

U.S. military vehicles fill a staging area near the port of Dammam, Saudi Arabia, in preparation for transport back to the United States following Operations Desert Shield/Desert Storm. This equipment represents only a fraction of the "iron mountain" required to expel Iraqi forces from Kuwait in 1991, of which, nearly two million tons were delivered uncontested by the Iraqi military through Saudi ports in the first six months alone. (Photo by Sgt. Bohmer, courtesy of the National Archives)

Intratheater Logistics Proficiency Preparing for the Modern Contested Fight

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Combat fills but a moment, of course the most important one, but the movements leading to battle, marching, fill the entire life of an army.

—Helmuth von Moltke the Elder

s a maritime nation, the United States depends on its ability to convert combat potential from the strategic support area to combat power on battlefields far removed from the continental United States (CONUS). This process requires the movement of significant amounts of equipment, personnel, and supplies, often over long distances, highlighting the fundamental challenge the United States faces in time and space. Nowhere are these challenges more apparent than in the European theater. Following decades of competing requirements in Iraq and Afghanistan, redeployment of conventional U.S. ground forces, and subsequent atrophying of theater logistics capability, the United States' ability to project power in conflict is in doubt.¹

Meanwhile, Russia increasingly threatens to challenge the security environment and prevent U.S. access by advancing antiaccess/area denial (A2/AD) capabilities designed to hinder U.S. freedom of action and ability to build combat power.² As a result, every day Russia prevents the United States from building combat power, potential adversarial gains remain uncontested, and the United States' ability to achieve strategic aims diminishes. While the United States has developed doctrinal concepts in response to this threat, the question remains whether the theater sustainment architecture can deliver the land forces necessary to succeed against a near-peer adversary in conflict. In an environment defined by increasing time and space challenges, U.S. Army Europe and Africa (USAREUR-AF) must ensure the sufficient throughput of land forces by expanding the capability of intratheater logistics architecture. USAREUR-AF can accomplish this by mitigating risk and improving proficiency at two critical points. First, by increasing the resiliency of theater access and improving proficiency of joint logistics over the shore (JLOTS) during large-scale, degraded port operations. Second, by ensuring throughput of forces from port to battlefield by improving reception, staging, onward movement, and integration (RSOI) proficiency during rotational unit opportunities. As

the chief of staff of the Prussian army, Helmuth von Moltke the Elder, recognized, "even the loss of a single day in mobilization can have significant impacts" on a campaign, and mistakes in deployment cannot easily be corrected.³ Therefore, regardless of Russia's intent or ability to prevent U.S. freedom of action long-term, merely delaying U.S. forces and buying time to seize the initiative short-term may achieve its goals.⁴ To better understand this challenge, it is essential to first understand the adversarial threat that intends to limit U.S. freedom of action and the inherent challenges facing USAREUR-AF theater logistics.

Framing the Problem: Russian and U.S. Strategy

Because of favorable battlefield geometry and shorter operational reach, Russia maintains inherent advantages in time and space in Europe. Over the past decade, Russia has further expanded this advantage by increasing A2/AD capabilities on NATO's eastern flank and increasingly relying on the fait accompli, a tactic designed to rapidly achieve objectives before the U.S. and NATO allies can react, leaving would-be adversaries little choice but to accept the new status quo.⁵ Russia demonstrated the challenges of this strategy in 2014 when a combination of Russian-backed militias, private military companies, and conventional forces invaded Crimea and the eastern Donbas region of Ukraine. In coordination with mutually supporting cyberattacks on critical infrastructure, Russia quickly seized Ukrainian territory, catching the United States and its European allies off guard.⁶ Without credible combat forces postured to counter this aggression, Russia's strategy exposed U.S. and NATO vulnerabilities and demonstrated a blueprint for future conflict in Europe.⁷ Despite an inability for Russia to replicate similar success in its

larger 2022 Ukrainian invasion, the fundamental challenge of time and distance for U.S. force projection persists.

Central to this theory of victory is an intent to exploit U.S. disadvantages in space by disrupting and delaying theater access Maj. Bryan J. Quinn, U.S. Army, is a strategist in the U.S. European Command Future Operations Section. He holds an MS from the University of Southern Mississippi and is a graduate of the College of Naval Command and Staff. and power projection through a layered A2/AD strategy. While the core of Russia's A2/AD strategy remains its integrated air defense systems and long-range precision fires, Russia has further expanded its cyber capability as a first layer of standoff.⁸ Russia uses this layer to challenge the day-to-day operations of adversaries below the level of armed conflict, extend influence, and disrupt freedom of action, as demonstrated in many European countries since 2008.⁹

information security environment, and a broad attack surface, transportation infrastructure remains highly vulnerable.¹⁶ In 2019 alone, the EU reported 230,000 new malware strains, the majority targeting industry and infrastructure.¹⁷ Combined with U.S. dependence on commercial deep-water ports for theater access, European port and transportation infrastructure offers Russia a prime target consistent with its cyber standoff strategy. A significant degradation of trans-

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Of these attacks, the NotPetya exploit, a repurposed National Security Agency cyber tool, best demonstrates this capability's potential to disrupt U.S. freedom of movement and mobility.¹⁰ In 2017, a Russian-backed group intending to punish Ukrainian businesses targeted them with this malware.¹¹ The virus then spread from Ukrainian servers to major corporations worldwide, including the global shipping provider Maersk, responsible for seventy-six ports and one-fifth of global shipping.¹² As a result, essential port infrastructure, including security access, cranes, and other essential material handling equipment, came to a standstill for weeks, leaving Maersk employees blind to the contents of eighteen thousand ships and reliant on social media for communication.¹³ Elsewhere in Europe, Chernobyl's technology administrator resorted to a loudspeaker to demand employees rip computers from walls to avert further damage, later stating, "there is now only life before NotPetya and life after NotPetya."¹⁴ Despite global commerce implications, this attack demonstrates not only modern infrastructure's reliance on the digital substrate but also the high payoff potential of targeting European transportation architecture to degrade any U.S. military response on the continent.

Although the European Union (EU) and NATO recently increased their focus on critical infrastructure following the 2017 attacks through revised and updated cybersecurity strategies, risk to U.S. land force theater access remains a critical vulnerability.¹⁵ Due to an expansion of connected devices, a complex portation infrastructure would ultimately cast doubt on USAREUR-AF's assumptions of theater access and ability to build combat power absent a robust or proficient theater logistics capability.

While Russia pursued an advanced standoff capability over the past decade, due to a drawdown of conventional forces and subsequent atrophying of logistics capability, USAREUR-AF's challenges in space and time increased. To account for these disadvantages and address Russian aggression, the U.S. Department of Defense developed the Global Operating Model (GOM), implemented in the 2018 National Defense Strategy (NDS).¹⁸ This model categorizes U.S. forces into contact, blunt, and surge forces, designed to "defeat Chinese or Russian theories of victory."19 While contact and blunt forces are intended to prevent an adversary from achieving near-term objectives by contesting initial gains, surge forces projected from CONUS strategic support areas remain a critical aspect of the U.S. theory of victory within the NDS to compel an adversary's withdrawal.²⁰

Demonstrating the potential scale of this surge force requirement, during Desert Storm, the United States and its allies assembled over five hundred thousand troops across three corps and six armored divisions to expel Iraq's large-scale, conventional threat from Kuwait in 1991.²¹ As the last time U.S. forces deployed multiple corps in large-scale combat, Desert Shield/Desert Storm represents a potential baseline for large-scale combat operation land force requirements. Unfortunately, to



ESC—Expeditionary sustainment command MSC—Military Sealift Command SMDC—Space and Missile Defense Command **TRANSCOM**—Transportation Command **TSC**—Theater sustainment command

(Figure by author)

Figure 1. Power Projection in an Uncontested Environment

deliver comparable land forces in support of *NDS* and GOM requirements today requires a theater logistics capability that USAREUR-AF lacks and one that Russia intends to disrupt. While GOM and future service concepts like the Army's multi-domain operations concept expand the United States' ability to respond in competition, a fundamental reliance on mass in large-scale conflict only reinforces the challenges in time and space they are designed to mitigate.²²

Theater Logistics Capabilities

While adversarial disruption presents one potential impediment to access and throughput, theater logistics must already overcome significant inherent friction and complexity from numerous actors, organizations, transactions, and human error to achieve success.²³ To build combat power, land forces rely on strategic mobility to deliver equipment from CONUS to theaters overseas. Historically, U.S. Transportation Command (USTRANSCOM) delivers 90 percent of this combat power through strategic sealift.²⁴ Within the theater, this process depends on the throughput of capable seaports of debarkation and subsequent intratheater logistics through RSOI to build combat power, depicted in figure 1.²⁵ These ports provide theater access for Military Sealift Command (MSC) deep-draft vessels through the same critical infrastructure already demonstrated to be at risk from Russian standoff capabilities.

The U.S. Navy is responsible for conducting strategic sealift, authority, and responsibility transfers once cargo arrives in theater to the Army's Surface Deployment and Distribution Command (SDDC), and it is in coordination with USAREUR-AF's organic logistics units to conduct vessel discharge operations.²⁶ The theater sustainment command, supporting expeditionary sustainment command, and subordinate sustainment units execute these activities, facilitating cargo from vessel discharge, through RSOI, to a tactical assembly area, demonstrating the full span and complexity of intratheater logistics required to build combat power.²⁷ However, this logistics architecture has been mostly dismantled following the drawdown of almost four hundred thousand troops from the height of the Cold War.²⁸ While other theaters have seen an increase in logistics capability, Europe remains outpaced three to one in comparison, making the proficiency of current organic units paramount in future conflict.²⁹



ESC—Expeditionary sustainment command JLOTS—Joint logistics over the shore MSC—Military Sealift Command SDDC—Surface Deployment and Distribution Command SMDC—Space and Missile Defense Command TRANSCOM—Transportation Command **TSC**—Theater sustainment command **USMC**—U.S. Marine Corps

(Figure by author)

Figure 2. Power Projection in a Contested/Denied Environment

In the event a port is damaged or incapable of accommodating strategic sealift vessels due to obstacles, disabled infrastructure, or other inherent insufficiencies, USTRANSCOM and USAREUR-AF logistics units execute JLOTS operations to transfer equipment from vessels at anchorage to shore.³⁰ JLOTS complexity and requirements for SDDC and theater army units can vary widely depending on the situation, ranging from amphibious landing forces on bare beaches to augmenting degraded ports in disaster relief, as demonstrated following the 2010 Haiti earthquake.³¹ While U.S. operations in World War II and Korea famously required bare-beach operations to build combat power, global infrastructure and urbanization have altered the context in which JLOTS operations will likely occur in Europe. Importantly, by simply holding favorable ports at risk and forcing the United States to resort to less capable infrastructure, Russia's standoff capability may easily achieve its desired disruptive effect, demonstrated in figure 2. Therefore, in future conflict, other lesser-known JLOTS requirements such as those in Saudi Arabia in 1991, requiring port augmentation due to insufficient infrastructure rather than the amphibious operations represented in popular culture, provide a more accurate

indication of future requirements.³² Combined with improving Russian standoff capability and European infrastructure vulnerability, degraded port operations represent a likely requirement for future theater access demanding greater JLOTS proficiency.

To account for the complexity and reduction of theater logistics capability as well as Russia's increased ability to disrupt U.S. power projection, USAREUR-AF must increase the proficiency of intratheater logistics: first, by ensuring theater access through JLOTS and large-scale, degraded port operations; and second, through ensuring throughput of forces from the port to the battlefield by improving RSOI proficiency. By requiring rotational and exercise participants to deliver a greater portion of forces through degraded ports and the theater logistics architecture, USAREUR-AF can mitigate these challenges, validate theater access assumptions, and build the in-theater proficiency required to plan and execute JLOTS and RSOI in conflict.

First, due to a unique combination of low-density platforms and multiservice requirements occurring across multiple domains, JLOTS is operationally and organizationally complex. For example, during a 2008

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exercise, the JLOTS joint task force (JTF) required more than three thousand soldiers, sailors, marines, and civilians from over eighty units to offload a single brigade combat team.³³ Considering the added friction of an adversary intent on denying or disrupting operations and the requirement to move multiple divisions in conflict, any increase in scope and scale escalates operational complexity and threatens throughput.

Furthermore, the JLOTS JTF is an ad hoc orga-

same year only further highlights the risk these ports pose. Furthermore, a reliance on a smaller number of larger vessels, although preferable for discharge, further limits the number of available ports. Despite frequent opportunities to increase JLOTS and port operations proficiency, USAREUR-AF has failed to build the necessary knowledge base at the tactical-unit level or expertise at the theater-level required to ensure throughput and access in conflict.

The JTF must consider a significant number of technical and operational factors even purpose-built organizations struggle to grasp, including lighterage capabilities, host-nation support and customs laws, sea states, access to inland transport, as well as the integration of cyber and air defense assets critical to JLOTS success.

nization, only created by the combatant command when required. Yet, the JTF must consider a significant number of technical and operational factors even purpose-built organizations struggle to grasp, including lighterage capabilities, host-nation support and customs laws, sea states, access to inland transport, as well as the integration of cyber and air defense assets critical to JLOTS success. Failure to manage this complexity or execute efficiently based on knowledge and experience could result in frustrated cargo and the piecemeal delivery of equipment, ultimately delaying throughput and USAREUR-AF's ability to build combat power.³⁴

Despite this complexity, USAREUR-AF and USTRANSCOM historically rely on a small number of large, capable, and familiar ports in support of operations and exercises.³⁵ This overreliance on modern port and shipping infrastructure ultimately limits USAREUR-AF's theater logistics ability to build experience and proficiency to reduce inherent complexity and friction risks. For example, in 2017, three commercial supercargo ships delivered a rotational unit to Gdansk, Poland, the second largest port in the Baltic Sea.³⁶ While advantageously close to training areas, Gdansk is 150km from Kaliningrad, well within Russian A2/AD threat rings. That the NotPetya malware heavily impacted similar European ports that Compounding operational complexity, JLOTS is also organizationally complex. Throughout the course of an operation, command relationships can span across over thirty unique organizations and transition quickly between multiple service leads dependent on the environment, requirement, and operational phase.³⁷ This frequent handoff of responsibilities represents additional risk to building combat power. However, exercise executive agents often assign a single organizational lead for the entirety of an operation, leaving this transition unrehearsed and untested.³⁸ To alleviate this friction, USAREUR-AF must exercise JLOTS across multiple operational phases within a dynamic environment.

JLOTS command relationships also span multiple combatant commands, adding the additional friction point of competing authorities. For example, USTRANSCOM, through the SDDC, is the single port manager responsible for managing ports across Europe.³⁹ However, during JLOTS operations, this authority conflicts with combatant command authority exercised through the JLOTS commander, responsible for all discharge assets and ship-to-shore operations.⁴⁰ Unless transferred to the U.S. European Command (USEUCOM) at the direction of the secretary of defense, USTRANSCOM retains combatant command authority over sealift platforms and assets, potentially



conflicting with JTF and theater priorities. While this situation may be quickly resolved for a single theater through the joint deployment distribution operations center, in the event of multiple priorities or crises, the question of authority becomes essential for building combat power.

Yet, due to the scale of JLOTS exercises, frequently isolated from theater-level exercises and often executed to preserve tactical skill and demonstrate capability, the extent of SDDC authority and the relationship between combatant commands remains untested. To reduce organizational friction and ensure throughput in conflict, in coordination with USEUCOM and USTRANSCOM, USAREUR-AF must more closely integrate large-scale JLOTS into annual exercises to rehearse the full spectrum of operations and mitigate complexity and risk. Exercises such as Defender Europe and Atlantic Resolve represent key opportunities for USEUCOM, USTRANSCOM, and USAREUR-AF to combine resources consistent with defense planning guidance limitations to build in-theater proficiency and knowledge to mitigate this risk.⁴¹ Although many other JLOTS challenges persist, including a lack of MSC Ready Reserve Force vessels, availability of U.S. flagged commercial vessels, and the dwindling number of Army lighterage, without greater proficiency and

USNS Yuma (T-EPF 8) arrives in Durres, Albania, 2 May 2021 to assist JLOTS-21 and vehicle cargo ship USNS *Bob Hope* in conducting intratheater lift in conjunction with Defender-Europe 21. JLOTS-21, the first joint logistics over the shore exercise in Europe since World War II, delivered only a small fraction of the exercise participants' cargo and equipment. A majority of European exercise equipment is historically delivered commercially through large ports. (Photo courtesy of the U.S. Navy Military Sealift Command)

knowledge, these capability gaps remain divorced from operational experience and lose meaning and staying power with those making resource decisions.

JLOTS complexity, however, represents only one theater logistics friction point in building combat power. To ensure sufficient throughput from CONUS, USAREUR-AF must also ensure combat power, once delivered to theater, reaches the area of operations by improving proficiency in large-scale RSOI. RSOI facilitates the transition between deployment and employment and is critical in building combat power following its arrival in theater.⁴² Like JLOTS, RSOI complexity and scale requires a knowledge base, experience level, and proficiency to overcome friction and reduce the time required for unit assembly at tactical assembly areas.⁴³ For example, in support of VII Corps' Desert Storm mobilization, over one hundred commercial and MSC ships transported thirty-eight thousand

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vehicles and seven thousand containers from Europe to Saudi Arabia.⁴⁴ However, despite the lack of an Iraqi threat to disrupt theater access, throughput, or RSOI, unit equipment arrived on average by nine vessels over twenty-six days, resulting in the extension of unit assembly and closure by multiple weeks due to theater logistics mismanagement.⁴⁵ That is, even with a cooperative enemy in Saddam Hussein, as well as other favorable conditions such as uncontested SLOCs, an open in 2015 and establishment of a rotational brigade in 2017.⁴⁹ However, absent an adversarial threat or potential environmental frictions, this experience is not indicative of RSOI in conflict, allowing bad practices and unrealistic assumptions to persist. Following a 2017 rotation, senior Army leaders recognized the absence of a threat environment as an obvious advantage in RSOI and acknowledged the limited experience provided under unrealistic conditions.⁵⁰ Yet, current

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Suez, modern, capable seaports, and over forty-four thousand soldiers dedicated to RSOI operations, the United States still struggled to build combat power.⁴⁶

While in the past, forward or prepositioned personnel and equipment reduced the importance of RSOI in Europe, in a contested fight today, proficiency in RSOI operations is critical to projecting and building credible combat power. Additional European friction considerations include the navigation of EU and individual country customs, rules, and infrastructure differences, as well as competing with commercial activities on the same road and rail networks in an urban environment.⁴⁷ Comparatively, USAREUR-AF required over two weeks to complete RSOI of a single brigade combat team without enemy threat or real-world operational pressure in 2017.⁴⁸ Considering the additional friction of adversarial action intent on disrupting infrastructure and essential services, USAREUR-AF must improve its ability to conduct RSOI to ensure its ability to build combat power through sustained port and transportation node throughput.

However, despite complexity and critical importance in building combat power, RSOI is continually treated as an administrative function, separate from large-scale exercises and immune to opposing force tactics. USAREUR-AF has executed limited RSOI operations since the inaugural Atlantic Resolve exercise large-scale exercises continue to neglect RSOI.

Historical experiences demonstrate a direct connection between realistic training and success, highlighting the importance of training the way a unit intends to fight.⁵¹ Nowhere is this notion more apparent than during a series of corps-level exercises in preparation for World War II. When questioned by a senator about the mistake-riddled Louisiana Maneuvers, Gen. George Marshall responded, "I want the mistakes made down in Louisiana and not over in Europe, and the only way to do this thing is to try it out, and if it doesn't work, find out what we need to make it work."52 The same remains true of intratheater logistics. Executed under unrealistic conditions, RSOI remains an administrative and supporting task resulting in bad practices, insufficient standard operating procedures, and invalid assumptions, ultimately leaving U.S. forces unprepared in conflict.

To ensure more realistic theater planning and mitigate force projection risk, USAREUR-AF must link the throughput of forces, both simulated and real-world, to forces available to training audiences at the start of an exercise. During a recent Army Forces Command sponsored exercise, executed in coordination with other joint and theater exercises, multiple simulated divisions began in eastern Europe at 95 percent combat strength. This practice is not only inconsistent with modest adversarial assumptions but ignores the complexities and throughput challenges facing intratheater logistics and reinforces unrealistic planning factors. Imposing uncertainty through real-world or simulated friction and placing access, RSOI, and available forces in doubt would reinforce logistical priority and force theater and unit planners to consider the impact of force projection challenges. Although these actions may limit a training audience's available forces and place some training objectives at risk, without realistic training opportunities, deficiencies and gaps in capabilities remain unexposed. Consistent with Marshall's comments in Louisiana, exercises can be reset while wars cannot. As a result, tactical-level training objectives cannot be met at the expense of realistic conditions and theater logistics proficiency.

Do Large-Scale Logistics Matter for the Future Fight?

In a recent paper on multi-domain operations, the chief of staff of the Army laid out a vision for the Army in the future operating environment, calling into question the need for a large land-force buildup to defeat an adversary.⁵³ Instead, the paper described a future in which the Army mitigated disadvantages in space and time through emerging concepts including "low signature, asymmetric forces," and "cross-domain maneuver" enabled by emerging, yet immature, technologies.⁵⁴ This theory of victory is in line with others that similarly relied on the promise of technology and innovation to decisively defeat an adversary.⁵⁵ However, technology alone is not a strategy. Multi-domain operations and other concepts, although important for how the Army thinks about the employment of forces in the future, cannot on their own achieve success consistent with current NDS requirements and adversarial threat. As Laurie Anderson states, "If you think technology will solve your problems, you don't understand technology—and you don't understand your problems."56 Likewise, reliance on technological overmatch of in-theater, expeditionary forces and the promise of future technology alone risks failure. As a result, how much emerging concepts can offset land-force requirements in large-scale combat remains in question. If the requirement to forcibly expel adversaries from future land grabs and restore borders persists, the necessity to project large amounts of land forces from CONUS will remain.

In summary, USAREUR-AF is at risk of ensuring the sufficient throughput of forces to displace adversarial forces in the event of conflict. To mitigate the risk posed by an increased Russian A2/AD threat, USAREUR-AF must mitigate intratheater logistics risk. To achieve this, USAREUR-AF must increase JLOTS and RSOI capability by exercising large-scale degraded port operations through JLOTS and by expanding the contested environment of theater RSOI in peacetime. Failure to improve intratheater logistics will leave theater access and the ability to build combat power at risk. However, by improving proficiency in intratheater operations, USAREUR-AF can ensure its ability to deliver sufficient land forces in conflict in support of allies.

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