote best describes the learning process accomplished in creating the proof of concept. The finite dimensions of CH-47 (90 inches wide by 78 inches tall) and

C-17 (208 inches wide by 190 inches tall) ramp and cargo door areas forced the unit to be diligent in its efforts. As training pods were loaded, offloaded, reset, and transferred, unit personnel searched for ways to get additional space to complete the offload. The most knowledgeable personnel in the brigade (on RSV, HEMTT, and LHS) utilized every feature their vehicle was equipped with to get every inch possible. Details, including when would the rocket pod be exposed on the ramps, which mode does the LHS need to be in to maintain the lowest profile for offload, and how far does the crane need to boom out, were regularly addressed in each iteration of training. Each measurement had to be correct, codified for reference,

and repeated with each vehicle crew for continuity. Every inch mattered. Every piece of shoring factored into weight distribution. Every operator’s expertise added to a greater margin of error during execution. Through deliberate attention to detail in all factors of size, weight, capability, and overall expertise, the processes ensured that offloads were not too early, too late, too slow, or too fast.

Ready for Prime Time

On the day of execution, the culmination of five months of planning, training, and coordination between 18 separate agencies took place. The task was simple but not easy: offload the rocket pods using organic vehicles without damaging the aircraft. To make shoring

portable in either a high mobility multipurpose wheeled vehicle or other military vehicles, the team created a device that allowed the pod to be freely moved on the CH-47 utilizing its roller system and protect the pod and aircraft from damage. We utilized 3/4-inch plywood as a base with 4- by 4-inch beams on the front and sides to prevent the pod from shifting. The plywood was cut to a width of 51 3/4 inches and a length of 28 inches. The device was placed on both the front and back ends of the pods.

Once the CH-47 landed, the ramp was lowered to its lowest point. When given the signal, a two-person pusher team unstrapped two of the three ratchet straps and pushed the pod until the pod shoring closest to the ramp rested on the ground. Once the pod was pushed forward, the crew chief guided the CH-47 approximately five feet forward to expose the attaching point at the center of the pod. Once ready, the CH-47 crew chief signaled the RSV team leader to position the RSV. The RSV team leader ground guided the RSV to the aircraft ramp with the crane in a “scorpion” position. The RSV team leader lowered and extended the crane to a low enough position to give the rear rotor blades of the CH-47 at least four feet of clearance. The RSV team leader ground guided the RSV to approximately thirteen feet from the ramp of the CH-47. The RSV crew extended both outriggers to stabilize the RSV in preparation to support the pod. The RSV was then able to hook onto the pod and lift until

the RSV supported the weight. The pusher team rotated the pod until it was perpendicular to the CH-47. The crane rotated to the side and set the pod onto the ground. The total time from lowering the ramp to having the pod cleared of the aircraft was 7 minutes and 49 seconds.

The C-17 iteration presented a different set of problems: operating in a joint environment. The challenge of joint operations is that each branch of the U.S. military speaks its own language. When interacting with another service, both parties take for granted that both the sender and receiver of information understand exactly the context of the message. This challenge was overcome by overcommunication and redundant information between Army and Air Force elements.

Once the C-17 landed, taxied, and stopped, the ramp was lowered to a coplanar position (horizontal). When given the signal, the pallet pusher team pushed the T3 pallet train to the end of the ramp until it was flush with the edge. Once the T3 pallet train was pushed forward, the loadmaster signaled the LHS team leader to position their vehicle within 12 inches of the ramp. The hook arm was positioned between the ramp of the aircraft and the upright of the M3 CROP. The hook arm hooked into the M3 CROP, securing the load to the vehicle. The aircraft ramp was lowered to five degrees below horizontal to allow for more space as the M3 CROP was elevated onto the LHS vehicle. A guide stationed inside the aircraft guided the hook

arm’s operation utilizing the Manual Hook Arm and Manual Main Frame modes of the LHS. The guide, along with the loadmaster, communicated which direction the LHS hook arm needed to maneuver to safely offload the M3 CROP without damaging the aircraft’s roof.

A mixture of relief, pride, and excitement swept across the aircraft once each pod and M3 CROP was successfully offloaded onto their respective vehicles. After 7 minutes and 36 seconds, sustainment history was made, and everyone knew it. For the first time, an Air Force aircraft was successfully offloaded by Army assets other than traditional MHE. We solved a realistic problem set that has far-reaching applicable capabilities for our formations. Various elements of brigade and corps level leadership were interested in our endeavor, which magnified the success or failure of this venture. Success was achieved through deliberate planning, meticulous coordination, and creative thinking.

Reflections

While reflecting on what we accomplished with Operation Island Hopper, the SPO team conducted three after action reviews (AARs). The three AARs were conducted with the 308th BSB participants, the aircrew of the CH-47 General Support Aviation Battalion, and the loadmaster and air mobility liaison officer team from the Air Force. Critical data was gathered during each AAR and codified into two separate manuals for future use by other organizations. In addition to

the codification, key lessons learned from the entire operation, from initial planning to execution, are worth sharing.

Here are a few key takeaways:

- **The Human Psyche.** Convincing 18 different organizations, all with experience within their field ranging from decades to only a few months, to risk assets, time, and reputation borders on being its own art form. Skepticism of the plan and the data presented, along with overall unwillingness to break from the norm all played roles in the challenge of bringing so many different elements together. Lessons learned from Operation Island Hopper include learning what each subject matter expert offers and fostering trust and motivation to utilize their skills effectively. That cannot be achieved through phone calls or emails alone. Taking the time to coordinate, in person, with each organization aided in our ability to sync 18 different elements simultaneously for success.
- **Rehearse, Rehearse, and Rehearse Some More.** Rehearsals are crucial in ensuring the success of the offload procedures. This method is more complex and requires an in-depth rehearsal of key actions so that all crews understand the sequence of events, cues to proceed, and contingencies. This, plus anything else requiring so many moving pieces, cannot be rehearsed

enough. Once the team feels as though they completely understand what is required, rehearse it again. Due to the risk to personnel and equipment, it is highly recommended to have an experienced crew to conduct the offload. The crane and hook arm will potentially get within a foot of the aircraft with active rotor blades and running jet engines. Deliberate and continuous rehearsals will mitigate any confusion and allow each offloading crew to operate with minimal error.

- **Take Prudent Risk.** Nicolo Machiavelli states, “All courses of action are risky, so prudence is not in avoiding danger (it’s impossible) but calculating risk and acting decisively.” The riskiest things the military does include operating vehicles, aircraft, or weapons systems. Each provides its own level of risk associated with the operators using it. Attempting something new with one or a combination of the three adds to the already associated risk. Training, synchronization, and engaged leadership mitigated most risks encountered during processes for Operation Island Hopper. Sometimes the norm must be challenged, the impossible attempted, and the unforeseen planned. Taking the prudent risk after conducting the necessary steps to have a solid, resourced plan can pay off in far-reaching areas that no one thought possible. Do not be afraid to take prudent risks.

- **What did the unit learn?** After every static training iteration, in-progress review, and data pull, the team’s most important discussion point was, “What did we learn?” Being caught up in the moment is a primary reason critical data points and lessons learned are lost when creating new methods and processes. Each team member readily had cameras, clipboards, and notebooks to ensure there was something to reference afterward through every step. With such finite training time and the availability of assets, the team could not afford to recreate many of the steps conducted throughout. No matter what role one has in creating new processes, ensure that every stakeholder has the opportunity to codify their observations. Always remember to ask each team member, “What did we learn?” They may be surprised at what was missed.

Maj. John B. Raynor currently serves as the 308th Brigade Support Battalion Support Operations Officer and 17th Field Artillery Brigade S-4. Raynor was commissioned in the U.S. Army Transportation Corps in 2009 from Sam Houston State University ROTC. He holds a Master of Arts in Military History from Norwich University, Vermont.

Feature Photo
Maj. John Raynor (second from left) observes members of the 17th Field Artillery Brigade, the 308th Brigade Support Battalion, and the 446th Air Wing Operations Group offload 4x rocket pods with an M1120A4 Load Handling System at the Selah Landing Zone, Yakima Training Center, Washington, on May 17, 2022. (Photo by Sgt. Joshua Oh)

CBRN

Supporting the Future Sustainment Force

By James M. "Mike" Cress

When comparing the U.S. military to other countries, discussions usually revolve around the importance of the semi-automatic battle rifle, the medium battle tank, or the medium artillery piece. Although often overlooked, the real winner of the last peer-to-peer conflict was the military cargo truck. The Third Army moved across Europe during World War II only because the famed "Red Ball Express" trucks kept it supplied. At one point, 28 divisions were advancing across France and Belgium, and each required 750 tons of supplies daily. They were supported by 132 truck companies, consisting of 5,958 vehicles carrying 12,342 tons of supplies during the first five days of operation following the Normandy invasion of Europe.

Logistics will be just as critical, if not more so, in a future conflict. For example, a mechanized infantry

company of 14 vehicles requires approximately 2,330 gallons of fuel per 24 hours. The ammunition load requires even more space than fuel, and that doesn't take into account the other items needed like water, other sustenance items, clothing and individual items, medical supplies, and repair parts. The movement of supplies to support a brigade combat team is a massive undertaking. The delivery of supplies at the right place and the right time is critical. One has only to observe the recent conflict between Ukraine and Russia to appreciate the potential of a stalled sustainment effort and the serious impact that could have upon operations. Stalled or halted convoys make great targets.

A future peer competitor can be expected to use technology applications that did not exist a generation ago. The widespread use of unmanned aerial systems combined with microelectronics enabling all-weather 24/7 target identification,

precision engagement, and rapidly massed long-range fires change the lethality of the battlefield. In some theaters, air superiority may exist only for short periods. While that presents a significant challenge, the integration of chemical agents by a threat force could easily make it much worse.

Chemical warfare agents have lethal effects, but an often underappreciated impact is the degradation caused by the need to protect from those effects. In the early 1980s, there was a concern about the impact of chemical attacks on combat operations. A series of experiments were conducted examining collective tasks for combined arms units. Those experiments, entitled combined arms in a chemical and biological environment, reported significant degradation of collective tasks when Soldiers were forced to wear protective equipment while executing collective tasks. Task degradation became most acute as time progressed, with a sharp

increase in degradation occurring as test players approached ten hours of operations in mission-oriented protective posture (MOPP).

Sustainment functions were not a focus of that study, but there is no reason to believe they would be any less impacted. Much of a modern logistics effort is driven by the movement of large shipping containers, which requires special equipment, some of which is military-adapted commercial equipment procured with little concern for use by Soldiers in protective equipment. The easiest way to mitigate the degradation of MOPP is to train in that condition. Planning and conducting logistics operations in MOPP is not often seen.

Sustainment operations in a technology-enabled environment have to do three things:

- They have to disperse. The traditional brigade or division support activities are far too easy to locate and service with increasingly more lethal weapons. It is necessary to array these in base clusters.
- Base clusters have to relocate at frequent intervals determined by the threat intelligence, surveillance, and reconnaissance capabilities.
- It is necessary to integrate signature management through natural cover and concealment, management of electronics emissions, multi spectral camouflage, obscuration, and decoys.

An effective protection effort must be planned and integrated to be agile. Doing this in a technically solvent manner requires a planning tool especially for operations complicated by the chemical, biological, radiological, and nuclear (CBRN) environment.

Future operational environments will require operations to cover a much larger area than it currently does. Long lines of communication and increased ability to locate, target, and disrupt sustainment will drive the need to operate differently. Once sustainment occurs, the sustainment formation will unlikely return to where it originated and will more likely recover to a newly established agile sustainment base. This complicated environment becomes more demanding when the condition of CBRN is added. Ensuring that returning manned and unmanned vehicles are not contaminated will require a screening capability before they close on the agile sustainment base. The likelihood that CBRN forces will be available to screen those assets is slim, further driving the need for an agile autonomous CBRN detection capability. Exactly how to accomplish this requires some thought and experimentation in the context of future sustainment operations.

Contaminated vehicles will require mitigation, and, as with screening, dedicated CBRN forces will unlikely be available to perform that function. As with detection, mitigation requires automated capabilities that minimize or eliminate the need for expert CBRN assistance.

Lastly, because mitigation will unlikely be complete and the effects of contamination may be cumulative, there will be a need to classify and tag logistics equipment as RED (Unserviceable without heroic effort); AMBER (Operable with limitations); and GREEN (Fully mission capable). This tagging effort should also feed a mission planning capability.

Ignoring the potential CBRN effects problem will not improve the bad news. Realistic training in a simulated CBRN environment contributes to mitigation. If unique sustainment challenges exist, identifying them, leveraging advanced technologies to mitigate them, and defining solutions now will ensure future sustainment operations are agile and effective in future combat.

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Feature Photo
A U.S. Army Soldier assigned to the Brigade Headquarters for the 1st Armored Brigade Combat Team, 1st Cavalry Division, moves forward in full MOPP gear while coming under simulated gas attack during exercise Combined Resolve XI in Hohenfels, Germany, Dec. 7, 2018. CBRXI at the Joint Multinational Readiness Center is the final exercise in unit's rotation in support of Atlantic Resolve in Europe, which evaluates the interoperability of U.S. Forces with their NATO allies and partners. (Photo by Staff Sgt. Ron Lee)

Improving Medical Materiel Effectiveness

Tips and Strategies to Build Better Item Requests

■ By Chief Warrant Officer 4 Kevin O'Reilly and Chief Warrant Officer 3 Dae Kim

Medical materiel is fielded to the operational force in the form of a medical assemblage (i.e., the bill of materiel within the Global Combat Support System—Army (GCSS-A)). Assemblages are all-encompassing capabilities consisting of expendable items such as bandages, intravenous tubing, and medical equipment components such as pulse oximeter probes or electrocardiograph leads. A medical assemblage also contains durables such as forceps and scalpels or non-expendable items like defibrillators, infusion pumps, and radiographic units that require routine scheduled parts replacements, calibrations, and repairs that require a reliable supply of parts. Each medical assemblage, and its associated items of equipment, is accounted for on the property book within GCSS-A, enabling property accountability, asset management, and the ability to manage all maintenance functions, for the purpose of procuring repair parts and components.

Replacing components of a medical assemblage during the performance of patient care, normal wear-and-tear, loss, maintenance, or damage cannot be performed within GCSS-A because medical materiel ordering is performed through numerous medical supply activities at the Installation Medical Supply Agency, which is usually the local medical treatment facility. When stationed outside the continental U.S., units are typically supported by one of the U.S. Army Medical Materiel Agency's three medical supply agencies: the U.S. Army Medical Materiel Center (USAMMC)—Europe, USAMMC—Southwest Asia, or USAMMC—Korea. These agencies utilize one or more of several medical supply systems depending on a unit's location (i.e., the Defense Medical Logistics Standard Support (DMLSS), the DMLSS customer assistance module (D-CAM), or the Theater Enterprise Wide Logistics System (TEWLS)).

Each medical logistics agency uses a local catalog unique to that agency, which may or may not possess the catalog or procurement record necessary to replenish, sustain, or repair originally fielded medical assemblages or equipment. For example, an assemblage may contain an anesthesia unit, but the oxygen sensor provided

during the original fielding may not be available through the local medical supply agency. Another way to articulate this is after working meticulously with the Womack Army Medical Center's staff to source medical materiel needs to sustain a medical mission on Fort Bragg, North Carolina, a unit deploys to another location such as the National Training Center in Fort Irwin, California, Europe, or Afghanistan, where the sourcing is different and uses a different medical catalog from the unit's adopted medical supply agency, creating gaps within medical materiel needs. Consequently, even when a required item possesses a local catalog record through the local medical supply system, orders may be rejected or canceled by the medical supply system, and units are instructed to produce a new item request (NIR) to develop or reestablish a procurement record, a concept referred to as "fill or kill."

How can an item the medical logistics enterprise issued or fielded to the organization now be considered a new item when a replacement is required?

As stated above, the underlining cause is that the medical supply system operates under numerous non-standard catalogs and disparate computer systems between agencies. Thus, the agency that originally fields or issues the assemblage is most likely not the agency supporting the organization during the sustainment of the assemblage. Furthermore, the medical supply system does not possess an integrated product support (IPS) or item management (IM) capability at the national level to develop and cultivate a single master catalog. Thus, each local nonstandard medical catalog is cultivated via numerous NIRs, developed over time, unique to each local medical supply agency, by numerous medical customers such as the medical maintainer, medic, or nurse. With this understanding, by developing a medical NIR, one is effectively operating as the medical item manager in a similar manner performed at a life cycle management command (LCMC), such as the Tank-automotive and Armaments Command or the Communications-Electronics Command.

Since the NIR process is utilized to develop and cultivate the medical supply system's numerous local



Staff Sgt. Gandhi Tuazon, assigned to the 549th Hospital Center, reviews a quote from industry to positively identify component shortages to facilitate a property lateral transfer within Global Combat Support System—Army, on March 17, 2022. (Photo by Maj. Dennis Kim)

catalogs, here are a few strategies to develop a sound NIR. It is important to understand approximately 85% of medical materiel provided to the DOD is sourced through the Defense Logistics Agency (DLA). Therefore, if the medical supply system rejects or cancels an order, another vendor contracted with the DLA likely carries the same item. Ironically, under this circumstance, the item being researched is not new, and the catalog record used to develop the original canceled order is no longer sourced, requiring a clinical expert to reestablish sourcing utilizing the NIR process. Conversely, suppose a unit requires an item the local medical supply agency does not offer. In this case, the responsibility also resides with the customer to establish a catalog record utilizing the NIR process.

An important task as the medical customer developing the NIR is to determine if the DLA possesses the desired item within the DLA Troop Support's Medical Master Online portal to establish sourcing. The DLA is a tremendous partner in the acquisitions of medical materiel, offering numerous sourcing options such as the prime vendor and electronic catalog programs. The medical customer can request access to the portal via a common access card and a short justification. After researching the DLA's online product listing and potentially finding the desired item, it is helpful to first contact the company or vendor to confirm the identified item offered through the DLA is the item required. Too often, sourcing assumptions made during the NIR process by either the customer or the medical logistician result in the wrong item being

provided after ordering. This also impacts other customers, because if a catalog record is sourced inaccurately during the initial NIR process, each follow-on procurement rendered from a poorly sourced record results in the wrong item being procured until the record is fixed.

Many companies provide product listings on their websites, including pictures and detailed descriptions. Furthermore, companies often advertise that they sell to the government and may provide contract numbers and product identifications (IDs) to ease research with the DLA. If explicit sourcing requirements, such as a replacement battery to a fielded automated external defibrillator, are found within a unit's assemblage, phone calls or emails with the company or vendor are appropriate to determine specific technical factors such as whether a specific battery can be utilized between models. To aid in sourcing research, the DLA's website and the DMLSS system both provide company or vendor contact information such as email addresses, phone numbers, and website addresses to aid in the research. Another option afforded to the DOD customer is the ability to procure materiel directly from DLA's web services without the need to develop a lengthy NIR with a local medical supply agency in a similar manner as other classes of supply offered by the DLA, such as FedMall, or through the Government Services Agency website.

As stated earlier, the DLA accounts for approximately 85% of the Army's medical supply needs. Thus, it

is inevitable a sizable portion of medical materiel requirements to sustain the Army's fielded medical assemblages are not sourced by the DLA. Local vendors are the most likely sourcing methodology leveraged to procure materiel outside of DLA's portfolio, often through the government purchase card (GPC) program or some other established contractual vehicle such as a Blanket Purchase Agreement. Local medical supply agencies provide specific procedures on

how to craft an NIR and how subsequent procurement documents should be developed. For example, a local GPC program may require one to three quotations from industry, depending on the cost threshold.

After performing the necessary research with the DLA and industry, it is time to develop an NIR. As stated earlier, the medical supply system is inherently a local and manual business model. Thus, it is important to consult with the local medical supply agency for specific guidance and formatting on developing an NIR. However, at a

minimum, the medical logistician requires the item's name, manufacturer product ID, and point of contact to include phone numbers, email, websites, and unit price. Some medical supply agencies may require additional information such as the product's weight, dimensions, and end item information such as model number and voltage. Moreover, depending on local policy, justification and leadership endorsement may also be necessary.

By developing a medical new item request, one is effectively operating as the medical item manager in a similar manner performed at a life cycle management command, such as the Tank-automotive and Armaments Command or the Communications-Electronics Command.

Once an NIR is accepted by the local medical supply agency and an actionable catalog record is successfully developed or reestablished within either DMLSS or TEWLS, the D-CAM catalog must be updated or synchronized with the local medical supply agency to ensure the unit possesses the new record within the broader local catalog. At this point, units can place their order or re-establish the originally canceled order.

The Army requires a medical materiel requisition capability fully integrated with the rest of the Army's logistics functions to facilitate the Army's total mission. The Army can achieve this by first elevating the IPS and IM functions currently performed at the tactical level by numerous medics, nurses, or medical maintainers to a national level Medical LCMC, cultivating a single cataloging and sourcing concept within the Federal Logistics Information System to develop standard national stock numbers, similar to all other classes of supply. This Medical LCMC should ensure, at a minimum, that medical materiel necessary to sustain the Army's current medical assemblage construct and

medical equipment fleet possesses a catalog record and is appropriately sourced to the nation's industrial base to include materiel beyond the DLA's portfolio. The Medical LCMC would then collapse numerous medical supply systems that facilitate the current local medical supply business model within the operational force and replace them with GCSS-A to enable a clean enterprise-wide medical supply business model compatible with the Army's logistics architecture.

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Sustainment 2030

New Armor Division Plan Impacts
Sustainment Force Structure

■ *By Maj. Nate McDermott*

The Armor Division 2030 (AD/2030) plan is a hammer, purpose-built to penetrate and exploit prepared enemy defenses on a narrow front. At the core of the AD/2030 is the realignment of enabling capability from the armored brigade combat teams (ABCTs) to the division and the transition to the division as the unit of action. As such, the division commander must have the capability necessary to weigh the division's main effort with enough enabling force to win decisively in large-scale combat operations (LSCO). Examples of capability

realignment include cavalry and cannon artillery from the ABCT to the division and engineer and protection brigades to enable division breaching operations and to consolidate gains in the rear area. All these new formations include organic sustainment capability.

Lastly, the division sustainment brigade (DSB) grows in personnel and capability, adding transportation, fuel, ammunition management, heavy maintenance, and mortuary affairs units to the existing division sustainment support battalion (DSSB) and special troops battalions (STBs). This paper analyzes the sustainment design of the AD/2030 based on observations and experiences of the 3rd Infantry Division (3ID) during Warfighter Exercise 22-04 and Joint Warfighter Assessment (JWA) 22 to help determine if it is fit for purpose.

Sustainment in 2030

Key to the sustainment brigade design is the resolution of three capability gaps identified in Training and Doctrine Command's LSCO gap study: Gap #4, fuel distribution; Gap #10, sustainment mobility; and Gap #17, material management. The new design addresses these gaps by adding organizations traditionally echelon above brigade (EAB) to the sustainment brigade. The DSSB gains a modular ammunition company (MAC), inland cargo transfer company (ICTC), medium truck company (palletized load system (PLS)), and medium truck company (5k petroleum, oils, and

lubricants (POL)) while shifting the support maintenance company to the STB. The STB gains the support maintenance company, heavy maintenance surge teams, and a mortuary affairs platoon. It is critically important to note that these additions retain their EAB structure with no adjustments to the existing standard requirement codes occurring, except for the heavy maintenance surge teams, which is an entirely new design concept.

In terms of total sustainment capacity, the sustainment brigade grew exponentially as total pallet warehouse pallet positions grew by approximately 150% and bulk fuel distribution by more than 300%. The brigade also added critical tracked vehicle maintenance capability, organic mortuary affairs capable of processing 80 remains per day, and organic capability to store and issue ammunition. This is essential to ensuring the maintenance of tempo and lethality of the AD/2030.

The sustainment brigade is not the only sustainment force to change or grow in the AD/2030 design. Each ABCT lost two forward support companies (cavalry squadron and field artillery battalion). The division artillery (DIVARTY) gains a brigade support battalion (BSB), and the protection and engineer brigades include new BSBs. This analysis does not focus on the Army Health System. Still, it is worth noting that none of these BSBs features a brigade support medical company to provide Role II care organically. Additionally, the

division cavalry (DIVCAV) receives an organic forward support troop (FST).

In aggregate, the AD/2030 gains three forward support companies (various standard requirement codes), three BSBs (distro and maintenance companies only), and seven functional companies/platoons in the sustainment brigade. This seems like a win for AD/2030 sustainment from a total capability standpoint. However, a deeper examination of how AD/2030 applies and builds this capability is necessary to answer the question.

Sustainment Brigade Performance

To sustain the AD/2030, the sustainment brigade must improve responsiveness, simplicity, and economy over current force structure. The AD/2030's doctrinal frontage reduces from up to 60km to between 18 and 28km, but the depth of the close and rear areas remains 100km. The pace and tempo required to fight the AD/2030 successfully necessitate the sustainment brigade to echelon sustainment further forward earlier in the fight. Effectively, the sustainment brigade must push the division forward rather than be pulled along. Critical sustainment assets may be forward of adjacent division forward-line of troops. Keeping pace to reduce vulnerable lines of communication becomes essential in this scenario. The sustainment brigade must be agile enough to displace and move rapidly to enable the maneuver's tempo and

increase survivability. This requires the reduction and optimization of cumbersome sustainment nodes—maintenance collection points, ammunition storage points (ASPs), central receiving and issue points, and fuel system supply points (FSSPs)—to enable as much mobility as possible. The AD/2030 aims to accomplish this by adding mobile fuel storage capacity and modular distribution platforms that increase capacity without degrading mobility. To illustrate, the medium truck company (PLS) adds 120 flatrack (or 20-foot equivalent unit) positions to DSB lift capacity. The additional 360 flatracks enable the DSB to keep multi-class stocks configured to move quickly without heavy reliance on materiel handling equipment or load configuration.

AD/2030 Sustainment Brigade Performance

During JWA 22, the 3ID exercise force structure replicated the AD/2030 quite well. From the sustainment perspective, all additional capability was present and employed throughout the exercise. The exercise achieved the overall effect, despite some new sustainment capabilities being replicated using legacy standard requirement codes. For example, the DIVARTY BSB was an ABCT BSB minus the Charlie Medical Company. Exercise designers tailored legacy formations to closely mirror the AD/2030 design down to the specific system whenever possible. A key example of this was additional fuel distribution capability being added through

Modular Fuel Systems instead of M969 tankers. This provided maximum mobility and flexibility to the gaining commander. Several after-action reviews captured the following observations from the eight-day exercise.

Increased capability does not equal increased effectiveness. Some of the added capabilities in the sustainment brigade did not improve and, in some instances, degraded the ability to sustain the division. Two clear examples of this are the ICTC and the MAC. Both standard requirement codes retain their EAB design and are not tailored to the AD/2030 mission set. The ICTC is designed to conduct terminal operations and trans-load International Organization for Standardization containers, which is not a mission set often encountered forward of the corps support area in a LSCO fight. It is less than 50% self-mobile and includes eight rough terrain container handlers (RTCHs) and 16 rough terrain forklifts. The ICTC encumbers the sustainment brigade and consumes critical heavy equipment transport (HET) assets when echeloning forward. During JWA 22, 3ID relinquished control of the ICTC to the supporting expeditionary sustainment command (ESC) before the division support area displaced forward—maintaining desired pace and tempo. Likewise, the MAC contains modular ammunition platoons capable of establishing an entire ASP and includes additional RTCHs, forklifts, and bulldozers. While the

For the Army Division 2030 sustainment brigade to be truly fit for purpose, it cannot continue to evolve as a patchwork of legacy DSB and EAB units; it must be rethought and redesigned without the constraints of existing sustainment standard requirement codes.

ability to establish and maintain an ASP is essential, there is no need to maintain multiple ASPs in the division area. Further, while there is excess ammunition handling and storage in the DSB, the DIVARTY BSB, the largest single consumer of ammunition in the AD/2030, lacks any organic capability.

The sustainment brigade lacks sufficient capability to operate effectively in a highly contested rear area. The additional distribution capability was added to the sustainment brigade in the form of EAB PLS and 5K POL truck companies. This increased overall distribution platforms by approximately 90% but did not include any organic convoy protection platforms (CPPs). The ratio of CPPs to distro platforms in the current DSB is about 1:7; this decreases to 1:13 in the AD/2030 sustainment brigade. The dedicated CPP shortfall is glaring, given the sustainment brigade's requirement to operate further forward in a more contested rear area. One solution offered during JWA 22 was allocating military police (MP) assets from the patrol base. This proved insufficient as demand for MPs forced a transition to area-based route security early in the fight.

HET shortfall will grind division to a halt. The added capability in the sustainment brigade did not include any additional HET systems. The composite truck company-heavy (CTC-H) HET platoon remains the division's only organic source

of support. During JWA 22, 3ID incurred more than 350 tracked battle losses. The CTC-H's 18 HETs would have taken eight or more days to retrograde the losses from forward maintenance control points. The same HETs were required to distribute Class VII and support the displacement of the division sustainment area. Without significant and continuous support from the ESC, massively encumbered ABCTs would not have maintained tempo through the enemy disruption zone. It is also important to note that as the Army fields the next generation HET/medium equipment transport (MET) systems, the planned allocation will provide only six HET systems to the CTC-H capable of hauling battle-damaged M1 Tank or M88 recovery vehicle variants.

Sustainment must enable the DIVCAV. The currently proposed design of the FST organic to the DIVCAV is insufficient. The traditional FST designed around functional platoons (fuel/water, distro, supply, etc.) cannot effectively support multiple cavalry troops spread across the division front, far forward of the support area. During JWA 22, the DIVCAV moved rapidly through the enemy's disruption zone and required significant augmentation from the sustainment brigade to extend endurance while ABCTs cleared obstacles and bypassed enemy formations. It was more than four days before distribution operations from the sustainment brigade to the DIVCAV were feasible.

Adding BSBs to enabling brigades paid huge dividends. The addition of capable BSBs in the DIVARTY, engineer, and protection brigades had a marked impact on the DSB's capability to extend the AD/2030 operational reach and endurance at decisive points throughout JWA 22. Without the requirement to allocate finite capability to sustain enablers, the DSB was better postured to weigh the main effort with additional fuel and multi-class distribution during the wet-gap crossing. Additionally, the enabling brigades were not tethered to the division support area by sustainment requirements and were able to echelon forward and impact the fight ahead of what was feasible in previous exercises.

Future of Sustainment Brigades

JWA 22 highlighted both areas that the AD/2030 sustainment brigade excelled over the legacy DSB and where gaps and seams still exist or, in some cases, were created by the AD/2030 design. Most of the requisite capability that divisions have lacked since the transition to modular sustainment brigades is now present. Massive shortfalls in fuel distribution and lift capacity were adequately addressed. The most glaring shortfall is not what was added, but in the lack of attention to how it was added. For the AD/2030 sustainment brigade to be truly fit for purpose, it cannot continue to evolve as a patchwork of legacy DSB and EAB units; it must be rethought and redesigned without the constraints of existing

sustainment standard requirement codes. A comprehensive redesign may include some of the following examples:

- **Purpose-built distribution.** Realign the ICTC, CTC, and PLS companies into light (CPP/troop transportation), medium (load handling system/PLS), and heavy (MET/HET) truck companies. The heavy truck company adds two additional MET/HET platoons to the division in exchange for the material handling capability in the current ICTC. The light truck company adds additional troop transportation and CPP platoons to address current shortfalls.
- **Node focused versus distribution focused.** The AD/2030 designs should aggregate more static capabilities (supply support activity platoon, ASP platoon, FSSPs) into a composite company that is purpose-built. This allows the division to set and operate nodes in the rear area, instead of current designs that require company commanders to manage tactical distribution and supply node operations simultaneously.
- **Field lighter, more agile capability.** Invest in fielding modern sustainment capability to match the evolution of modernized combat formations. Expand the family of systems designed to be carried/

employed on flat racks (akin to the modular fuel system or common authorized stockage list containers in the BSB) to increase the mobility of the sustainment brigade.

- **Completely rethink DIVCAV sustainment.** To enable the DIVCAV to operate effectively across the entire division front, the FST design must move from functional to multi-functional platoon structure. Modular multi-functional sustainment platoons aligned to each cavalry troop with a robust battalion support platoon serving as the second level of sustainment would meet the requirement. Additionally, the breadth and complexity of the DIVCAV FST mission (think mini BSB) warrants an O-4 key developmental command billet to maximize effectiveness.

The AD/2030 sustainment design represents a step, not a full leap forward. It provides adequate increases to fuel and multi-class distribution, ammunition handling, and mortuary affairs capability to the AD/2030 commander, but stops short of being the refined, purpose-built tool it should be. Damaging shortfalls still exist in HET capability, convoy protection, troop transport capacity, and the overall organization of capability within the DSB. To achieve the goal, designers must be free to rethink divisional sustainment force structure at the company and platoon level. The foundation has

been laid. However, to complete a lasting structure, the Army must be willing to discard the building blocks of the modular era for those tailored to the new environment and mission. Empowering designers to make impactful changes to both the what and how of future sustainment capability will yield an AD/2030 DSB that is fit for purpose.

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Feature Photo
Up-armored M1070 Heavy Equipment Transporters assigned to the 24th Composite Truck Company out of Camp Buehring, Kuwait, line up to receive fuel at the King Fahad Industrial Port Yanbu, Saudi Arabia, Dec. 20, 2021, during Operation Provider Caravan. The mission, executed by elements of 1st Theater Sustainment Command and Task Force Spartan on behalf of U.S. Army Central, was a multilateral logistics operation that exercised some of the logistics capabilities within the U.S. Central Command area of responsibility to ensure U.S. and partner forces have the resources and flexibility to deliver supplies and materiel wherever needed. The operation enhanced relationships and partner capacity with the armed forces of Saudi Arabia and Kuwait. (Photo by Sgt. 1st Class Mary Katzenberger)



Building & Sustaining Unit Water Production Readiness

■ By Lt. Col. Jonathan A. Daniels and Chief Warrant
Officer 2 Rickey D. Ivey

Water production in the Army is a key capability required to support large-scale combat operations (LSCO). In March 2022, Alpha Company, 87th Division Sustainment Support Battalion (DSSB), partnered with 92W Water Treatment Specialists from across the 3rd Infantry Division and the U.S. Army Reserve to execute a culminating water purification training exercise to build and sustain readiness in support of defense chemical, biological, radiological, and nuclear (CBRN) response force (DCRF) and other prepare-to-deploy order requirements. During the exercise, Soldiers purified more than 20,000 gallons of water utilizing the tactical water purification system (TWPS) and the lightweight water purification system (LWPS). The train-up and preparation for this culminating training event (CTE) were significant.

As a composite supply company (CSC) assigned to multiple operational mission sets and garrison requirements, sustaining readiness is both a priority and a challenge. Building readiness does not happen overnight and requires establishing systems for readiness. Units must balance day-to-day requirements, approach maintenance aggressively, incorporate effective training methods, and share lessons learned. The below recommendations take sustaining readiness beyond conceptualization and into implementation.

Mission Set

CSCs play a vital and significant role in LSCO and multidomain operations. CSCs are very diverse and complex organizations. The CSC is an essential unit in the DSSB, providing multiclass supplies to Soldiers on and off the battlefield. CSCs provide Class III bulk and packaged products (petroleum, oils, and lubricants), Class IV (construction and barrier materials), Class VII (major end items), Class IX (repair parts), and Class I (perishable and semi-perishable) shower, laundry, and bulk water to supported units.

Specifically, within the DCRF mission sets, defense support of civil authorities (DSCA) is one of the most demanding missions. These missions require rapid deployment to support local, state, tribal, and federal agents in large-scale natural disasters and/or CBRN events. Units must be ready to deploy and employ water treatment systems at a moment's notice. At the division level, CSCs have most of the water production and distribution assets capable of purifying up to 130,000 gallons per day from fresh water, salt water, and CBRN contaminated sources. Active duty units must continuously maintain a high level of readiness and be prepared to support contingency operations, scheduled deployments, training rotations, and unscheduled DSCA mission sets.

The Army has transitioned its focus from counterinsurgency (COIN) operations to LSCO to meet the threats posed by peer-to-peer and near-peer competitors. Commanders at all levels require water purification

and distribution assets on the battlefield to support the sustainment line of effort. The size, scope, speed, and quantities of sustainment support required to conduct LSCO operations vastly outstrips what was required to support COIN operations. Unlike the last 20 years of COIN, LSCO operations have limitations on the employment of operational contract support, host nation support availability, international acquisition cross service agreement (ACSA), and logistics civil augmentation program (LOGCAP). Instead of a battlefield based on population-centric counterinsurgency, LSCO centers on divisions and corps fighting in a more linear concept. In LSCO, hybrid threats intermixed with deep strike kinetic fires and cyber warfare place the entire theater and even the United States under threat. The very nature of LSCO and its scope impede the availability of supplies and services from ACSA, LOGCAP, host nation support, and operational contract support to the battlefield. External support will be limited to augment the mission, so equipment must be ready, and Soldiers must be trained.

Maintenance Approach

Understanding water production equipment's maintenance and supply status was a key element to prepare for the CTE. Preparation was started by conducting thorough technical inspections of the equipment. Operating procedures were conducted per the technical manual, and non-chlorinated water was pushed through the system to validate functionality. Non-chlorinated water must be used to



Quartermaster and Chemical Equipment repairers and Tactical Power Generation specialists conduct technical inspections on Lightweight Water Purification Systems to build equipment readiness at Fort Stewart, Georgia, on Oct. 6, 2022. (Photo by Chief Warrant Officer 2 Rickey Ivey)

prevent costly damage to elements within the system. Good sources of non-chlorinated water include ponds, lakes, and rivers. It is also possible to use a potable water point; however, the chlorine must be neutralized with a sodium bisulfite chemical before being pushed through the system. Additionally, thorough inventories were conducted to validate shortages and serviceability of components while shortages were ordered. This phase should take 3-5 days to complete for each system. Providing a detailed maintenance plan to one's chain of command for visibility and support before execution is recommended.

With the technical inspections complete, the team focused efforts on tracking and installing parts. Time management and good tracking tools are a must during this phase. The team developed maintenance tracking tools and had open lines of communication with the mechanics resulting in expedient parts installation. Once parts were received and installed, the team quickly tested the functionality of the systems again and conducted further troubleshooting procedures. Depending on the initial status of the equipment, troubleshooting procedures require two or more system diagnoses to capture deficiencies accurately. Commanders should

allocate sufficient time in training schedules to enable units to accomplish maintenance missions. Within a six-month period, all water treatment systems became fully mission capable. This required four Soldiers to be readily available every day to assist mechanics with part installations and movement of equipment. Consistency and leader engagement were key factors in driving the operational maintenance plans providing Soldiers the ability to train with the equipment.

Training Methods: Crawl-Walk-Run

92Ws are responsible for supervising, operating, and maintaining

water purification equipment and ensuring the proper storage and distribution of clean water. Other critical tasks 92Ws perform are routine water quality tests, inspections, and accountability at water sites. They must comprehend how to maintain appropriate chlorine levels and parts per million and how to identify other conditions or hazards to health and the environment.

How do units ensure their 92Ws are properly trained and proficient? Enhance their military occupational specialty (MOS) specific skillset through training prioritization, virtual simulation, hands-on training, leader engagement, and knowing operational plans regarding specific roles and responsibilities in a garrison and theater of operation. As stated in FM 7-0, Training, incorporating the crawl-walk-run methodology for training promotes optimal performance through progressive sequence training that builds on each other before moving on to more complex tasks.

An effective tool to utilize during the crawl phase is virtual simulation training available online. These tools enhance the familiarization of water production systems. As petroleum systems technicians, specialized in water and fuel equipment and training, Soldiers are highly encouraged to train on virtual simulation courses located on the quartermaster website at www.quartermaster.army.mil under the Petroleum and Water Department tab. This training style enables Soldiers to assemble, disassemble, and operate MOS-specific equipment in

a virtual environment while providing interactive multimedia instruction. A good training practice is to reserve a computer lab at a local education center for 1-2 weeks to give the Soldiers multiple sets and repetitions to build muscle memory and overall familiarization.

Next is the walk phase, which includes systematic, hands-on training. During this phase, water treatment systems are employed at a raw water source like a pond, river, or lake. Leaders conduct training on water site reconnaissance, water testing, chemical injection, operating equipment, maintenance, and accountability procedures. The end state is to train Soldiers on both the TWPS and LWPS simultaneously to fully understand the capabilities and challenges of both systems.

The run phase comprises all the procedures in the walk phase, but Soldiers are now being evaluated based on the training and evaluation outlines per the unit's mission-essential task list. The evaluation outline determines if the Soldiers are untrained, need practice, or trained. This is the Army's way of objectively evaluating and determining the effectiveness of Soldier training.

Conclusion

A commonly used phrase in the Army is, if you don't use it, you lose it. Water production capabilities and training on these systems were not top priorities during COIN operations. However, this capability is critical to support LSCO. Despite day-to-day mission complexities,

Alpha Company, 87th DSSB, used the approach previously mentioned to build and sustain water production readiness. The unit has proven this method of sustaining water treatment systems to be effective in preparation for garrison and contingency operations. The unit's approach to readiness included balancing day-to-day requirements, attacking maintenance aggressively, and incorporating effective training methods. Conducting a water purification field training exercise with 92Ws from multiple components enabled the 92Ws to enhance their MOS proficiency while supporting total Army integration. Quarterly unit training on water purification is highly encouraged to maximize training opportunities for 92Ws while exercising the equipment. To support the nation's future wars, water production readiness must be built and sustained.

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*Feature Photo
Water Treatment specialists employ Tactical Water Purification Systems in a field environment to test equipment functionality and conduct maintenance services at Fort Stewart, Georgia, on Sep. 15, 2021. (Photo by Chief Warrant Officer 2 Rickey Ivey)*

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