SPRING 2024

THE ARMY'S OFFICIAL PROFESSIONAL BULLETIN ON SUSTAINMENT

HIP-POCKET GUIDE

HUNT OR BE HUNTED: Lessons from the Ukraine Battlefield



Lessons Learned: Ukraine Sustainment Operations

PB 700-24-02 Headquarters, Department of the Army • Approved for public release; distribution is unlimited.

IN THIS ISSUE

2 LESSONS FROM THE MODERN BATTLEFIELD **Deliver Ready Combat Formations**

By Lt. Gen. Heidi J. Hoyle

- 4 ADAPTING TO THE EXPECTED LSCO **CONFLICTS IN THE 21ST CENTURY** By Maj. Thaddeus Wilson
- **TACTICAL SUSTAINMENT Unraveling Kyiv's Urban Battlefield** By Lt. Col. Phil Thomas
- 11 MUNITIONS FOR UKRAINE **Observations and Recommendations** By Chief Warrant Officer 4 Michael K. Lima
- 16 **INTERMODAL OPERATIONS IN SUPPORT OF THE UKRAINIAN FIGHT**

By Maj. Gen. Gavin A. Lawrence

20 THE MISSION AND MAINTENANCE What Logistics Assistance Representatives Mean to You By Sgt. Maj. Shane K. Short

- 24 **EMBRACING MODERNIZATION Progress and Innovation in Aerial Delivery** Bv Frank Badalucco
- 28 LEAPING AHEAD IN PROJECTING **COMBAT POWER** The View From the 267th Theater Movement **Control Element** By Lt. Col. Scott Gum

THE MULTIFUNCTIONAL LOGISTICIAN By Command Sgt. Maj. Oscar Llamas

- 36 THEATER SUSTAINMENT TRANSFORMATION Lessons from the Russia-Ukraine War By Maj. Gen. Ronald R. Ragin and Maj. Christopher G. Ingram
- 40 **CHANGING MILITARY MENTALITY VITAL TO MODERNIZATION** By Adriane Elliot



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ON THE COVER

Lessons Learned: Ukraine Sustainment Operations is the theme of the Spring 2024 issue of Army Sustainment Professional Bulletin. On the cover, stevedore drivers load Bradley fighting vehicles, part of the U.S. military aid package to Ukraine, onto the ARC Integrity, Jan. 25, 2023, at the Transportation Core Dock in North Charleston, South Carolina. (Photo by Oz Suguitan)



Army Sustainment (ISSN 2153-5973) is a quarterly professional bulletin published by the Army Sustainment University, 562 Quarters Road, Fort Gregg-Adams, VA 23801-1705.



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PB 700-24-02 VOLUME 56, ISSUE 02 SPRING 2024

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

WEBSITE: WWW.ASU.ARMY.MIL/ALOG

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LESSONS From the **MODERN BATTLEFIELD**

Deliver Ready Combat Formations



By Lt. Gen. Heidi J. Hoyle

around the onflicts world demonstrate to prepare for the future fight in which is posted outside of Ukraine, bodies. Despite the rudimentary a contested environment. With a in NATO territory, and connected origins of the conflict, the collective effort from the Army with Ukrainian

joint sustainment enterprise, the a wide array of American platforms, Army is rising to the challenges from Javelin missile launchers presented by its adversaries. Along to Bradley Fighting Vehicles. In with allies and partners around addition to providing necessary the world, the Army is already assistance to a partner nation, this employing new techniques to gain also serves as effective testing of an advantage on the battlefield. One the Army's systems in a contested such area is tele-maintenance, which environment. is a practice that has long existed but has recently seen a resurgence in popularity since the Russian technology on the battlefield is invasion of Ukraine in 2022. It is the effective utilization of drones. an effective method of ensuring Like tele-maintenance, drones are the Ukrainian military can operate not a new concept in warfare. The and maintain American equipment Ukrainian military has seen great without sending American troops success in destroying vast numbers directly to the conflict. One of fRussian vehicles and equipment. the units supporting the fight is In the early stages, the drones were the 405th Army Field Support no different from those purchased the need to refine Brigade's Remote Maintenance at local electronics stores, albeit

sustainment enterprise, part of the providing insight and instruction on

Another example of emerging policies and strategies and Distribution Center-Ukraine, with grenades duct taped to the maintainers, conversation around autonomous vehicle platforms has expanded to 3,000 national stock numbers were include use in reconnaissance and resupply. Autonomous resupply program allows units to turn in their enables commanders at echelon excess property without bringing it to mitigate risk by conducting to -10/-20 standards. This effort resupply operations from the joint saves valuable time and helps reduce strategic support area to the point the maintenance workload for agile of need without putting personnel units. R2E has already shown to in danger.

platforms unmanned humans, it must update policies to reflect the influx of new equipment. Additionally, it is incumbent on

requirements for these platforms up the fight. While new systems present new opportunities for industry, parts necessary for delivering combatready formations. Older platforms cannot and should not be ignored, as they will remain in formations as the Army transforms in contact.

As the Army prepares for largescale combat operations, the last thing it wants is for its formations to be overburdened. As the Army continues to deliver combat-ready formations, those formations must not be burdened by unnecessary or unfeasible equipment, requirements, and timelines. We have all heard horror stories about commanders with 100-page hand receipts. One way the Army seeks to avoid those situations is the Rapid Removal of Excess (R2E) program. Before R2E, the Army divested thousands of pieces of equipment, and over

subsequently retired. The R2E be effective at several installations across the Army, with significant As the Army moves to integrate pull by the team at Army Materiel into Command. The Army will continue formations to fight alongside to leverage this great tool to reduce the burden in its formations.

It is an exciting time to be a the defense industrial base to sustainer in the Army. Sustainers incorporate service and maintenance are the linchpin for the joint force and need to be prepared to operate front to ensure they can be kept in in any environment. The actions of U.S. adversaries around the world have exposed new capabilities. Army for existing equipment are equally sustainers must train to standard to meet these new capabilities. It is also important that programs and policies adapt to meet new needs. I look forward to continuing to sustain our Army alongside you!

> Lt. Gen. Heidi J. Hoyle currently serves as Headquarters, Department of the Army, Deputy Chief of Staff, G-4, and oversees policies and procedures used by Army logisticians. A graduate of the U.S. Military Academy, she has a Master of Science in systems engineering from the University of Virginia and a Master of Science in national resource strategy from the National Defense University. She is a graduate of the Chemical Officer Basic Course, Combined Logistics Officer Advanced Course, United States Army Command and General Staff College, Kansas, and the Eisenhower School of National Security and Resource Strategy, Washington, D.C.

Sustainers are the linchpin for the joint force and need to be prepared to operate in any environment.

Adapting to the Expected LSCO^COnflicts in the 21st Century

By Maj. Thaddeus Wilson

hroughout advances in civilian and military technology have continuously changed the character of warfare and necessitated constant adaptation of large-scale combat operations in a military training, doctrine, tactics, and multidomain environment. Among thinking. The most recent example the numerous lessons learned from of the present character of war is the Russia-Ukraine war, the five battlefield. the Russia-Ukraine war that began that directly and most profoundly on February 24, 2022. Observation impact sustainment on the battlefield and analysis of Russian, Ukrainian, are that sustainment assets are an have provided critical insights into target sustainment nodes; the impacts likely U.S. Army requirements in of the widespread use of unmanned

adapt its doctrine, organization, training, and mindset to build leaders and formations that can survive, fight, and win in high-intensity, future combat operations. To meet aircraft systems (UASs); the effect

history, these requirements, the Army must of individual Soldier discipline; and the importance of adaptive communication. Considering these insights, the Army has begun transforming training to build and maintain the capability to deal with dilemmas posed by the integration of new technologies into the future

(FM)Field Manual 3-0, Operations, explains that Army and allied operations during this war intelligence indicator; the enemy will forces conducting multidomain operations must "Account for being under constant observation and all forms of enemy contact." The

open-source intelligence, and signals intelligence. This new transparent battlefield requires a shift in the way the Army trains for and conducts sustainment operations.

nature focuses on friendly forces maintaining the tempo, and endurance, and freedom of action of the supported force. Historically, sustainment leaders have focused most of their planning and mission command efforts on how operations most efficiently provide could support with little consideration for the signature their operations might give to the enemy. Outside of planning for defense against localized direct fire, indirect fire, or enemy special operations forces attacks, most sustainment planning camouflage vehicles and equipment. has not considered the impact the Integrating signature management, placement or employment of key frequent and rapid survivability sustainment assets might have on the enemy's ability to anticipate friendly actions. In both the initial Russian invasion of Ukraine and subsequent Army sustainers for the threats combat operations, the movement they will encounter on the future and placement of key sustainment battlefield. stocks and capabilities have proved to be intelligence indicators. Army sustainment leaders must understand they are always in some form of contact with the enemy. Ukraine war, is a wide variety of How sustainment assets are arrayed UASs. UASs of every size and the consequences of the indiscipline and employed not only exposes them to enemy targeting but may

Russia-Ukraine war has clearly of what the friendly force will do fire, kinetically engage the enemy, shown that sustainment units are next. These considerations must be susceptible to a multitude of enemy incorporated into training, planning, sensors and intelligence disciplines, and operations at all echelons of including human intelligence, cyber sustainment. On a transparent intelligence, financial intelligence, battlefield, sustainers at any level could significantly hinder operational success by inadvertently exposing the friendly plan to the enemy.

The Russia-Ukraine war has also shown that sustainment nodes and Military sustainment by its assets will be targeted with direct and indirect fires delivered by air, land, maritime, cyberspace, space, or special operations forces. To mitigate this, sustainment leaders and units must understand their signature across all domains and employ camouflage and deception techniques to reduce their risk of being targeted. Completely avoiding detection is not realistic with the widespread availability of sensors, but sustainment units can minimize the size of support areas, disperse stockpiles, employ decoys, be deliberate with emitting signals, and moves, dispersed operations, and mobility into future institutional and sustainment training will prepare

One sensing capability that has been employed in many recent conflicts, including the Russiadescription have been used by both that Soldiers will face on the next provide the enemy with indications collect intelligence, observe indirect that their actions have strategic

and conduct multiple other tasks. The availability, relative low cost, and ease of employment make UASs a capability of choice for 21st-century military operations. Sustainment leaders and units must understand friendly and enemy UASs, counterunmanned aircraft systems, and electronic warfare capabilities. UASs will be present in all areas of the future battlefield, and Army sustainers must have the capability to differentiate friendly from enemy UASs, master all facets of active and passive protection from enemy UAS capabilities, and employ UASs to provide responsive and precise support.

On January 3, 2023, Ukrainian forces conducted a rocket artillery strike that destroyed a building and killed 89 Russian soldiers in the Donetsk region of Ukraine. The Ukrainians found the target through signals intelligence gained from unauthorized cellphone use by the Russian soldiers. This is just one example of the unforgiving nature of the modern battlefield. In Ukraine, there have been multiple examples like this in which soldier indiscipline has led to targeting with indirect fires. For U.S. Soldiers, individual discipline and unit discipline are critical to the survivability and effectiveness of sustainment units. This discipline must be generated through tough, realistic training that replicates the conditions and the Russians and Ukrainians to battlefield. Soldiers must understand impacts and may jeopardize success their electromagnetic signature. Document, and the new draft of up to the strategic level.

One key capability that enables sustainment units to conduct dispersed operations, employ precision sustainment, and mitigate the enemy's ability to find and target sustainment units is adaptive communication infrastructure. Lessons learned from the Russia-Ukraine war have shown that sustainment units need to be dispersed, mobile, responsive, and possible if units can communicate and the joint force have already begun at the point of need. Sustainment units at echelon must have secure and resilient communications capability. They must carefully plan how and Contested Logistics, the Predictive when units communicate to manage Logistics Capabilities Development

Communication discipline must be integrated into all training.

More than two years of observing the Russia-Ukraine war has provided countless insights into the future battlefield. Army sustainers and sustainment units must be able to mitigate their signature, conduct dispersed operations that deceive the enemy, mitigate the effects of UASs, display individual and collective discipline, and employ effective precise. Those things are only resilient communications. The Army effectively and converge capabilities to operationalize these principles and integrate lessons learned from the Russia-Ukraine war into training and doctrine. The Joint Concept for

FM 4-0, Sustainment Operations, currently in development, all incorporate the changing character of war. Institutional sustainment training also integrates these lessons learned into courses. As the Russia-Ukraine war grinds through its third year, we will continue gathering lessons learned and adapt accordingly.

Maj. Thaddeus Wilson currently serves as the executive officer to the U.S. Army Chief of Transportation. He was also an operations officer (J3) in a joint and combined NATO Corps Headquarters in support of operations in Poland and the Baltic States. He has also served with the 75th Ranger Regiment and the 173rd Airborne Brigade Combat Team. He attended the Army Command and General Staff College and has a Master of Business Administration from the University of Kansas.



TACTICAL SUSTAINMENT



Unraveling Kyiv's Urban Battlefield By Lt. Col. Phil Thomas

he battle for Kyiv reinforces the lesson that the sustainer must always account for worst-case scenarios, including prolonged operations, increased demand for supplies, dispersed formations, and little or no security. The battle, which occurred from February to April 2022, saw Russian forces advance from the north, transitioning Kyiv and create a blockade. For this discussion, let's from rural to urban environments. However, Russia's assume the U.S., with a similar strategic need to seize a plan for the battle did not unfold as intended for several city, would approach it by focusing on key terrain while reasons. One of the most prominent was the expectation emphasizing messaging to mitigate collateral damage. of encountering little Ukrainian resistance, which would Under these assumptions, the Army can derive the facilitate a quick victory and uncontested resupply. The following sustainment lessons and considerations for commonly accepted Russian objective was to surround U.S. forces that can be applied to future urban fights.

Seizing key terrain takes longer than expected, especially in an urban environment. A brigade combat team can carry three days' worth of supplies. According to Army one should anticipate a "20–30 percent expenditure increase in personnel, fuel, ammunition, barrier, or obstacle material" in an urban environment. Simple math suggests at least four days' worth of supply is required. Consequently, the brigade combat team either needs additional division sustainment resources assigned from the outset or must be resupplied within the first 24 to 48 hours after entering urban terrain.

The pace of battle is slow. With additional sustainment resources and more frequent resupplies, the tempo of the battle naturally decreases, which degrades the element of surprise and exposes formations to risks, such as from unmanned aerial systems or indirect fire. Striking a balance between tempo and protection is crucial for commanders on the ground, and sustainment leaders must be prepared bring field trains closer to the frontlines. Therefore, either to offer guidance and advice.

logistical reporting. Forces deplete at an alarming rate resource-intensive operation. and divide into sectors and/or neighborhoods most likely delineated by supply routes. Units will most likely share supply points for the sake of simplicity. However, due to security challenges, it should be anticipated that the accuracy of logistical reporting is less accurate than usual. Hence, overcommunication and anticipation, achieved by synchronizing running estimates in all command posts regardless of warfighting function, become even more critical.

adversary to protection. As the Army moves beyond the are established conventionally. conventional support area, the enduring theme of stability from ATP 4-90, Brigade Support Battalion, remains pertinent: "units must know where the new BSA (brigade support area) and resupply points are and when to begin using them." Meanwhile, dispersion enhances survivability but "complicates C2 (command and control) and perimeter security." The Russian forces found themselves in-advertently dispersed, leading to a precarious situation. Commanders must devise innovative strategies to plan and safeguard stability, even if temporarily, across the battle-

field to protect the planned distribution cycle. This concern has prompted many Army leaders to explore tactics and techniques, including keeping supplies uploaded and Techniques Publication (ATP) 3-06, Urban Operations, distributing items more quickly, while being conscious of the survivability of the logistics forces.

Sustainment units must prioritize their own protection or rely on others to do so. While sustainment units can protect themselves to a limited extent, are they designed or trained to defend adequately against anything beyond saboteurs (level I) or small tactical units (level II)? The resounding answer is no, leaving them increasingly exposed as logistical elements approach the front line, especially in an urban environment. The conflict in Ukraine involving Russia has prompted discussions among adjacent warfighting functions regarding the necessity for deception, pre-positioned ammunition, and additional strategies for moving commodities across the battlefield. All these factors sustainment leaders need to dedicate more time to training for their own self-defense, or maneuver commanders must Battlefield geometry is messy, consequently affecting allocate more forces to avoid further strain on an already

The array of sustainment command posts within the division, including the brigade, requires reconsideration. Currently, Army divisions serve as the primary units of action, operating sustainment nodes in what is known as the close and rear areas per ATP 3-91, Division Operations, a configuration better suited for linear warfare but challenging in urban environments. The condensed nature of urban settings potentially exacerbates battlefield congestion and renders the supply chain more susceptible Stability proves to be a friend to sustainment but an to indirect fires or unconventional threats when these nodes

> Moreover, the Army emphasizes commanders controlling their forces from smaller, dispersed command posts, ready to relocate quickly, introducing added complexity. When command nodes intertwine with dynamic battlefield geometry, roles and responsibilities among echelons may become unclear. Sustainment leaders must demonstrate immense discipline in synchronizing sustainment operations effectively without compromising flexibility and responsiveness.

This complexity might necessitate streamlining either expeditionary sustainment or theater sustainment C2, potentially removing layers or redefining roles. commands. Consequently, this process enables a surge of Such measures aim to prevent mission creep, avoiding capabilities, like increased throughput and allocation of unnecessary redundancy or distribution inefficiencies that combat platforms from reserves. could needlessly risk constrained resources.

The urban environment and the demands required for a Current maintenance operations are structured to successful battle for a city like Kyiv would not permit such an extended process. Therefore, corps-level leaders must facilitate repairs as close to the front lines as feasible through maintenance collection points. However, in anticipate needs beforehand. Anticipating and effectively urban environments, this approach may not be viable. distributing these requirements necessitates collaborative, Consequently, vehicles end up being triaged in semi-secure rapid planning between corps and division staffs, especially locations for a significantly extended duration, surpassing in an environment where synchronizing operations and what is presently considered ideal. sustainment within the current planning cycle is already challenging.

The degradation of combat capabilities may accelerate, necessitating more frequent and challenging decisions One could argue maneuver commanders may need to by maneuver commanders, particularly as they transition plan for tactical pauses or transitions, even in environments main effort responsibilities. Division-level and corpswhere such pauses are not immediately apparent, solely to level leaders could encounter task organization alterations allow sustainment to maintain pace. that require hours, if not days, to realign and maintain effectiveness.

The Russia-Ukraine war has evolved into a battle of attrition, where the ultimate victor will be the one who The demand for patient treatment at forward integrates fires more effectively or mobilizes their militarypositions and/or the need for evacuation is significant industrial complex more efficiently. As with all wars, it and unconventional, necessitating strategic allocation of consists of a series of tactical battles sustained by tactical the division's limited assets to address these needs. Air planners. The overarching lesson gleaned from this is evacuation within a city might not be feasible due to the that sustainment leaders within the division and corps threat or the terrain. Commanders must ready themselves to must undergo detailed training to adequately address the confront a challenging choice between managing personnel previously outlined lessons. An emphasis on immersing losses at the expense of momentum or capitalizing on leaders in an urban training environment like Kyiv may momentum at the risk of neglecting personnel losses. This be required to adequately provide the exposure required presents a tough decision, one that simulations may not to facilitate the tough discussions and ultimately tough comprehensively address—the emotional toll on the force decisions between the sustainers and their maneuver in such a battle. colleagues to address the lessons learned from the Russia-Ukraine war.

Divisions and corps sustainers undergo training to Lt. Col. Phil Thomas currently serves as the 40th Infantry Division G-4. analyze the critical path, evaluating requirements, available He is a graduate of the Armor Officer Basic Course, Quartermaster Advanced Course, Support Operations Course, United States Army Comresources for transportation, and the necessary measures mand and General Staff College, Kansas. He has a Master of Business to safeguard such movements. Senior leaders may make Administration from the University of Redlands, California. decisions like these once or twice a day. Operationally, this Feature Photo process entails identifying the main effort, formulating Russia bombards telecommunication antennas in Kviv. Ukraine. March 1, 2022. (Ministry of Internal Affairs of Ukraine/Creative Comschemes for fires, and other essential inputs. mons Attribution 4.0)

The outcomes involve adjustments in sustainment and protection priorities, alongside requests for support from

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MUNITIONS FOR UKRAINE

Observations and Recommendations

By Chief Warrant Officer 4 Michael K. Lima





X

ongoing international conflict between Russia and Ukraine, which began in 2014 with the annexation of Crimea, has brought about a new reality in warfare. The full-scale invasion of Ukraine by Russia in February 2022 put the conflict front and center in the minds of the general public. The news and social media have provided even more insight with details from the front lines. Updates from front-line leaders and official and unofficial sources on both sides offer insights not seen at this scale in previous conflicts. From the onset, social media has given the Russia-Ukraine war prominence never seen before. Case in point, Ukrainian President Volodymyr Zelenskyy was offered a chance by the U.S. to evacuate from the capital city of Kyiv, an offer he turned down in a spectacular statement: "The fight is here. I need ammunition, not a ride." Ammunition is a commodity that has continuously been at the forefront of Ukraine's sustainment operations.

Munitions Industrial Base

As of December 2023, the Department of State said the U.S. Government has provided approximately \$44.2 billion in military assistance since Russia launched its invasion against Ukraine on Feb. 24, 2022, and has invested in air defense, fires, ground maneuvers, aircraft and unmanned aerial systems, maritime, and other capabilities equipment, all categories of support with heavy munitions assistance. Munitions support has strained the U.S. munitions industrial base and the European Union (EU). It takes time for the defense industry to ramp up, restart, expand, or a combination of all to produce critical items such as artillery shells or man-portable air-defense systems, both of which recently have been viewed as a priority for large-scale combat operations.

One such DOD prime contractor to ramp up production was Raytheon. The company called upon retired engineers to teach current employees how to build Stinger missiles. The surface-to-air weapon system has not been purchased in decades but is now integral to Ukrainian military defense. The private company worked to increase production and fill the initial orders. According to the company's president, it would take about 30 months for legacy munitions to come off the production line due to setting up the factory and training employees, functions the DOD has taken note of, as stocks have dwindled and munitions have been issued from a variety of sources.



Ukrainian artillerymen fire an M777 howitzer toward Russian positions on the frontline of eastern Ukraine on Nov. 23, 2022, amid the Russian invasion of Ukraine. (Photo by Anatolii Stepanov)

News reports indicate the Pentagon has sent an estimated 300,000 155mm howitzer shell rounds from War Reserve Stock Allies-Israel, maintained in Israel since the 1980s, to the Ukrainian military to counter Russia. The Israel-based sent out of the country to offset the reduced capability of domestic munitions production. domestic munitions production in the U.S. This is a shortterm stopgap as the DOD plans to increase its monthly production rate for 155mm artillery shells to 100,000 by 2025. Another source of munitions for Ukraine has been 7.62mm rounds of ammunition to the Ukrainian armed forces. The legal transfer was part of a more extensive

that involved Iranian illicit trafficking of advanced conventional weapons systems and components to support terrorist activities throughout the Middle East, a creative solution for seized munitions that supports the war effort. stockpile, which Israel can access during emergencies, was However, a more strategic solution is required to offset

Just as the commercial industry has made a strategic effort to modernize and increase the efficiency of systems, the Army's organic industrial base (OIB) has developed ammunition seized by U.S. Central Command naval a 15-year OIB modernization implementation plan to forces. The U.S. transferred approximately 1.1 million modernize facilities, processes, and the workforce. The plan creates a priority and synchronizes resources on critical facilities and capabilities to increase capacity to sustain investigation of an Iranian weapon smuggling network the Army's systems. The Army's OIB includes 23 arsenals,

depots, and ammunition plants that manufacture, reset, in the open make another valuable target as propagation and maintain Army equipment; provide critical munitions provides for additional damage to other munitions and that may not be cost-effective to commercial industry; and equipment. Both Russian and Ukrainian forces use supply warfighters across the joint force. Multiyear contract cheap methods of delivery and available munitions to authorities provided by Congress, which can go up to disrupt formations and munitions storage and bring five years, have potential savings from 5% up to 15% and a chaotic situation to the enemy. Another form of an provide prime contractors a predictable funding source, a unmanned system is unmanned ground vehicles with forecast for given outyears, and an incentive for internal explosive charges, such as anti-tank mines that blow investment to expand. Such munitions supply has been a near targets. Another is unmanned surface vessels, challenge in the U.S. and Europe. which attack naval ships. The innovative use of modified systems to conduct direct attacks on Russian formations This is why Europe has followed suit with munition is an example that would be used against munitions reforms such as the Act in Support of Ammunition supplies in a near-peer conflict. Tactics that have already Production. The regulation facilitates the buildup of appeared on each side find available targets. In future ammunition production capacity within the EU, allowing conflicts, the tactic would be used in deep and close the European defense industry to increase support to operations and on sustainment organizations in rear member states' armed forces and the war effort in Ukraine. operations, bringing about a new era of warfare and The European Union Act provides a three-track approach: contested logistics not seen in previous conflicts. The deliver ground-to-ground and artillery ammunition to Russia-Ukraine war has also seen an unprecedented Ukraine, jointly procure 155mm ammunition, and support amount of support for Ukraine as European nations fear they may be next and are more than willing to provide the buildup of EU manufacturing capacities. Other initiatives include the NATO Multinational Ammunition munitions and military supplies.

Warehousing Initiative, which allows the management of **Standardization** ammunition stockpiles amongst allies to be effectively and collectively controlled. The first opened in March While the U.S. has been leading the effort in security 2022 in Estonia, and another in Belgium opened in 2023. assistance to meet Ukraine's critical security and defense The project is pertinent to the eastern part of the alliance needs in its war with Russia, it is not the only country that supports eight multinational battlegroups stationed that has participated. The primary coordination is done in Bulgaria, Estonia, Hungary, Latvia, Lithuania, Poland, through the Ukraine Defense Contact Group, a coalition Romania, and Slovakia. The collectively stored materiel that comprises the 30 member states of NATO and 24 allows for a flexible warehousing solution for ammunition additional countries that have provided major weapon stockpiling instead of having materiel being segregated by systems, mass quantities, and a vast array of munitions. nations or dependent on supply from their own country, Meanwhile, ammunition manufactured to NATO permitting munitions to be protected, accounted for, and standards, with available firing data, is designed to be used collectively in the face of multiple threats. interchanged between weapon systems. NATO terms to understand when discussing munitions standardization **Unmanned Threats** and the goal of interchangeability with allies and partners Threats are any combination of actors, entities, or include:

forces with the capability and intent to harm U.S. forces and their interests. Many such tactics are now creative Standardization. and low-cost direct actions by air, land, and sea. One of Within NATO, the process of developing the most notable tactics from the Russia-Ukraine war concepts, doctrines, procedures, and designs to is to have unmanned aerial vehicles, known as drones, achieve and maintain the most effective levels of look for targets of opportunity, such as an open hatch, compatibility, interoperability, interchangeability, and drop a rigged grenade or mortar. Munitions stored and commonality in the fields of operations,

administration, and materiel.

Compatibility.

The capability of two or more items or components of equipment or material to exist or function in the same system or environment without mutual interference.

Interoperability.

services to and accept services from other systems,

Both Russian and

Ukrainian forces

use cheap methods

of delivery and

available munitions

to disrupt formations

and munitions

storage and bring a

chaotic situation to

the enemy.

units, or forces and to use the services so exchanged to enable them to operate effectively together.

Interchangeability. Items possessing similar functional physical and characteristics that are equal in perand formance capable of exchanging one for the other without alteration.

The conjecture is far from reality when faced with the actual problem of unfamiliar munitions. Just as most Soldiers conduct training with U.S. munitions on a routine basis, being

twice before firing, especially in combat staring at the following: enemy. Examples of differences include the notable Spanish-made M107 155mm high-explosive projectiles received by Ukraine with its bright yellow paint scheme and unexpected suppliers like Pakistan with Soviettype 120mm artillery made by the Pakistan Ordnance Factories. Interoperability is acting together to achieve allied strategic, operational, and tactical objectives. As

noted by Under Secretary of Defense for Acquisition and Sustainment William A. LaPlante, allies and partners are moving toward not just interoperable but to interchangeable munitions with production in numerous locations to meet the needs of a new security environment. A new operational environment has been unveiled in the Russia-Ukraine war. The challenge now is determining The ability of systems, units, or forces to provide what the operational environment will look like when American forces conduct the fighting.

Recommendations

While making great strides, a continental U.S.-based munitions modernization implementation plan ends the port of at Theaterembarkation. munitions have level minimal change had since the brigade combat modular force team transformation, only now catching up with a modular ammunition point. The transfer Army's business modernization with Enterprise Business Systems – Convergence provides a streamlined munitions business process. Still, more has to be done if the Army is to prevail in combat

handed a round with unfamiliar markings and packaging and learn from the Russia-Ukraine war. The main material in another language would make anyone think advancements required in munitions sustainment are the

Ammunition interchangeability in practice with allies and partners.

Allies and partner armies must demonstrate the feasibility of ammunition interchangeability. Deliberate exchange during exercises would allow tactical-level commanders and Soldiers to

pouring out of munitions has provided the means for committed people to defend themselves. When those of the world audience through social media. This may be one of the most significant effects of the Russia-Ukraine war on the future of war: the ability to create, counter, and develop tactics that work on the battlefield, exploiting the enemy's weaknesses. The war has taught many lessons for a fragile munitions industrial base, including the ability to employ unmanned threats and the need to follow standardization to ensure interchangeability. Munitions will remain the primary lethal effect in the

the tactical level.

experience interchangeable ammunition in their overwhelming support from free nations worldwide. The weapon systems, practicing the procedures and exchanges while having hands-on experience with firing another nation's munitions. War should not means began to thin out, they became creative in front be the time to try this but to confirm what has been practiced in training. Counter-drone technologies on the modern battlefield, specifically for munitions storage at Technology greatly improves modern air-defense systems and surface-to-air missile systems such as the Army Coyote drone interceptor. The challenges of facing smaller commercial off-the-shelf drones are that they fly at lower altitudes, are hard to detect fight, and the need to sustain munitions for prolonged and target, and make munitions in open storage a conflict will continue to be a national imperative. primary target.

Advanced identification technology (AIT) and sensing must be used at amass to keep pace with combat.

Using AIT to offload munitions vessels and firingdata sensing on systems for automatic reporting, technology can provide the data needed for decision-making.

Munitions data analytics must be harnessed down to the tactical level.

Pencil and paper and manual logistical status reports are trends that must be left in the past, used only as a back-up analog means if the Army is to prevail in the modern information age.

Munition visualization on the battlefield is imperative for commanders' decisive action.

Munition data sustainment and available visualization, both virtual and augmented (known as mixed reality), can provide commanders and their staffs the tools to assist in decisive action during armed conflict. Visualization representation of munitions operations allows theater-level staff and below to support decision-making between warfighters and the munitions supplies needed to reach military objectives.

Conclusion

Ukraine's remarkable victory to save its country from a Russian invasion may be rooted in its people's determination to remain a sovereign nation and in the

Chief Warrant Officer 4 Michael K. Lima currently serves as the training developer with the Ordnance Training Development Division. He is assigned to the Ordnance Corps and Ordnance School under Combined Arms Support Command at Fort Gregg-Adams, Virginia. He has conducted Training With Industry with a prime missile defense contractor and was an accountable officer for the Army ammunition supply point at Kadena Air Base in Okinawa, Japan. He holds a doctorate in business administration from Baker College Center for Graduate Studies.

Feature Photo

A Ukrainian artilleryman tosses an empty 155mm shell tube as Ukrainian soldiers fire an M777 howitzer toward Russian positions on the frontline of eastern Ukraine on Nov. 23, 2022, amid the Russian invasion of Ukraine. (Photo by Anatolii Stepanov)



Operations in Support of the Ukrainian Fight

By Maj. Gen. Gavin A. Lawrence

orce projection is the ability to deliver the and associated combat power globally is an essential element of Techniques Publication has as a fighting force. In the weeks leading up to and following Feb. combat power was once again tested invaded. This time, the U.S. military was required to not only position forces forward to assure NATO allies defense articles to Ukraine rapidly capabilities. Multimodal is the through Presidential Drawdown movement of cargo and personnel Transportation Command U.S. (USTRANSCOM) and its Army service component command Deployment and Distribution (SDDC), Command intermodal operations intermodal These projection of combat forces to for future force projection operations requirements. in Europe but also for the conduct of intermodal operations across the globe in support of future with Headquarters, Department of in coordination with SDDC, utilized

contingencies.

Per Army Doctrine Publication and U.S. Army Europe and Africa 4-0, military instrument of operations are the using of modes Command's ASCC-to facilitate national power where of transportation to move troops, the rapid movement of IRF troops and when it's needed in response supplies, and equipment through via strategic airlift from CONUS to national security requirements. a network of nodes to deliver air terminals to outside continental The capacity to project Army forces combat power into an area of U.S. (OCONUS) aerial ports of operations. According to Army conventional deterrence and one of Army Expeditionary Intermodal Publication 3-36, Joint Air Mobility the strategic advantages the Army Operations, intermodal operations and Sealift Operations, an aerial port ultimately provide flexibility for the is an airfield that has been designated combatant commander to deploy, for the sustained air movement of 24, 2022, U.S. capability to project employ, and sustain land forces to extend operational reach, ensure as Russia massed troops on the freedom of action, and prolong Ukrainian border and subsequently endurance during combat operations.

These operations take into consideration theater infrastructure but also coordinate the delivery of and the availability of multimodal Authority (PDA). To accomplish using two or more transportation this, the Army, in partnership with methods from point of origin to destination. Both air and surface (truck, rail, and maritime vessel) modes of transportation are integral (ASCC), the Military Surface to intermodal operations. Use of terminals for onward movement into multimodal capabilities reduces theater. Due to the large quantities executed backlog, enabling the speedy delivery of ammunition that needed to be from of combat power to the point of moved over a relatively short period continental U.S. (CONUS) to the need. This was certainly necessary of time, SDDC coordinated with joint area of operations in Europe. at the outset of the Ukrainian crisis the Department of Transportation's operations as the deployment enterprise was Federal Motor Carrier Safety contributed significantly to the challenged with simultaneously Administration to garner permission projecting immediate response to extend AA&E driving hours. This Europe and to the provision of forces (IRFs) and large quantities proved critical to ensuring there critical combat capability to Ukraine. of ammunition from CONUS was sufficient AA&E truck carrier They serve to not only set conditions into Europe to support Ukrainian capacity to meet initial surge munition

USTRANSCOM

Sustainment, intermodal (USAREUR-AF)-U.S. European disembarkation (APODs) in Poland, 4-13, Germany, and Romania. Per Joint personnel and materiel and is an authorized port for entrance into or departure from the country where it's located. Aerial ports provide the most expeditious method for rapid force deployment and normally serve as a link to land transportation systems in theater.

SDDC leveraged its portfolio of commercial arms, ammunition, and explosives (AA&E) truck carriers to move requested munitions from Joint Munitions Command's (JMC's) CONUS depots and plants to air requirements. Once munitions were transported via AA&E truck carriers coordinated to designated aerial terminals, JMC, the Army, Army Forces Command, special assignment airlift mission



An Air Force HH-60G Pave Hawk helicopter and equipment assigned with the 129th Rescue Wing are loaded onto a C5M Galaxy transport aircraft from the 439th Airlift Wing during a cargo deployment processing at Moffett Air National Guard Base, California, Dec. 28, 2023. (Air National Guard photo by Master Sgt. Ray Aquino)

to OCONUS APODs designated essential to the rapid positioning of for a smooth, seamless flow of by USAEUR-AF and the 21st combat power, it is not an efficient equipment and materiel. Roll-on/roll-Theater Sustainment Command means for the transport of armored (TSC) for onward movement. platforms or for large quantities SAAMs are funded missions that of ammunition. Strategic sealift utilize a combination of Air Force took on a more prominent role as ships are the ideal means of transport and commercial contracted strategic U.S. national command authority for sustainment and ammunition. airlift assets to transport high-priority made the decision to increase the cargo. Utilization of SAAM flights number of armored brigade combat provides the operational flexibility to pick up and deliver cargo to locations outside recurring channel flights. This proved critical as movement planners attempted to reduce the time it took to move critical munitions from JMC depots to APODs.

teams on rotation to Europe along with increasing quantities of heavy platforms and munitions donated to Ukraine.

transportation (highway, rail, or is the reason strategic sealift is the

(SAAM) requests to move stocks While strategic airlift remains waterways) through ports, providing off (RO/RO) vessels are the primary means of sealift for wheeled, track, and rotary wing equipment. Container There is a sizeable difference in the capacity of sealift versus airlift. A large, medium-speed RO/RO (LMSR) vessel, for example, can transport the equivalent of approximately 400 C-17s' worth of equipment. Two LMSR vessels can deploy an entire Strategic sealift is linked to inland armored brigade combat team. This preferred method of transportation security for large equipment requirements.

SDDC utilized the CONUS 597th and 596th Transportation is done with the host nation to and sets on the conduct of these Brigades (TBs) to conduct marine coordinate provision of security, mobility operations. The Army terminal operations to facilitate stevedoring, and related marine must continue expanding its global reception, staging, and loading terminal of unit equipment and PDA equipment can be received, material at CONUS seaports of accounted for, and moved onward. and control capability to execute embarkation (SPOEs). As the In support of Ukraine, USAEUR- intermodal operations in contested SDDC CONUS units loaded and AF planners have expanded pitched strategic sealift carrying utilization of ports from Germany units and PDA materiel toward the to multiple locations in the Baltics, European continent, the 598th TB, North Sea, and Mediterranean. as USAEUR-AF's strategic TB, Port diversification allows SDDC facilitated reception, staging, onward to garner increased intelligence on movement, and integration (RSOI) port capacity and capability within of equipment and ammunition areas of operation. It also enables received at European seaports of the TSC and its ASCC to validate disembarkation (SPODs).

was made through 21st TSC's of the Three D's: theater movement center. The theater movement center and subordinate movement control teams coordinated movement of unit equipment and PDA materiel from SPODs to final destinations through a combination of host nation-contracted assets (rail, truck, and barge) and military commonuser land transportation.

A by-product of the increased strategic sealift requirements caused by the situation in Ukraine has been the ability to expand port diversification efforts in Europe. entails the deliberate selection of SPODs to meet combatant

objectives. coordinates directly with the 21st power and sustainment cargo in TSC's theater movement cell and support of these deployments. As the DOD's single port manager, USAEUR-AF G-4 for SPOD Operations supporting Ukraine selection. Extensive coordination have provided invaluable reps services to ensure intratheater movement corridors and host nation agreements. This Coordination of RSOI operations ultimately results in accomplishment

- of operations.
- forward presence.
- communication.

The U.S. military is constantly OCONUS port diversification on the move conducting dynamic force deployments around the globe in support of strategic interests. command's overarching theater Intermodal operations remain key

Demonstrating commitment to allies through the ability to project combat power where and when needed in the theater

Detering adversaries through

Dilemmas created for adversaries due to their inability to predict movements through use of multiple SPOD/ SPOE and associated lines of

SDDC to enabling the projection of combat deployment networks, mobility capacity, and global command environments if it is to maintain the strategic advantage it currently enjoys in global force projection. USTRANSCOM and SDDC remain focused on mission execution, testing, and experimentation so the Army can maintain this advantage.

> Maj. Gen. Gavin A. Lawrence currently serves as the commanding general of Military Surface Deployment and Distribution Command at Scott Air Force Base, Illinois. He previously served as the Deputy Chief of Staff, G-4, U.S. Army Forces Command at Fort Liberty, North Carolina. He is a graduate of the United States Military Academy where he was commissioned as a second lieutenant in the Army Quartermaster Corps. He has a Master of Arts in national security and strategic studies from U.S. Naval War College, Rhode Island, and a Master of Arts in strategic studies from U.S. Army War College, Pennsylvania, where he successfully completed the Advanced Strategic Arts Program. He has also completed the Massachusetts Institute of Technology Seminar XXI program and University of North Carolina's Institute for Defense & Business LOGTECH Executive program.

Feature Photo

The 21st Theater Sustainment Command (TSC) supports the first U.S. and Portuguese mission at the Port of Setubal, Portugal, on Dec. 7, 2023, a collaboration between the 21st TSC, 598th Transportation Brigade, the Portuguese military and port authority, and the U.S. Mission to Portugal. (Photo by Sqt. Andrew Jo)



spectrum of warfighting equipment from unit funds. received attention, not just command, control, computers, communications, cyber intelligence, surveillance, and Army also saw an influx of field representatives (LARs). Soldiers for maintenance and sustainment. Combat training center after-action LAR has returned. FSR versus LAR

the importance of

sustainment

he world is learning able to maintain their equipment assigned to it. If you have an issue forward of the line and at the speed with your track, Tank-automotive and and of maneuver. However, the pervasive Armaments Command (TACOM) maintenance as it nature of rapidly fielding equipment has a LAR for that. If you have an watches Russia attempt to occupy through program executive officers issue with something on the aircraft, and annex Ukraine. Beleaguered prior to Program of Record adoption Aviation and Missile Command has Russian formations struggle to led to a large FSR maintenance a LAR for that. maintain their equipment across tail. While FSR personnel are great long lines of communication with technicians and close a maintenance Each LCMC complement of seemingly little to no maintenance and sustainment gap, they are LARs is dependent on what or sustainment support. The U.S.'s contractors and come with a different Programs of Record are underneath race to employ and maintain a set of constraints and restraints based that LCMC. So, the LAR team technological edge in the war on on their performance work statement, complement from TACOM may terrorism created an accelerated host nation agreements, and be larger than the LAR team proliferation of technology in equipment supported. Sometimes, complement from Communicationsthe operational force. The entire the funding for FSR support comes Electronic Command. Therefore, it is important to understand your LARs, what LCMC they represent, LARs are different. Although and what they do specifically for they are still civilians, they are the assemblage. Many of the LARs reconnaissance updates. In this Department of the Army Civilians. have a broad scope of expertise but push of modernization to control Per Army Regulation (AR) 700-4, are best suited when used for their the desired centers of gravity, the Logistics Assistance Program, LARs specialty. However, LARs are not are part of the Logistics Assistance simply a magic wand to wave at your support representatives (FSRs) and Program (LAP) and fall under the sustainment and maintenance issues.

a reduction of logistics assistance Army Material Command's umbrella of sustainment and maintenance As AR 700-4 says, the LAR does began to lose their maintenance and tasks: "The LAP delivers materiel not absolve the commander of sustainment fidelity as the Army enterprise capabilities that enable logistic readiness but is an asset to continued to field Non-Program of Army readiness at the tactical aid the commander in recognizing Record equipment under contract point of need in order to provide trends and providing hands-on commanders with freedom of action, training to close logistics gaps extended operational reach, and related to Programs of Record. The reviews on sustainment show the prolonged endurance." This means hands-on training portion of that U.S. military is in danger of looking LAR personnel can be with you at statement is crucial in receiving the like the Russians. The Army is now at the speed of maneuver to solve the best support from your LAR and the a turning point, and the time of the sustainment and maintenance issues LAP in general. Hands-on training that occur during combat operations. means whenever a LAR is providing Your unit's LAR team is the subject assistance to your formation, the matter expert pool for issues the operator or maintainer for that As far back as 2016, the Army unit cannot solve on its own. Every equipment must also be there. The looked to reduce FSR reliance and Program of Record underneath LAR's goal is to teach Soldiers how place ownership of maintenance and the four life cycle management to do it on their own. To borrow a sustainment back into the hands of commands (LCMCs) of Army popular analogy, they teach the Soldiers, who must return to being Material Command has LARs Soldiers to fish.



Lawrence Hill, a Joint Munitions Command Logistics Assistance Representative assigned to the 405th Army Field Support Brigade's Army Field Support Battalion, trains a motor transport operator from the 2nd Cavalry Regiment in Vilseck, Germany, Dec. 7, 2021. (Photo by Cameron Porter)

How to Use the LAR Team

To get the most out of the LAP and the LAR team assigned to your

pieces. When was the last time commander gets checked. Soldiers turned on the Joint Battle formation, there are a few things Command-Platform (JBC-P)? Do you must do. The first and most Soldiers know the JBC-P must be important thing you must do is turned on regularly to keep it from setting the conditions and culture being removed from the network? within the unit. Does your unit have a Standard operating procedures go a good maintenance plan and focus on long way to address issues like this. to railhead equipment. Invite them maintenance? Often, units focus on Commanders and leaders at all levels the attractive pieces of their inventory need to understand these nuances have them come to your motor pools. and ignore the enabling tools that to maintenance because Soldiers Commanders and staff leaders need

help maintain those attractive know that what is important to the

The next thing leaders must do for good LAR relationships is talk to them regularly. Do not only call them prior to a combat training center rotation as your formation is preparing to your maintenance meetings and

and welcome the LARs as enablers deployable, mandatory mobile, and emergency essential.

Lastly, and one of the most important parts of getting the most out of the LAP and LAR team, make sure your operators and maintainers are present. As mentioned before, the mission risk and need. For instance, report. Faults placed against rolling LAR wants to train themselves out of many LARs from various AFSBs a job. That's not to say they will stop were called to support Defender end item (such as recording a fault on helping you; they are enablers. This Pacific in 2021 because critical is one of the primary distinctions aspects of that exercise needed to between the FSR and the LAR. The have success. FSR is a doer. They maintain the equipment in the absence of Soldiers. The LAR teaches the Soldier how to process for requesting the LAR L-STR a false sense of where certain do it, creating spheres of maintenance team for support. After all, the Army influence in the formation. So, if the runs on documentation, and AR LAR is off somewhere else, that Soldier is now capable of performing the maintenance task on their own.

How to Find Your LAR Team

While each LCMC has a LAR population, the LAP is geographically dispersed and managed directly by the Army field support brigades (AFSBs) of Army service component command has an formality. AFSB, managing the LAP for Army Sustainment Command. AR 700-4 has a very detailed explanation of **Leader** where each AFSB is and the area battalions help deconflict and

to ensure there is LAR integration areas. Each Army division in the electronics maintenance. That is continental U.S., Alaska, Hawaii, and in your formation. After all, these are Korea have a lead-system technical a way. Secondly, look past any scar the same personnel that will deploy representative (L-STR) assigned to tissue that may have grown from with you when the time comes. AR it to help communicate maintenance war on terrorism FSR support and 700-4 explicitly says LARs must be trends and operations to the AFSB embrace the LAR team as part of and LCMC. Japan and Europe have your formation. Your LAR team these personnel also but are assigned is just as important as the enablers differently because there's no division in the brigade support battalion. headquarters. The AFSB, the L-STR, Third, make sure your maintenance and the LCMC senior command representative determine priorities of work and coverage in terms of Each L-STR has visibility of this

700-4 has a section specifically for documenting LAR support. In many units, the request is through staff and technical channels from battalion, through brigade, to the L-STR at division. However, if there is good integration of LAR support in the However, if you do not use these unit, chances are the LAR already helped the commander identify the makes your formation susceptible to problem and is helping resolve it, and Sustainment Command. Each Army the documentation for support is a facing.

What This Means to You, the

First and foremost, it means leaders the AFSB commander is responsible must take all maintenance seriously. for. The AFSB and its subordinate Prior to the war on terrorism, many units had two days set aside allocate these assets to best enable for maintenance. Monday was for the operations in their respective rolling stock, and Tuesday was for

not the only way to do it, but it is personnel are correctly inputting the data into the equipment status report. stock as opposed to the equipment the JBC-P against the tank instead of inputting it as a fault against the individual JBC-P system) are not visible. This gives the commander, Each unit has, or should have, a unit maintenance officer, and maintenance levels are.

> Take the lessons learned from watching the Russians fail at sustainment and maintenance and do not repeat them. The Army has many enabling capabilities that make it the greatest fighting force on the planet. enablers, which are already funded, it the very same issues the Russians are

Sgt. Maj. Shane K. Short serves as a Department of Force Management instructor of the Sergeant Major Academy at Fort Bliss, Texas. He previously served as the G-3 Sergeant Major for Communications and Electronics Command and as a troop sergeant major, Able Squadron, Asymmetric Warfare Group. His training includes SGM-A Class 69, Operator and Advisor Training Course Class 29, Sensitive Site Exploitation. and Armv Red Team. He has a Master of Science in instructional design, development, and evaluation from Syracuse University, New York.

Embracing Modernization



the 15 ver past years, significant advancements in aerial delivery capabilities have allowed for enhanced interoperability and readiness/ modernization efforts. Before 2005, tactics, techniques, equipment, and procedures (TTP) remained unchanged for over 50 years. The TTPs mentioned in reference texts were very useful in enabling the aerial delivery field to provide a strong foundation for the initial airdrop sustainment missions during Operation Iraqi Freedom and Operation Enduring Freedom. During the time of conflict, aerial delivery was forced to adapt and modernize. Currently, the Army is still modernizing and striving to be adaptable for large-scale operations, humanitarian support, and NATO interoperability support.

Aerial delivery is essential in shaping battlefields and giving commanders access to resources that would otherwise be denied when operating in a land-locked country like Ukraine. This led to a revision of Army Techniques Publication 4-48, design updates to unit structures. As individual combat loads and equipment became heavier and more robotic applications. sensitive, modernization became necessary for paratroopers jumping rate of descent to avoid injuries and ensure the paratroopers' safety. Advancements on the battlefield, such as adversaries' increasing surface-to-air capabilities, have also impacted aerial delivery operations, pushing the Air Force to request higher drop altitudes

and autonomous airdrop capabilities to avoid damage. With guidance from the Army Airborne Board and commanders at all levels, the aerial delivery community has adapted to new aerial delivery requirements and lessons learned for an ever-evolving battlefield.

By leveraging MAT-APM's many The aerial delivery community must capabilities, data collection, analysis, and audits will increase throughput continue to support Soldiers with modern technology changes and work and reduce the need for human modernization efforts to increase resources. For example, MAT-APM is a great resource and improvement commanders' operational reach and maneuverability. For any systems on how the aerial delivery community an airborne unit utilizes, the Army collects data on malfunctions and requires rigorous developmental and mishaps of ADE. The reports contain operational testing and certification multiple data points, capturing all for airdrop and sling load. Training relevant information on the user, and standards must also be developed maintainer, terrain, and weather and implemented for parachute conditions. The aerial delivery field riggers, jumpmasters, Air Force is working to improve the process aircrews, and joint airdrop inspectors. by introducing digital submission The Army is advancing the capabilities through MAT-APM instead of fax, email, or SharePoint. This will for aerial delivery by implementing enhance record-keeping and instant modernization initiatives such as utilizing mobile asset trackerinformation gathering for leaders. The automated parachute management current process is labor-intensive and (MAT-APM) for tracking and requires years of experience to correctly maintenance, establishing the Aerial review and process submissions, which Delivery Readiness and Safety Team takes time away from leaders and staff. Aerial Delivery, incorporating force (ADRST) to evaluate and support all Retrieving data for combat developers aerial delivery units, and integrating can be challenging, and the system is human and computer functions using vulnerable to data loss and is restricted by local software policies.

The MAT-APM application is To assist aerial delivery units with with more weight and at a slower a program designed by the aerial modernization and ensure safety delivery community to establish and readiness, G-4 has created a a database to keep track of the new team called the ADRST. This history, maintenance actions, and team's mission is to assess and assist catalog information of aerial delivery all aerial delivery units every three equipment (ADE). It provides a to four years. They assess adherence system for aerial delivery units to to policy and doctrine across all monitor personnel certifications, components of aerial delivery units.

qualifications, and the operational status of ADE. The reason why the aerial delivery community took this action is that Global Combat Support System-Army was unable to perform these tasks, and a different process was needed.



Sqt. 1st Class Jesse Norris, a member of the Aerial Delivery Readiness and Safety Team, conducts a quality assurance and control check on a parachute as part of an assessment for the Airdrop Branch of the Joint Readiness Training Command, Fort Johnson, Louisiana, Jan. 10, 2024. (Photo by Sgt. 1st Class Nicholas Runyan)

added assessments, the team has across the aerial delivery community School's basic course. The team also partnered with other units such as the and report all findings to Army G-4. National Guard Airborne and Aerial The team is developing an award for the triannual malfunctions safety Delivery, Safety, Training, Readiness, program for annual aerial delivery unit and analysis review board to identify Assistance Program; the 1st Special readiness, safety, and unit of excellence units with malfunctions or mishaps Forces Command senior airdrop and is credentialing its members advisor; and the Army Reserve through organizations such as Army airdrop office. The team's goals are Sustainment University's Data they are working on expanding MATto provide a status of the aerial Analysis and Visualization course, APM's capabilities to allow units delivery capability Army-wide and Army Combat Readiness Center's to submit malfunction reports and to offer assistance and get-well plans Army Mishap Investigation Course, utilization summaries electronically.

To provide standardized and value- if needed. They share lessons learned and the Army Inspector General assumes the duties and responsibilities and address them during assessment and assistance visits. Additionally,

effort is to implement artificial intelligence (AI) applications to Due to theater aerial delivery companies and corps aerial delivery companies being at risk of mission degradation for intratheater-level support activities, a need for a viable below-standard effectiveness are parachute packing facility operations, parachute management, rigging facility operations, heavy problems both in garrison and combat environments because personnel manning strengths cannot support full-scale aerial delivery requirements. speedy in providing mission-critical cargo and key personnel anywhere in a dispersed era of operation. This strategic aim cannot be fulfilled if the manning portion is not maintained to wartime readiness rates above 90% or if the effectiveness of the personnel rigging is not trained appropriately with the right amount of experience.

As a result, the Aerial Delivery and Field Services Department the battlefield and helping the Army at Fort Gregg-Adams, Virginia, achieve victory. Therefore, it is crucial is teaming up with the Army to prioritize safety and readiness Combat Capabilities Development when modernizing aerial delivery

Another modernization effort Command in Natick, Massachusetts, capabilities. This can be achieved the aerial delivery community is to design an AI robot that can by analyzing data and auditing undertaking is the integration of interact with humans and perform the aerial delivery community. human and computer functions rigging duties. This collaborative The collected data is valuable for through robotic applications. This effort includes private organizations developers improving aerial delivery and colleges such as Carnegie capabilities. It provides them with Mellon University, Pennsylvania, relevant and up-to-date data points, augment aerial delivery operations in to help create a technological which can speed up the design and personnel parachute packing, cargo application to meet aerial delivery's testing process in the developmental rigging, and maintenance activities. unique challenges and perform the and operational phases. AI robots associated high-risk operations. can be used in the future to address These cutting-edge efforts shape the human constraints resource future augmentation of the human and modernization efforts. The force to help commanders improve development and implementation combat readiness levels and outputs timeline for ADE is quite lengthy, solution, which can be sustained both both in the garrison and on the future and the development of training in garrison and combat, is immediate. battlefield. The AI robotic system will programs further compounds it. The types of operations that face also be able to connect to automated However, the MAT-APM, ADRST, systems such as MAT-APM to and integration of human and upload real-time data and have total computer functions through robotic asset visibility throughout the aerial applications provide commanders delivery enterprise. This monumental and senior leaders with crucial drop operations, and ADE repair change to how aerial delivery is information and resources to make facility operations, which constitute implemented will revolutionize aerial informed decisions at the right time. delivery operations to improve speed, Frank Badalucco is presently the Deputy volume, and asset visibility from the Director of the Aerial Delivery Readiness tactical to the industrial enterprise. and Safety Team at the Aerial Delivery and Field Services Department (ADFSD), Fort The future seems so far away, but Gregg-Adams, Virginia. Previously, he was a In today's multidomain operations it is within reach due to push from senior airdrop advisor and an aerial delivery technical writer for ADFSD. During his tenure (MDO), aerial delivery must remain the leaders of both the airborne and as a technical writer, he was responsible for aerial delivery communities. An monitoring and conducting an initial analysis of aerial delivery malfunctions and incidents. AI robot that can conduct aerial Feature Photo delivery rigging would help augment Sgt. 1st Class Freddie Feliciano, a member the human force and improve both of the Aerial Delivery Readiness and Safety Team, explains the process of parachute quality and quantity to increase packing to team members from Carnegie Meloperations and safety measures of Ion University's Master of Human-Computer effectiveness and to give commanders Interaction program as part of a parachute packing demonstration conducted by Staff the decisive edge needed to dominate Sgt. Diana Campos, an instructor assigned the future MDO environment. to the Aerial Delivery and Field Services Department, Fort Gegg-Adams, Virginia, Feb. 9, 2024. (Photo by Sgt. 1st Class Jesse Norris)

Aerial delivery is pivotal in shaping

Leaping Ahead in Projecting Combat Power

Control Element By Lt. Col. Scott Gum



n Feb. 24, 2022, the forces of the Russian Exceeding limitations of stove-piped legacy systems, the Federation crossed the Ukraine border, JMCE accomplishes what has never before been possible. initiating a special military operation that First and foremost, it rapidly enables integration between resulted in the first major ground combat European allies/partners and DOD assigned/allocated operation in Europe in 70 years. In swift response, forces during the planning and execution of operations, NATO nations, including the U.S., mobilized to support rotations, and exercises in support of military mobility Ukraine with military materiel and supplies. Since the across the European theater. In addition to achieving this conflict's onset, the U.S. has assured its allies by projecting extraordinary new standard of joint operations, it also combat power across Europe, dedicating over \$44.2 leverages digital persistence, enabling consolidation and billion in military aid under the Presidential Drawdown analysis of DOD and commercial information systems Authority (PDA), granted in the Foreign Assistance capabilities with LOGFAS, enhancing the functionality Act of 1961. To coordinate these complex deployments of LOGFAS across NATO nations. Since 2022, the 21st and logistics movements across nations, the 21st Theater TSC rapidly deployed and tracked 14 brigade combat Sustainment Command (TSC) has operationalized teams, five division headquarters, two corps headquarters, theater sustainment to meet the challenge. and countless enablers with near-flawless transparency in addition to partner aid missions, including 32 Surface U.S. European Command (USEUCOM) faces the Deployment and Distribution Command vessels of sustainment and combat power.

daunting task of accurately tracking the movement of Army division-sized forces in addition to the military sustainment materiel entering and traveling through For the 21st TSC, the PDA mission is clear—transport European NATO countries. A critical aspect of this and track resources that are critical for Ukrainian victory. support falls under the 21st TSC's responsibility. Within Success in this mission relies on meticulous preparation the 21st TSC, the 267th Theater Movement Control of materiel for shipment, coordination with allies and Element (TMCE) developed, tested, and implemented partners, and appropriation of funding for the ongoing an unprecedented method to further enable movement support by the American people backing this crucial control: the Joint Enterprise Data Interoperability endeavor. (JEDI) Movement Center – Europe (JMCE). Developed in collaboration with industry partner Nexus Life Cycle The safe and secure movement of resources through Management, the JMCE serves as a crucial interface a multinational environment is imperative, and this is between the 21st TSC, allied and partner nations, and where the 21st TSC, specifically the TMCE, comes into NATO, which relies on the Logistics Functional Area play. The importance of solidarity with sovereign nations Services (LOGFAS) suite of tools. and transit nations cannot be overstated.

TSC, plays a pivotal role in accounting for a significant in identifying frustrated cargo, reducing errors and delays from diplomatic clearances, and responding to requests for information from commanders and higher headquarters at the tactical level. This innovative element ensures the hand-off points, critical to the success of the mission, are efficiently managed and executed.

developed out of necessity, facilitated the rapid adoption of nextgeneration transponders (NGTs), JEDI, and LOGFAS capabilities in a scope never before Beyond attempted. tracking, the JMCE has been at the forefront of advancing intransit visibility (ITV) capabilities, particularly with LOGFAS. The of implementation this ITV capability, including the integration of commercial off-theshelf (COTS) NGTs, was a groundbreaking step forward. The use of NGTs presented several challenges and

employment phases.

Implementing the new systems and methodology validated the commercial approval of NGTs throughout teams.

The TMCE, operating under the umbrella of the 21st the European Union (EU), leading to the permanent authorization of NGTs. A dedicated team member was portion of the support when in the European theater. added in Germany to provide direct ITV support to the Established as part of the TMCE, the JMCE is vital JMCE, resolving operational demands and advancing processes and policies to reduce the risk of additional concerns related to the new ITV capabilities.

The JMCE's commitment to continuous improvement is evident in its response to these spectrum management concerns. Recognizing the challenges posed by employing COTS technologies, the JMCE actively The military-commercial hybrid nature of the JMCE, addressed these concerns and collaborated with relevant

> This mission, beyond its operational successes, has yielded a wealth of lessons learned for logistics operations in the multinational and NATO environment.

authorities, including the EU, to secure commercial approval for NGTs. Since the integration of NGTs in the theater, the JMCE has accurately tracked and reported on 869 missions between May and December of 2023. The industry team's dedication to resolving concerns and providing direct support reflects the adaptability and commitment of the JMCE to meet operational demands effectively.

The IMCE's work within the 21st TSC is not limited to tracking

lessons learned during the development and operational assets and ensuring timely deliveries. It extends to updating policies, executing new processes, and managing new technologies. Ongoing efforts include testing the use of mission data available in the Transportation was not without its challenges. In late July 2023, Coordinator's Automated Information for Movement spectrum management concerns arose, highlighting the System (TC-AIMS), the Army's transportation complexity faced when employing COTS technologies coordination tool, with plans to bridge TC-AIMS to such as NGTs with LOGFAS. By early August 2023, the LOGFAS to streamline data entry requirements for JMCE, working in collaboration with industry experts, movement control battalions and movement control

This mission, rooted in on-the-ground, evolving NATO and the U.S. military face extraordinary processes, serves as a proving ground for advancing the challenges in responding to the Russian Federation's incursion into Ukraine. Amidst these tumultuous Army's logistics and technological capabilities in Europe. The JMCE's integration of NGTs, JEDI, and LOGFAS times, the U.S. commitment to support Ukraine, under the PDA, necessitates a meticulous and synchronized capabilities into PDA missions not only advances ITV capability but also contributes to the development of logistics effort. The establishment of the JMCE policies, technology, and process advancements being within the 21st TSC emerges as a pivotal element, assessed by the Army and NATO partners. At present, facilitating an agile approach to coordination, tracking, the 21st TSC is a catalyst for positive change, pushing and transportation of critical resources. The benefits forward advancements benefitting both Ukraine support provided by cutting-edge technologies, including NGTs, and the entire Army ecosystem operating in Europe. JEDI, and LOGFAS, are seen every day across Europe. Notably, the JMCE's role extends beyond immediate Due to the increased need for the U.S.'s support for support for Ukraine, showcasing its impact on global Ukraine under the PDA, the use of NGTs and the data sharing, technological advancements, and lessons implementation of greater ITV through the JEDI learned for logistics operations. The new technologies, multinational (MN) logistics (LOG) common operational methods, and capabilities all add velocity, visibility, and picture (COP) enhance the ability for successful flexibility to the Army's decision-making, increasing its USEUCOM theater deployment and sustainment of advantage in future contested logistics environments. The U.S. forces in a coordinated and collaborative joint and continuous improvement ethos of the combined TMCE multinational environment. Furthermore, they strengthen and JMCE, its adaptability to overcome challenges, and the multinational force readiness capability and posture innovative contributions to NATO's working groups are as the conflict continues. groundbreaking with every movement, demonstrating its significance as a catalyst for positive change in advancing This mission, beyond its operational successes, has yielded Army logistics and logistics convergence across Europe.

a wealth of lessons learned for logistics operations in the Lt. Col. Scott Gum serves as the chief of the 267th Theater Movement multinational and NATO environment. Acknowledging Control Element at 21st Theater Sustainment Command on Panzer the importance of sharing these insights, the JMCE has Kaserne in Kaiserslautern, Germany. He previously served as the joint operational logistics planner for U.S. European Command J-4. He has actively contributed to NATO's Asset Tracking Working a Master of Science degree in homeland security from Colorado Tech-Group and plans to participate in NATO's Coalition nical University. Warrior Interoperability exercise and Asset Tracking Feature Photo Capability Integration Campaign exercise. The Rhine River barge crew loads equipment for the 82nd Airborne

Beyond the direct support for Ukraine, the JMCE's use of LOGFAS enables rapid data sharing not only with NATO and NATO partners but also globally with non-NATO partners. This global application was demonstrated in North Africa during exercise African Lion 23, which showcased the versatility and interoperability of the JMCE's capabilities. The data collected can be shared with other DOD or partner dashboards or systems using the MN LOG COP application programming interfaces, providing commands across DOD the flexibility to use their preferred tools for viewing or analyzing the data. The natural next step for the DOD is to extend the proof of concept to other theaters of operation.

Division deployment to Europe in Antwerp, Belgium, Nov. 23, 2023. (Photo by Capt. Jake Palmer)

HE BERNETIGNAL LOGISTICIAN

By Command Sgt. Maj. Oscar Llamas

armysustainment@army.mil | Lessons Learned: Ukraine Sustainment Operations | 33

ost agree that much of what a The required education exists and is currently delivered senior sustainment NCO does is to senior logistics NCOs at the LNCOA. accomplished through the lens of a multifunctional logistician. What is a multifunctional logistician? It's an NCO with experience was codified. The implementation of the broad knowledge and experience who is qualified to Personnel Development Skill Identifier (PDSI) of fulfill several functions or roles within the sustainment the multifunctional logistician encourages leaders

warfighting function. This definition was determined and established early in nominative 2023 by command sergeants major and sergeants major across the Total Army.

The NCO corps currently has **NCOs** assigned to varied organizations performingmultifunctional tasks. What did not exist until now was a codified process to bridge education and experience.

In May 2022, a directive was issued incorporate to Sustainment Common Core within the Senior Leaders Courses (SLCs) of logistics **NCOs** attending professional mileducation at itary the Logistics Non-

commissioned Officer Academy (LNCOA) at Army multifunctional logistician NCO. Establishing the Sustainment University (ASU), Fort Gregg-Adams, multifunctional logistician NCO PDSI allows for a Virginia. The intent is to provide senior NCOs attending formal program of self-guided professional development. their respective SLCs with 58 hours dedicated to The following criteria for a multifunctional logistician logistics common core. Sustainment Common Core is NCO were submitted for recommendation to the the foundation of the multifunctional logistician NCO. permanent PDSI:

Once the educational aspect was established, the within the sustainment enterprise The multifunctional to become skilled. The logistician reflects the also identifies trained and leader development senior logistics NCOs for model in that positions leader identification and certification is a deliberate, continuous, sequential, and

progressive process

grounded in Army

Values and the Army

Chief of Staff's four

major priorities.

organizations. Doing so provides a baseline understanding of mission planning within each sustainment warfighting fun-With ction. the implementation of the PDSI, positions coded as are multifunctional logistician positions, placing the right person in the right position at the right time. In December 2023, the Logistics Branch Office Proponency (LOGPRO) within ASU submitted a PDSI requesting the establishment of the

to

seek

multi-

PDSI

within

experienced

multifunctional

- Common Core).
- 12 to 24 months.
- Graduate the Support Operations Course (Phase increasingly complex world. I).
- reports).
- accredited college hours.
- ArmyIgnitED.

Serve as support operations course commodity There are currently logistics NCOs assigned to manager, S-3/operations noncommissioned officer various organizations performing multifunctional in charge, or G-4/S-4 successfully for a minimum tasks. A senior multifunctional logistician NCO of 12 months (validated through NCO evaluation possesses broad knowledge and experience and is qualified to fulfill several functions or roles within Complete an associate degree with at least 60 the sustainment warfighting function. The education portion of being a multifunctional logistician NCO Acquire one credentialing certificate via is delivered through Sustainment Common Core presented to senior leaders who attend their respective Complete one functional course at ASU. SLCs at the LNCOA. However, there has been no process to certify multifunctional logistics NCOs, so The request for the multifunctional logistician NCO is efforts have been focused on codifying the process. The currently being actioned by Headquarters, Department implementation of the multifunctional logistician NCO of the Army, G-1. Once the PDSI has been approved, PDSI will allow the NCO corps to identify and certify a board will be established, and LOGPRO will decide logistical senior NCOs in performing multifunctional in detail the packet submission. The number of packets duties in multifunctional organizations, becoming submitted for the PDSI will determine whether boards multifunctional logisticians in the process. meet quarterly or monthly.

Command Sgt. Maj. Oscar Llamas currently serves as the command sergeant major and commandant of the Logistics Noncommissioned The Army Leader Development Model is woven Officer Academy at Army Sustainment University, Fort Gregg-Adams, Virginia. He graduated from all levels of the Noncommissioned Officer into the fabric of the multifunctional logistician. The Professional Development System, culminating with the Sergeants institutional domain is seen through the educational Major Academy. He holds a master's degree in psychology. He is also a graduate of the Senior Enlisted Joint Professional Military Education aspect of the Sustainment Common Core received course and the Supervisor Development Course. by senior leaders attending their respective SLCs at Feature Photo the LNCOA. The operational domain is seen in the Soldiers assigned to C Company, 87th Division Sustainment Support myriad of multifunctional positions in which senior Battalion, 3rd Division Sustainment Brigade, unload an M1 Abrams tank from the M1302 trailer, part of the enhanced heavy equipment NCOs currently serve. throughout multifunctional transporter system, after hauling the tank back to the 2nd Armored organizations. The self-development domain is grafted Brigade Combat Team at Pabrade, Lithuania, Jan. 10, 2024. (Photo by Sgt. 1st Class Jason Hull) into a multifunctional logistician through various functional courses, civilian education, and a multitude of certifications and credentialing. The multifunctional logistician reflects the leader development model in that leader identification and certification is a deliberate, continuous, sequential, and progressive process grounded in Army Values and the Army Chief of Staff's four major priorities.

Identifying and certifying multifunctional logistical senior NCOs to meet the demands of the sustainment

Graduate a senior NCO SLC (with Sustainment enterprise allow for continuous transformation through the delivery of combat-ready formations Perform duties in a leadership role successfully for while strengthening the profession of arms. The Army is transformational in winning the challenges of an

THEATER SUSTAINMENT TRANSFORMATION

Lessons from the Russia-Ukraine War

By Maj. Gen. Ronald R. Ragin and Maj. Christopher G. Ingram

systems. in Ukraine, once a logistics node Soldiers do.

merging technologies, is established, it is rapidly targeted

The proliferation and exponential already visible on the and often destroyed in less than 24 growth of emerging technologies are battlefields of Ukraine, hours. With drones that can detect, changing the scale, geometry, and are rapidly changing the surveil, and target, the kill chain in complexity of warfighting. The lessons character of war in ways that require Ukraine demonstrates that as fast as learned in Ukraine are not unique a transformation in how the Army a supply depot or command post can to Europe. From Russian logistical sustains the fight. Autonomous be found, it can be destroyed. The missteps in the 2022 invasion of long-range precision future of armed reconnaissance is Ukraine to the attrition warfare that fires, and hypersonic weapons unmanned, lethal, and expendable, predominates the defensive fight are reaching deep and targeting and it may be operated by artificial today, these lessons should drive command posts, logistics nodes, and intelligence (AI) that follows a transformation of sustainment across lines of communication. As seen different set of moral norms than the Army, joint, and multinational forces.



One of the hazards in applying lessons learned in any conflict is that adversaries may draw different lessons from the same events. In Operation Desert Storm, the U.S. and its allies deployed to a new theater of conflict, of the world's largest land armies in The lesson the U.S. learned was that it could use its advantage in strategic mobility to respond to threats anywhere in the world. The lesson its adversaries learned was that if you let the U.S. establish a coalition and build up combat power in your neighborhood, you cannot win. From this observation, Russia and China invested heavily for three decades in anti-access/area denial capabilities.

Georgia, Russia's theory of victory has been to turn tactical success into strategic advantage by exploiting political divisions of democratic nations and negotiating an end to the conflict that achieves their objectives. In contrast, the U.S.'s theory of victory theater set for contested logistics, the close fight.

The logistics challenges the Russians faced in the early stages of ability to project and sustain forwardthe Ukraine invasion should not be positioned forces rapidly, reliably, and ignored, but it cannot be assumed consistently from multiple points those challenges reflect the current of origin to deployed locations or future Russian force. Russia throughout the depth and breadth of is learning lessons and adapting the battlefield.

under fire. While the initial phase depended on expeditionary logistics, the current phase features an active defense supported by robust internal lines of communication that are more consistent with Russian sustainment doctrine and organization.

At the theater level, Russia is built combat power, and defeated one expected to learn from its early missteps and develop expeditionary under 100 hours of ground combat. logistics capabilities to sustain offensive operations. Likewise, they are expected to continue investing in capabilities they believe will contest the U.S.'s ability to project power in response. While there are countless tactical lessons to be learned, this article's focus is on areas of theater sustainment transformation that will be critical to countering Russia, China, or any advanced adversary.

Contested power projection As demonstrated in Ukraine and provides combatant commanders with sufficient power projection capability and capacity to enable strategic and operational reach and supports the freedom of action necessary to create multiple dilemmas for our adversaries. Executing contested power projection requires rapid power projection; includes an allied unity of effort, a conducting reception, staging, and onward movement (RSO) in contact; multiple dilemmas imposed on the use of Army pre-positioned stocks adversary, and creative options to win (APS); and theater power projection capabilities.

Rapid power projection requires the

RSO in contact should be an assumption in planning for crisis and conflict. Current operations are regularly conducted under the observation of adversaries. Intelligence gathering on RSO locations, timelines, and capabilities sets the conditions for active targeting in future crises or conflicts. Throughout the process, critical vulnerabilities are exploited for targeting RSO across all domains.

APS enables forces to be inserted rapidly and prevents adversaries from exploiting a window of opportunity to gain a fait accompli. In unanticipated crises, APS may represent the bulk of immediately available combat power. The balance of APS should include the sustainment capabilities required for intratheater force projection and distribution.

Theater power projection platforms are critical to strategic mobility and the rapid movement and integration of combat forces. An adversary can attack anywhere, so it is critical to have theater power projection platforms to respond rapidly to any potential crises.

Adaptive sustainment is the solution to a contested logistics environment. Adapting to a contested logistics environment requires rapid and predictive decision-making, sustainment at echelon that is purposefully designed for distributed and responsive operations, and diverse options for the transportation of forces and materiel. Rigid planning processes, points of failure, or single lines of fixed targets for contested logistics. communication create vulnerabilities the enemy can exploit to delay, disrupt, and defeat friendly forces.

over 10,000 a day flying on each the Russians adapted. side, has made masking, camouflage, dispersion, and mobility a conflicts. Expendable long-range drones above mean that if you can be almost always be seen.

Data-enabled decision-making and AI-enabled predictive sustainment are the nervous systems of an adaptive sustainment network. storage of bulk commodities is In a major war, the pace and scale of attrition will cripple antiquated decision-making processes. Ach- scale seen in Ukraine. Both sides not sufficient for large-scale combat ieving decision-advantage over the target fuel and ammunition storage adversary requires the ability to facilities. Even semi-fixed locations building maintenance, repair, and collect and process volumes of data quickly and to provide relevant, dynamic fight and are targeted. reliable information to decisionmakers faster than the adversary. AI will not replace Soldiers in combat, but Soldiers who know how to use AI will defeat those who do not.

Multimodal provides options for sustainment two million gallons per day. Relying when adversaries attack a preferred mode. Army watercraft are critical to delivering fuel to forward operating ground lines of communication are contracted distribution will reach

echelons of sustainment with single bridges, railheads, and tunnels are dominated by persistent surveillance Russian forces were overly dependent on rail transportation and struggled

The ability to hide in plain the offense. Russian reliance on rail sight is critical to operating in a for high-volume resupply of artillery contested logistics environment. ammunition also created a lucrative The proliferation of drones, with target for contested logistics before advantages in speed and proximity.

Secure prolonged endurance market. The ingenuity of Ukrainians requirement for survival. Surprise, determines the outcome of major has already demonstrated that or rear area sanctuary, will be wars. The side that produces, additive manufacturing can produce dramatically decreased in future maintains, and regenerates combat power faster will likely prevail in operational requirements. However, Ukraine. As the pace of destruction current policies and proprietary seen, you can be killed, and you can has increased, the complexity of restrictions create hurdles for the use weapons systems has also increased. Success requires stockpiles of critical munitions and rapid regeneration.

> Pre-positioned and distributed required to sustain forces in a contested environment at the are not mobile enough to support a

Resilient and autonomous distribution creates a targeting disrupting logistics. The simplest way to disable a tank is to deny it transportation fuel, and a corps-sized force requires in recent decades on contractors

and long-range fires.

Production at the point of when they had to transition from rail need improves readiness and to road for expeditionary logistics in reduces the demand for long lines of communication. Advanced manufacturing closer to the point of need provides exponential Advanced manufacturing capabilities exist in the commercial parts that are good enough to meet of these technologies to sustain U.S. forces.

Regeneration of combat power requires distributed maintenance activities in theater with higherlevel capabilities. The efficiency of the current sustainment model is operations. Russia has prioritized overhaul capability sites to get combat platforms rapidly back into the fight. Maintaining the advantage in prolonged endurance requires capabilities and authorities dilemma for an enemy focused on for combat regeneration, including advanced/additive manufacturing of parts in theater.

Collective sustainment enables collective defense. The U.S. has not fought a major war alone since 1898. sustaining operations in areas where bases, it cannot be assumed that When considering reinforcement and sustainment, the Army must unavailable or disrupted. Large ports, the tactical edge in an environment find collective solutions and reduce

friction. That includes collective infrastructure, investment in training, and efforts to streamline the cross-border mobility process. Whether in Europe, the Pacific, or elsewhere, building partner capacity and improving interoperability will make us stronger together.

Interoperability, integration, and interchangeability of sustainment capabilities improve unity of effort and prolonged endurance in a future conflict. The Army must train alongside its allies and partners as it pursues modernization. Our strength is multiplied when we combine effects to address common challenges, share costs, and widen the circle of cooperation. Interoperability enables forces, units, and/or systems to operate together, allowing them to communicate and share common doctrine and procedures, along with each other's infrastructure and bases. While interoperability can be trained, integration requires the ability to seamlessly sustain forces, regardless of nation, enabled by interchangeability.

Conclusion: Campaigning to Transform Theater Sustainment

As transformational change is sought to win in contested logistics lessons being learned today are from environments against strategic the sustainment operations the Army rivals, theater sustainment requires does every day to transport, integrate, deliberate operations, investments, and repair equipment donated by the and experimentation:

access/area-denial strategy requires contested projection across all domains, theater operations in conflict.

Collective defense requires collective sustainment. Allies are the U.S.'s greatest strength. While we face active threats from adversaries opposed to the rules-based international order, we are stronger together. Finally, some of the least discussed U.S. and its allies to Ukraine. The Army has an opportunity to leverage • Russia and China's anti- these contingency operations through a campaign mindset to power transform how the Army sustains

from points of origin to the tactical edge. Our adversaries' theory of victory relies on objectives.

The

force.

contested logistics environment requires an adaptive sustainment network, model, and multimodal and unmanned transportation capabilities to sustain the

Victory depends on secure prolonged endurance. All wars become wars of attrition, eventually. The side that creates multiple dilemmas for its adversary, sustains the massing of operational effects at critical points over time, and regenerates combat power faster will win.

The innovations the Army fails to make today will be the adaptations it is forced to make under fire delaying our military response tomorrow, and the price will be to achieve their strategic paid in lives lost. Russia is adapting; China is innovating; Iran is learning; and the technological evolutions seen today will reshape the future of conflict. The scale and complexity which leverages AI to adapt of war are changing rapidly. Is the faster than the enemy attacks, Army transforming sustainment a networked sustainment doctrine, infrastructure, equipment, and training fast enough to win the next fight, wherever it occurs?

> Maj. Gen. Ronald R. Ragin currently serves as the commanding general of 21st Theater Sustainment Command and as deputy commanding general - support of United States Army Europe and Africa. He previously served as deputy commanding general - support of Security Assistance Group - Ukraine. He holds a Ph.D. in public policy from Walden University, Minnesota. He completed the Harvard National Security Fellowship program and is an alum of the Harvard John F. Kennedy School of Government, Massachusetts.

> Maj. Christopher G. Ingram is an Army strategist, currently serving in the Commander's Initiative Group of 21st Theater Sustainment Command in Germany. He previously served as deputy chief of plans and operations at the National Training Center Operations Group, California, and as the speechwriter to the commander of Combined Joint Task Force **Operation Inherent Resolve.** As an infantry officer, he served in South Korea, Iraq, and Afghanistan. He holds a master's degree in international affairs from American University, Washington, D.C., and serves on the board of the Military Writers Guild.

Feature Photo

A French soldier assigned to the 92e regiment d'infanterie engages an enemy drone during Saber Junction 23 at the Joint Multinational Readiness Center at the Hohenfels Training Area, Germany, Sept. 10, 2023. (Photo by Sqt. Christian Aquino)

Changing Military Mentality Vitalto Modernization

By Adriane Elliot

s the Army comes out of prolonged The DEAG was activated to support the Armed conflicts in the Middle East and focuses Forces of Ukraine, which had been deeply entrenched its attention on Russia and the pacing in post-Soviet mindsets and processes, to become a threat of China, Army leadership is force capable of NATO integration. It consisted of working overtime on modernization plans to ensure it highly skilled U.S. Army officers, numbering between cannot be outranged or outpaced by its adversaries. four and six Soldiers at a time, who advised at the operational level to revamp doctrine and professional Whether the threats come from cyberspace or military education.

traditional battlefields like Ukraine, the Army is pursuing its most significant modernization effort in generations.

But as the Army modernizes, it must also help its allies and partners modernize to maintain the vital interoperability and operational effectiveness that will prove decisive on tomorrow's battlefields.

Part of that partner modernization assistance includes helping allies refine operational concepts, not just tactical practices.

The U.S. Army Security Assistance Command (USASAC)headquartered at Redstone Arsenal, Alabama, with personnel spread across the globe-has incorporated this modernization support into its vast arsenal of security assistance aid.

USASAC's Security

Assistance Training Management Organization with multiple combat deployments. He is currently the (SATMO) supplied Ukraine with a Doctrine Education deputy of G-33 Current Operations for the Army's Advisory Group (DEAG), which was headquartered XVIII Airborne Corps at Fort Liberty, North Carolina. in Kyiv from 2016 until three weeks before Russia's invasion in February 2022. SATMO provides advanced "Creating a climate for organizational change, altering and specialized training, professional military education, the way a group has been thinking for generations, is and tactical-level expertise to allies and partners a much bigger feat than teaching someone to follow worldwide. orders or execute a task," he said.

"There was minimal teaching in the traditional sense

But as the Army modernizes, it must also help its allies and partners modernize to maintain the vital interoperability and operational effectiveness that will prove decisive on tomorrow's battlefields.

of standing in front of a classroom," explained Lt. Col. Rob Nesbit, former detachment commander for the DEAG. "The reality is that there is far more advising of senior Ukrainian leaders which, in an abstract way, is teaching. Having said that, what we modeled to the Ukrainians is effective long- and midrange planning and professionalism."

If that sounds simple, Nesbit said it's not. And he should know. Leading the DEAG until weeks before the invasion and continuing to consult at the start of the war, Nesbit has spent the majority of his life as an active-duty Army officer (37 years and counting)

It's a complete cultural shift, notoriously difficult even in the best of circumstances, and even more so considering the rigid, top-down style of leadership Foreign Assistance Specialist Pat Macri, "but we're that was a remnant of Ukraine's Soviet roots. This confident that it aided our partner and will continue, is in sharp contrast to the U.S. military's mission long after this war has ended, to provide tremendous command doctrine, which delegates decision-making to subordinates wherever possible, minimizing detailed control, and empowering lower-level initiative.

Despite the challenges, Nesbit began to witness a hopeful shift as senior Ukrainian officers, recognizing the value of standardized planning, began using longrange forecasting and preparation that are a hallmark of successful organizations.

The DEAG mission supported the Armed Forces of Ukraine: the National Guard, the National Defense University, and to a lesser extent the Air Assault and Airborne Forces and the Ukrainian Marine Corps. The mission was a crucial test of what the future holds for a strong, independent Ukraine and regional stability throughout Europe.

"Within the realm of great power competition, the DEAG was really a component of U.S. and NATO efforts to counter Russian influence, not just in Ukraine but throughout Europe," said Nesbit. "The importance of the mission rested in its ability to set conditions that enable the Ukrainian military to serve alongside Euro-Atlantic partners in the future."

Col. Dan Miller, former chief of the Office of Defense Cooperation at the U.S. Embassy in Kyiv, described the DEAG's work as leading edge, most notably its "development of new, NATO-interoperable doctrine and reforms to the professional military education system. This represents vital first steps to creating the sustainable and irreversible change needed for Ukraine to progress on its desired path to NATO membership."

No one knows how the story will end, but the beginning is clear. The world watched in awe as a much smaller, lesser-equipped Ukrainian military used extraordinary resolve and overwhelming allied support to defy the odds against Russia.

"We won't know the full impact of the DEAG and other international support," said SATMO's Ukraine benefit."

For more information on USASAC and how its security assistance missions support U.S. foreign policy, visit www.army.mil/usasac, or to learn more about SATMO, visit www.army.mil/satmo.

Adriane Elliot has served as a journalist, editor, and public affairs specialist for the Army for more than 26 years, both on and off active duty in the U.S., Europe, Asia, and the Middle East. Before beginning her military public affairs career, she served as a freelance reporter and columnist for the New Bern Sun Journal in New Bern, North Carolina. She served as the director of public affairs for the Army Area Support Group-Afghanistan during a yearlong deployment in support of Operation Freedom's Sentinel and the ongoing NATO-led Resolute Support Mission. She is the recipient of multiple military and national civilian ournalism competition awards.



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42 | SPRING 2024 | Army Sustainment

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armysustainment@army.mil | Lessons Learned: Ukraine Sustainment Operations | 43

