Infantry

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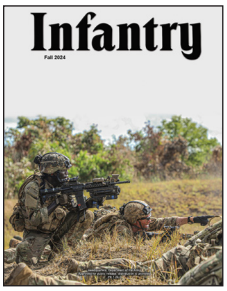
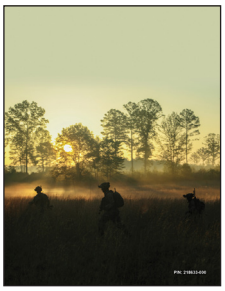


FRONT COVER:

Soldiers assigned to 2nd Battalion, 27th Infantry Regiment, 3rd Infantry Brigade Combat Team, 25th Infantry Division, alongside soldiers from the Philippine Army's 7th Infantry Division, conduct a live-fire exercise during Salaknib 24 at Fort Magsaysay, Philippines, on 13 May 2024. (Photo illustration by SPC Benjamin Anderson)

BACK COVER:

Soldiers from 1st Brigade Combat Team, 101st Airborne Division (Air Assault) act as the opposing force during an exercise as part of Operation Lethal Eagle 24.1 on 25 April 2024 at Fort Campbell, KY. (Photo illustration by SPC Zachary Blevins)



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By Order of the Secretary of the Army:

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Infantry

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Commandant's Note

BG PHILLIP J. KINIERY

It is a distinct honor and privilege to succeed MG Monté Rone as the 62nd Commandant of the U.S. Army Infantry School, Chief of Infantry, and Director of the Soldier Lethality Cross-Functional Team.

I've always prioritized professional development and hard, relevant training. The modern battlefield demands Soldiers and leaders who are prepared for the hardest day of ground combat. Physical toughness, mental resilience, and grit are in high demand, and we have a responsibility to deliver. We must integrate new technology, pass on lessons learned, and train as hard as possible to be prepared to fight and win anywhere in the world at any time.

As our Army undergoes its most significant transformation in decades, the Infantry Branch is changing as well, and I'm excited to guide leaders through such a momentous time. Our rapid adaptation to large-scale combat operations is a necessary shift away from global war on terrorism (GWOT)-era tactics. We will face numerous opportunities as we integrate new equipment and develop cutting-edge tactics and doctrine for the future battlefield, and we have the best leaders in the nation to seize these opportunities and pave a way forward. During times like these, I think it's important to place an emphasis on leader and Soldier development. New technology and advanced weaponry will never replace our brave men and women whom our country relies on to accomplish the mission. It has never been more critical to produce combat-ready officers, NCOs, and Soldiers for our force.

The collection of articles in this issue of *Infantry* targets several focus areas — to include unmanned aerial systems (UAS), command and control, and Soldier load, among others — and aims to help prepare our force for the next fight.

In his article, "Integrating Drones Isn't Intuitive — Practical Ways to Build this Critical Capability," LTC Reed Markham accurately comments that UAS "are not just the future of warfare; they are the present." As we have seen in conflicts around the world, UAS are playing a major role in combat operations. LTC Markham shares how his battalion identified challenges to drone integration and worked to improve their UAS capabilities by training leaders to better understand their usage, building operator expertise, and modifying systems to efficiently resource and maintain UAS assets.

Another article I'd like to highlight is "Relearning Infiltrations: The Light Infantry Advantage," which discusses the recent use of infiltrations by Ukrainian forces and encourages U.S. forces to maintain a high level of proficiency in this often-misunderstood form of maneuver. LTC Aaron Childers and MAJ Michael Stewart detail the benefits that light infantry forces bring to the fight and how well suited they are to conduct infiltrations. They make a strong argument about the versatility that infiltrations offer and state that infantry forces need this skill set to be successful against our near-peer adversaries.

An article I am hoping will generate some discussion is SSG L. Armando De Lara and COL Ryan Kranc's "Scouts vs Snipers: Combining the Craft to Survive LSCO," which discusses the evolving role of snipers in the Army and factors that are affecting this critical force multiplier. It details the importance of properly employing snipers and understanding what they bring to the force. When utilized correctly, snipers can provide timely intelligence updates and support command and control. The authors provide numerous recommendations to address the challenges currently faced by snipers. These include making structural changes, educating leaders on their proper employment, integrating sniper curriculum into the NCO Education System, and upgrading the sniper training pipeline.

In "Techniques for Mortar Ammunition Planning," MAJ Andrew Patterson provides insight to mortar planning at the battalion and company levels. The article details effective strategies for multiple points of friction commonly found in mortar operations. MAJ Patterson discusses the link between haul capacity and how it affects the type of support that mortars are able to provide. He also emphasizes tailored mission planning as an essential part to providing the best possible operational support.

One of the missions of our branch professional bulletin is to provide a forum for new ideas and generate discussion on any topic relating to our profession. If you read something you agree or disagree with in any of our issues, I encourage you to share your thoughts (or even write a rebuttal) to our editorial staff (usarmy.moore.tradoc.mbx.infantry-magazine@army.mil). We want your feedback! In the coming months, we will be making changes to the frequency in which we publish articles and modernizing our publication methods to reach more readers and increase professional discourse. These changes are part of a larger Chief of Staff initiative to renew professional military writing — the Harding Project, which you can read more about on the following page.

I am the Infantry! Follow me!

The Harding Project:

Strengthening the Profession through a Renewed Emphasis on Military Writing

The Harding Project is a Chief of Staff of the Army initiative to revitalize professional military discourse. It is named after MG Edwin "Forrest" Harding, who as a major in the mid-1930s, served as editor of the *Infantry Journal* and led efforts to stimulate debate and reinvigorate the publication in the interwar years. Now, as the Army again prepares for the battlefields of the future, it is an opportune time to not only encourage professional writing but also renew military journals such as *Infantry*.

One of the key goals of the project is to modernize these publications. What does that mean for *Infantry*? We will be transitioning to a "web-first, mobile-friendly" platform. Issues of the magazine will continue to be offered in a PDF format, but we will also soon have html versions of individual articles available for better readability on mobile devices. We will also utilize social media more to promote and distribute these articles.

In addition, we will also begin publishing articles more frequently. Instead of solely releasing quarterly issues, we will also publish individual articles on a routine basis. This will begin later this year.

Another big change for *Infantry* is the reintroduction of uniformed editors to our staff, something that last occurred more than 40 years ago. Through the Harding Fellowship, a new Army broadening opportunity, fellows will attend graduate school and then serve as editor of their branch's professional bulletin. Applications for the 2025 fellowship are due 10 September 2024.

To learn more about the Harding Project, visit www.hardingproject.com.

To receive notifications about new content and news of upcoming developments within our professional journal, join our electronic distribution list at usarmy.moore.tradoc.mbx.infantry-magazine@army.mil or follow any of our social media accounts:
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Integrating Drones Isn't Intuitive:

Practical Ways to Build this Critical Capability

LTC REED MARKHAM

Flying robots that identify their enemy, drop grenades, bring fires, or suicide themselves to destroy armored vehicles are commonplace in the Russia-Ukraine War. Drones have not only dramatically shaped that war, but they have also been used by Hamas to set conditions for their terror attacks on 7 October 2023, the Azerbaijan military to change the balance in the Nagorno-Karabakh War, and Iranian proxies in their attacks on U.S. naval and ground forces.[1-3] I pondered all of this as I watched firsthand one "battlefield" where drones were not having any impact — my battalion's platoon live fires. This distressing fact was made apparent when the fourth straight platoon's small unmanned aerial system (sUAS), a mini-helicopter called a Black Hornet, shakily lifted off, raised 10 feet in the air, and then smashed into the ground. It became even more clear when the second unit in a row reported that its company-level UAS system, a Raven, was unable to fly because of missing parts, an inexperienced operator, not having the restricted operating zone (ROZ) activated at the right time, or some combination of those factors. This was the moment that I fully understood that we had a problem and needed a new approach to integrating this critical asset into how we fight.

Above, Soldiers in the 2nd Battalion, 506th Infantry Regiment employ a commercial off-the-shelf quadcopter during a training exercise. (Photos courtesy of author)

To frame the problem appropriately, I did not assess that our battalion was the anomaly in struggling to integrate drones. We have a great unit that is fortunate in the quality of its past and current officers and NCOs. However, something was stopping us from saturating the battlefield with sensors as the current and future battlefields demand.[4] So, what was the problem? Turns out there were many, and some we could affect, some we could not. We can't control the number and type of UAS we are fielded — just as you use the night vision devices, shoot the weapons, and wear the body armor you are fielded. Many factors we could affect, however, and that is where we focused our energies. Our leaders struggled to visualize drone employment, our operators weren't experi-

enced, and our training and resourcing systems didn't support the effort. During our quest to flood the zone with drones and radically increase our warfighting ability, I identified three key areas that demanded improvement: We needed to train and certify our leaders, provide hours and hours of flying repetitions and simple objectives for our operators, and integrate UAS into the battalion-level training and maintenance management systems.

Fighting with drones is vitally important now; we cannot afford to overcontrol it to mitigate risk at the expense of real implementation.

Visualizing the Battle

If you close your eyes, can you visualize swarms of drones in front of your forces conducting reconnaissance of routes, various positions, obstacles, and the enemy to identify their command-and-control locations, indirect fire assets, and anti-tank/machine-gun positions? Picture fire supporters making micro adjustments to their pre-planned targets before massing fires to overwhelm and destroy the enemy... or assault leaders and sappers pinpointing the location of the breach and the positions they will bound their elements to preserve their forces and close with and destroy the enemy. How about drone operators identifying a remaining enemy machine-gun position in a trench, dropping a 40mm round on it, and then reporting that key condition is met before the assault element advances? Lastly, visualize immediately after the attack, when transitioning to the defense, rapidly sending drones along the most likely avenues of the enemy's counterattack to enable indirect fires to disrupt and the now-rightfully placed antitank weapons and machine guns to destroy. Can you see the battle that way?

Well, I couldn't, nor could most of our leaders. We had to start with casting a shared — and easily understood — battlefield vision for the leaders in the battalion. Every element in the battalion would use drones: rifle, heavy weapons, scout, mortar, and distribution platoons as well as all command posts. Our drones would:

1) Recon our routes, positions, obstacles, and the enemy;
2) Deceive and disrupt the enemy;
3) Integrate fires and drop munitions; and
4) Secure our forces.

Current UAS Training Resources

The Army has some helpful doctrine to direct the training and employment of drones. One source we used to determine offensive uses of drones was the Army's counter-UAS doctrine, Army Techniques Publication (ATP) 3-01.81, which was very helpful in defining missions, UAS groups, and the basic logic of their use.[5] However, not all the doctrine has kept up with the advances since the Russians escalated their attack deeper into Ukraine. My assessment is that Training Circular (TC) 3-04.62, *Small Unmanned Aircraft System Aircrew Training Program*, written in 2013, was developed for the fixed-wing sUAS (Raven), and the requirements for operator and program training, tracking, and currency seem too stringent and slow to keep up with the current commercial off-the-shelf (COTS) quadcopter variants.[6]

There are some helpful existing training and program-tracking systems. Ensuring operators use drones inside a ROZ and are trained on basic employment through the online basic unmanned qualification course is critical.[7] We also logged operators' flight hours inside the sUAS manager to identify future master trainer candidates and help us track our proficiency. However, to make tangible gains in the employment of UAS in collective training, live fire, and situational tactical exercises, we needed to ensure we did not overdo UAS programming at the expense of actual combat capability. Fighting with drones is vitally important now; we cannot afford to overcontrol it to mitigate risk at the expense of real implementation.

Once we understood our current situation, envisioned future, and resources available, it was time to act and build a real, lethal, and lasting drone capability.

Training Leaders

We had to train our company- and platoon-level leaders on the new vision of the battlefield. Our platoon leaders and sergeants balance many things early in the Army. Integrating and synchronizing the foundations of a rifle platoon, its machine guns, anti-tank systems, rifle squads, and external mortars is challenging enough. Now they must rapidly learn to employ the awesome, but complicated, integrated tactical network (ITN) to populate their position location information and receive, make, and rapidly disseminate digital graphics on their end user device through the android team awareness kit (ATAK). Our digital fires systems also allow quick integration of artillery and adjacent unit mortars into their operations. Throw drones on top and even our most talented young officers and NCOs will struggle without deliberate training.

To train our platoon-level leaders, we found that starting with a white board to sketch out the drone battlefield vision helped them share that understanding. Giving them simple tactics, techniques, and procedures (TTPs) was important. For example, treat the UAS operator as a member of the platoon headquarters element, same as their radio-telephone operator (RTO), forward observer (FO), and medic. That way the operator can move back and forth between the platoon leader and platoon sergeant based on aspects of the operation while maintaining the right leader oversight of the drone employment. Lastly, we trained our leaders by providing a mental model of when to employ the drone and how that fits within the normal stages of executing an operation (for example, at the objective rally point, before reaching the assault position, immediately after reaching the limit of the advance of the attack, etc.).

Platoon headquarters elements consisting of a platoon-level leader, radio-telephone operator, forward observer, and unmanned aerial system operator work together to command and control the platoon.

Our Army is great at integrating and echeloning indirect fires. Fire supporters and our maneuver leaders are trained on this critical task through fire support team certifications, call-for-fire trainers, collective training, and fire support coordination exercises. Based on the depth of knowledge of the mental model of echeloning fires, we trained our leaders to integrate UAS using the same structure. Doing so during planning and rehearsals was critical to ensuring UAS were built into indirect fires planning as a tool for observers to initiate the various artillery and mortars.

During the planning phase, our leaders identified the right locations to launch the various drones. For example, drones such as Skydios and DJI Maviks can be launched from 2-3 kilometers away, fly a deceptive route, and conduct their recon mission, all while the platoon is still moving towards the objective to then receive the drone at a different landing location. Once closer to the enemy, the platoon can fly its Soldier Borne Sensor (SBS) Black Hornet using the quick “periscope” method of rising above the tree line to gain a final assessment of the enemy while our forces remain behind cover. Finally, before or during the assault, DJI Maviks or Skydios with fabricated munition droppers attached can execute precision attacks on enemy fighting positions or trenches where direct fire weapons struggle to achieve lethal effects. Simple engagement criteria to operators enables initiative (for example, find antennas or machine guns and kill them). Once our leaders visualized drone integration into the battle using the model of echeloning fires, we were able to effectively account for them during planning and execution.

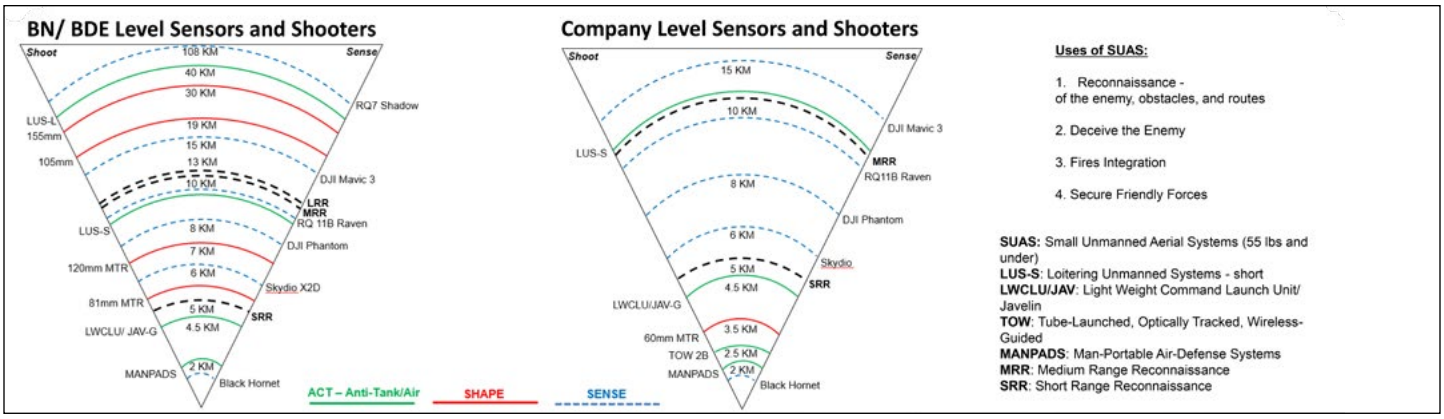


Figure 1 — Echeloning the Employment of Indirect Fire, UAS, Anti-Tank, and Air Assets

Training Expert Operators

Nearly 2,500 years ago, Archilochus was probably not talking specifically about flying robots to recon and drop bombs on the enemy, but his words hold true: "We don't rise to the level of our expectations, we fall to the level of our training." Leaders understanding how to employ drones is not enough without trained, confident, and knowledgeable UAS operators. Repetition, repetition, repetition — it's the key in bowling, shooting a basket, running a maintenance meeting, crewing a machine gun, and yes, flying drones.

You probably heard, as I did, that our Soldiers, especially the gamers, will instinctively pick up the flying of these drones. I found that 100-percent false. As with anything, time varies by Soldier, but our rough estimate is operators need to fly around 10 hours to not be a liability in the operation and around 15 hours before they seamlessly integrate the UAS into the platoon's operation. Adding a ROZ in every event and creating frequent flying opportunities for our operators were both critical to building their experience and confidence.

Just as we needed a shared vision for employment by leaders, the same was true for our operators. Creating plain speak — jargon and acronym free — training objectives and rules for our Soldiers provided them a knowable training path (see Figure 3). For example, placing the drone into operation, developing a simple flight path, and using identifiable terrain features to quickly deconflict air space with other drones gave tangible actions for our operators. This also helped

Figure 2 — Example Exercise with COTS Drones Employing Reconnaissance and Precision Attack Capabilities

***Endstate**: How we identify, deceive, and kill the enemy, confirm our routes, and secure our positions and personnel is radically altered to make us more lethal and survivable using drones.*

Specific Training Objectives for Our UAS Operators:

1. Understand basic air-space de-confliction and how to safely employ UAS.
2. Aggressively pursue hands on and classroom training on numerous UAS Platforms.
3. Understand the various distances and capabilities of UAS Platforms and know how they are employed in a phased manner to conduct reconnaissance, indirect fire employment, and security operations.
4. Understand how to secure, account for, charge, place into operation, and recover numerous UAS Platforms.
5. Know how to read a map to understand where the enemy is located, plot a course to fly from your location to the enemy to observe them in a manner least likely to get your drone identified and destroyed.
6. Understand how to receive an enemy situation briefing, plan out a reconnaissance or indirect fire attack mission, and then fly your drone to identify your high payoff targets to either report on their status or call-in indirect fire to destroy the enemy.
7. Develop the system to rapidly employ your UAS, in trees, and in a manner that you can quickly and quietly communicate what you are observing to the right leader to enable your platoon, company, or battalion mission (confirm enemy situation (machine guns, forces, indirect fire assets, command and control nodes, counter-attack forces), employ and adjust indirect fires, confirm breach location, confirm assault positions & directions, and the most likely limit of advance).
8. Know how to send a clear enemy spot report.
9. Know how to partner up with multiple UAS Pilots, do basic flight de-confliction planning, take-off, fly a route, and observe the enemy together to disrupt the enemy and bring multiple indirect fire attacks simultaneously.
10. Know how to coordinate with a UAS Pilot in a separate area, and then launch, fly, and hand-off your drone to that pilot.

SUAS Rules Driving Training, Experimentation, and TTPs

1. Understand the performance capabilities, physical limitations, and weather limitations of the SUAS platform you are flying.
2. Do not fly a drone over people that are not directly involved in the operation.
3. Ensure a ROZ (restricted operating zone) has been submitted, approved, and you fly within the approved boundaries. Do not fly over restricted areas.
4. You cannot be a pilot for more than one SUAS operation at a time.
5. Always avoid manned aircraft and moving obstacles.
6. Ensure a DRAW (deliberate risk assessment worksheet) is approved for your training event that covers SUAS operations.
7. Operate SUAS with someone that has completed a form of SUAS training instructed by a Master SUAS Trainer.
8. Log your flight hours and any notes or lessons learned in SUASMAN (Small Unmanned Aircraft System Manager) upon completion of your training event.
9. Understand the emergency, loss of link, and recovery procedures prior to flight operations starting. Do not disable GPS functions.
10. Maintain the capability to charge the SUAS system for the duration of your operation.

Uses of UAS:
1. Reconnaissance of the Enemy, Obstacles, & Routes
2. Deceive the Enemy
3. Fires Integration
4. Secure Friendly Forces

Resources:
2-506 SUAS Platforms and Capabilities
TC 3-04.62 – Small Unmanned Aircraft System Aircrew Training Program
AR 95-1, Appendix D – Flight Regulations
Grafenwoehr Training Area Aviation Map
Grafenwoehr Redline Brief
SUASMAN

Figure 3 — Plain Speak UAS Operator Training Guidance and Rules

reinforce proper use by leaders. As in most of our warfighting training, hands-on training using simple guides was more effective than the hours of an online basic unmanned qualification course or in-person classroom instruction using PowerPoint.

Manning a machine gun or a tank is a team sport; the same applies for launching robots into the sky. Instilling the crew mentality to the employment and recovery of UAS assisted in the speed, safety, and the preservation of our systems. We learned this lesson the hard way after numerous failures or too slow launches, and worse, breaking hard-to-replace antennas as a flustered operator yanked a $12,000 drone out of his assault pack. Integrating the platoon's RTO, FO, and medic into the UAS "crew" helped decrease launch and recovery time and led to more effective tactical transport of the systems. There were also hard-to-quantify advantages to getting more Soldiers involved in drone employment that led to smoother integration.

Building UAS Enabling Systems

Systematizing an activity helps to weight the effort appropriately. We found adding drone employment to our battalion training resource meeting made an outsized impact. When our drones were just another system sitting in a tough box dependent on the individualized efforts of the high-speed operator or innovative leader, we had sporadic successful employment. Once we added the issuing of UAS and requesting of a ROZ as critical items for each training event — the same as ammunition and land — we were able to increase training opportunities. Events that were not

COTS drones, although easier to use than the Raven or Puma, require expert operators to rapidly employ in tactical situations.

normally viewed as times to integrate UAS, such as crew qualification and land navigation, became occasions for operator repetitions and TTP development. Adding our drone status to our maintenance meeting was also key to forcing us to work through how to repair or coordinate replacement of non-standard equipment. Deliberate recovery operations with company drone status reporting allowed us to better see ourselves and get broken systems fixed. What we track and report on is how we prioritize efforts, and we were unable to weight this effort effectively until we integrated UAS into the battalion's core systems.

Recommendations

• Battalion leader development programs account for training platoon-level leaders on how to employ sUAS, similar to how we train our leaders to integrate fires.

• Battalion training resource systems establish ROZs at every training event, pool the sUAS in the unit, and ensure their maintenance status and allocation to every unit's training.

• Leaders, all of them, fly drones, not because they have to become experts, but understanding the basic employment allows more effective integration, similar to how every fighting leader can employ all the weapons assigned to his or her unit.

• Companies build a bench of trained UAS operators (we have a minimum of eight per company). This allows continuity, spreads the knowledge of employment throughout the ranks, and drives innovation as the incredible creativity of our Soldiers is identified and unleashed.

• Every unit trains with sUAS — we do not recommend consolidating the systems with the scout platoon as that risks their integration into every aspect of a unit.

• sUAS is fought as a crew (not necessarily Soldiers' primary or only duty); we have an assigned primary duty UAS operator supported by the RTO, FO, and/or medic at our company and platoon headquarters.

Soldiers in 2-506 IN employ a drone in a crew manner at night.

Drones are not just the future of warfare; they are the present... Our Army will not use drones exactly the way others are employing them. Many units employing UAS in many ways will create an environment where the most practical and effective uses flourish.

Drones are not just the future of warfare; they are the present. Unlike the Ukrainians, we do not have the stimulus that drives battlefield innovation from the level of violence and desperation existing in war. We cannot afford to wait until that happens to develop the training and employment techniques with this vital new asset. Our Army will not use drones exactly the way others are employing them. Many units employing UAS in many ways will create an environment where the most practical and effective uses flourish. There are more obstacles to employing UAS; however, training leaders to understand how and when to employ them, building expertise with operators, and adjusting existing systems to maintain and resource our UAS efficiently are ways to integrate this critical asset into a unit. I am certain there are more and look forward to learning better ways to do so!

Notes

[1] Eado Hecht, "Drones in the Nagorno-Karabakh War: Analyzing the Data," *Military Strategy Magazine* 7/4 (Winter 2022), https://www.militarystrategymagazine.com/article/drones-in-the-nagorno-karabakh-war-analyzing-the-data/.

[2] Mia Jankowicz, "How Hamas Likely Used Rudimentary Drones to 'Blind and Deafen' Israel's Border and Pave the Way for its Onslaught," *Business Insider,* 10 October 2023, https://www.businessinsider.com/hamas-drones-take-out-comms-towers-ambush-israel-2023-10.

[3] Rodney Barton, "The Use of Drones in the Nagorno-Karabakh Conflict," *Australian Defence Business Review*, 24 May 2021, https://defense.info/air-power-dynamics/2021/06/the-use-of-drones-in-the-nagorno-karabakh-conflict/.

[4] GEN James Rainey and LTG Laura Potter, "Delivering the Army of 2030," *War on the Rocks*, 6 August 2023, https://warontherocks.com/2023/08/delivering-the-army-of-2030/.

[5] Army Techniques Publication 3-01.81, *Counter-Unmanned Aircraft System (C-UAS)*, August 2023, https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN38994-ATP_3-01.81-000-WEB-1.pdf.

[6] Training Circular 3-04.62, *Small Unmanned Aircraft System Aircrew Training Program*, August 2013, https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/tc3_04x62.pdf.

[7] U.D. Defense, SUASMAN, retrieved from Small Unmanned Aircraft Systems Manager, https://suasman.sofapps.net/Site/Home.

LTC Reed Markham is an active-duty Army officer since 2005 who has led and trained Soldiers from the platoon through battalion level. LTC Markham is currently in command of 2nd Battalion, 506th Infantry Regiment, 3rd Brigade Combat Team, 101st Airborne Division (Air Assault), Fort Campbell, KY.

1LT Jonathan Dow is the 2-506 IN battalion editor and greatly contributed to this article.

Relearning Infiltrations: The Light Infantry Advantage

LTC AARON CHILDERS
MAJ MICHAEL STEWART

Over the last two years, much attention has been given to the destruction of Russian tanks by Ukrainian forces as part of the ongoing war between the two nations. As of 19 February 2024, more than 2,742 tanks had been destroyed, and images of these destroyed vehicles have become a hallmark of the conflict.[1] Ukrainian forces received Javelin anti-tank missiles from the U.S. early in the conflict, and their use has been overwhelmingly successful, raising the weapon to an almost exalted status. However, little attention has been paid to the tactics which enabled the Ukrainian forces to be so successful behind and within Russia's forward line of own troops (FLOT). To gain an advantage over their Russian adversaries, Ukrainians utilized infiltrations to create multiple dilemmas in depth.[2]

In U.S. doctrine, forms of maneuver, which consist of envelopment, frontal attack, infiltration, penetration, and turning movement, "are distinct tactical combinations of fire and movement with a unique set of characteristics that differ primarily in the relationship between the maneuvering force and the enemy."[3] This relationship describes offensive and defensive operations as the overarching concept for courses of action to gain identified decisive points or positions of advantage.[4] Of these forms of maneuver, infiltrations hold a particular advantage in current conflict as they are designed to move forces deeper into enemy-controlled areas to accomplish a unit's tasks. Infiltrations have utility during both offensive and defensive operations, allowing light infantry formations to use restrictive terrain as an advantage. Although difficult to train, they offer a decided advantage to units that employ them in conjunction with other forms of maneuver or to create tactical opportunities.

The Misunderstood Form of Maneuver

The infiltration is often misunderstood, and therefore, not something units in the U.S. Army often train or execute during combat training center (CTC) rotations. Units will commonly execute an envelopment (the preferred form of maneuver) or even a frontal attack (the least preferred but easiest to control), but seldom do units conduct a textbook infiltration.

As described in Field Manual (FM) 3-90, *Tactics*, "an infiltration is a form of maneuver in which an attacking force conducts undetected movement through or into an area occupied by enemy forces. Infiltration is also a march technique used well before encountering enemy forces to avoid enemy information collection assets."[5] Army doctrine does a good job of describing infiltrations in both FM 3-90 and in subordinate infantry battalion and company manuals; however, they are not often employed as they are difficult to execute and often viewed as risky for commanders at echelon.

(Illustration from photo by Paolo Bovo)

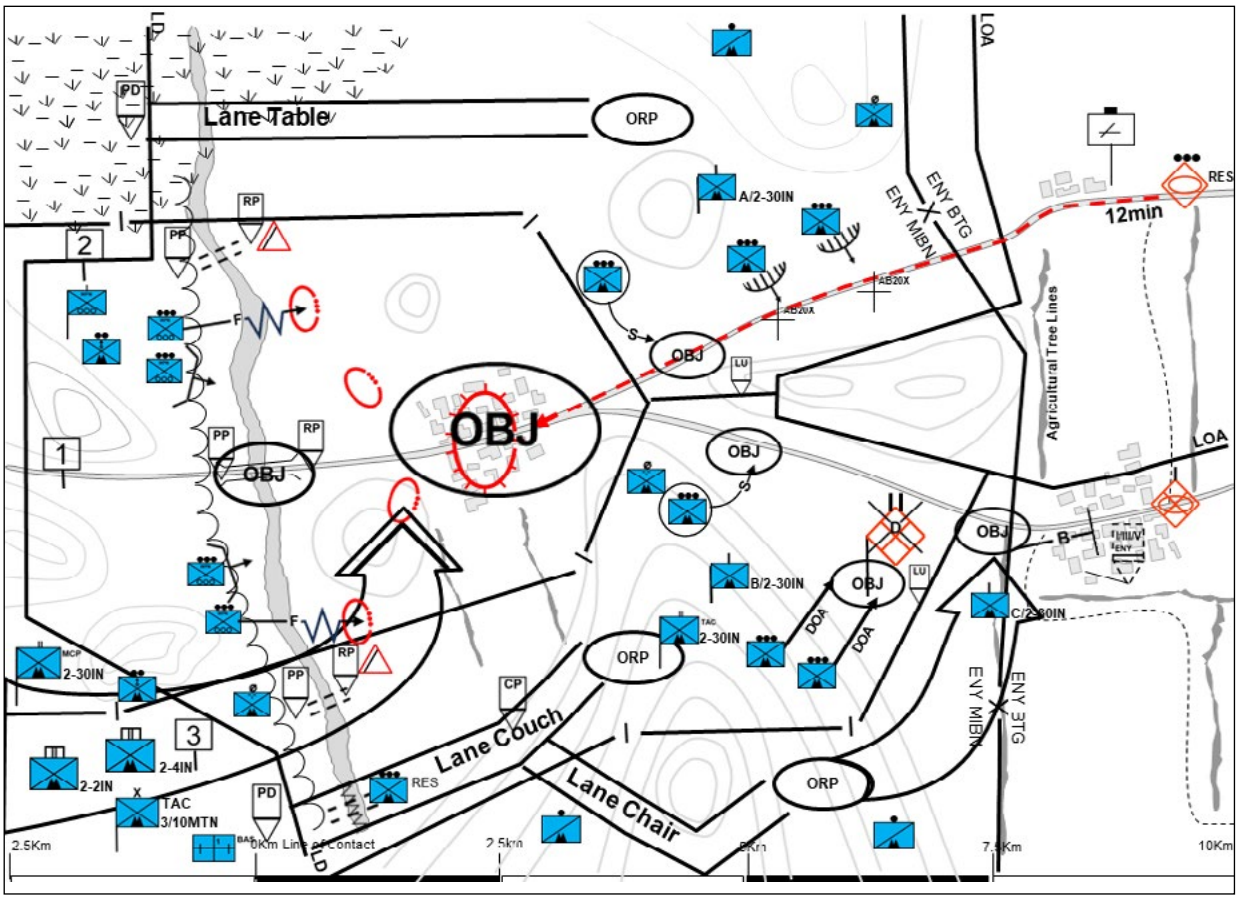


Figure 1 — Battalion Infiltration - Attack to Seize in Enemy Rear Area

In Ukraine, advancements in unmanned aerial systems (UAS), combined with accurate fires assets, have made larger scale maneuver untenable for long durations. Envelopments require large unit formations to be able to mass for attacks. As seen in attacks like the Russian wet gap crossing of the Siversky Donets River on 8 May 2022, large concentrations of forces at points of penetration or narrow axes of advance are often met with massive artillery attacks.[6] Such consequences require units to move in smaller, less detectable formations. For light infantry, who are particularly susceptible to artillery, utilizing infiltrations is not just important for mission success but necessary for unit survival. Detection means death; some Ukrainian forces have indicated that once a Russian UAS sees them, "they have as little as three minutes before indirect fire is called in on their location."[7] The same has proven true for Russian forces, who were shown in an October 2023 video released by Ukraine to be targeted by cluster munitions. For light infantry, success and survival in the UAS era depend on a tactical unit's ability to create dispersion to avoid detection while retaining enough combat power to create dilemmas in depth.

The Multi-Tool of Maneuver

Infiltrations are an extremely versatile form of maneuver, as once behind the FLOT, they can be utilized in the offense, the defense, and to make enemy positions untenable. Again, these operations take training, risk acceptance, and understanding from subordinate commanders to work effectively. If successful though, a formation behind an enemy's FLOT can not only cause irreparable damage but also impact the enemy's decision-making process in a way that is advantageous for the infiltrating unit's higher tactical or operational headquarters.

As described in FM 3-90, "infiltrations are used to set the conditions for larger operations as a part of the overall scheme of maneuver."[8] With a friendly force forward of the FLOT, these units can set the conditions for larger operations while simultaneously causing multiple dilemmas for the enemy. Units can seize key crossings and bridges for a larger force to cross from unexpected directions while simultaneously causing the enemy to deploy forces early by using ambushes and spoiling attacks to protect the friendly main effort. Finally, infiltrations can position friendly forces to make enemy strongpoints displace or make them untenable. By positioning large assets to the rear of a strongpoint, forces can disrupt enemy resupply or make the enemy withdraw. This occurred during Joint Readiness Training Center (JRTC) 23-09, where 2nd Battalion, 30th Infantry Regiment faced a mechanized enemy strongpoint to the southeast. Previous attempts to seize the strongpoint had failed, and the enemy continued to resupply along Alternate Supply Route (ASR) Chevy (see Figure 2). By infiltrating two companies forward of the FLOT, and along ASR Chevy, the enemy position was no longer tenable and they withdrew.

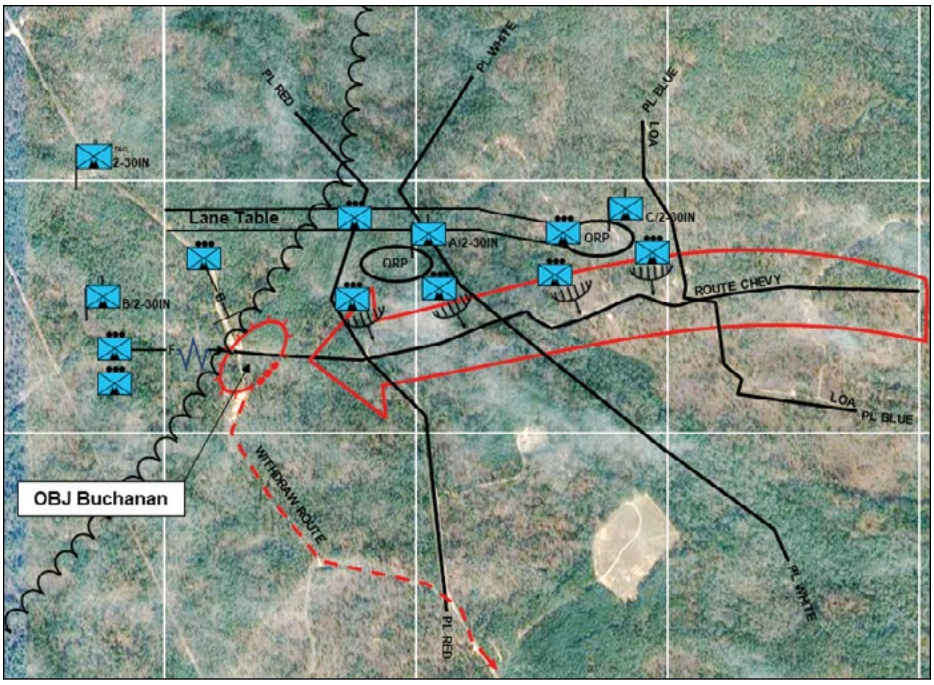


Figure 2 — Battalion Infiltration - Bypass of Objective Buchanan

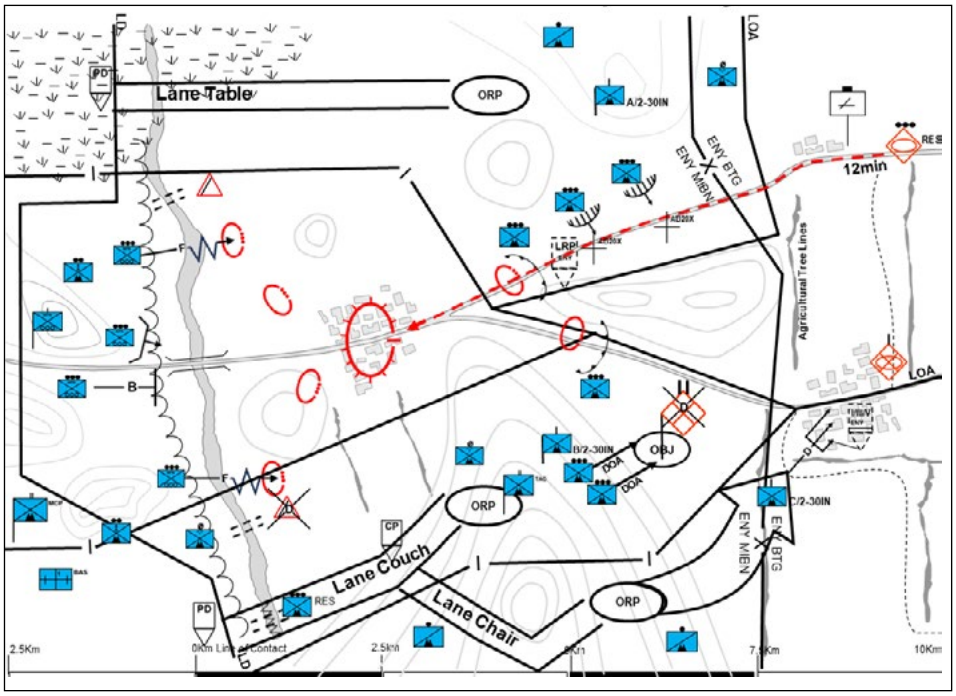
Expanding on the utilization of infiltration in the offense, operations not in conjunction with other units or forms of maneuver can achieve effects and present opportunities to exploit. In this sense, the use of infiltrations allows friendly forces to establish an area of operations for small unit actions forward of the FLOT that do not support an immediate higher headquarters operation. For example, if a company moves behind the enemy's FLOT, it could launch ambushes along key supply points, specifically against armored formations, as we have seen in Ukraine. A headquarters forward of the FLOT can also provide intelligence, conduct raids, or conduct other harassing attacks. These variations of attack, reconnaissance, and security operations enable friendly forces to disrupt the enemy's decision-making cycle to create opportunities for other operations. This is not about just being a nuisance; the successful use of infiltration should require the enemy to commit additional resources to counter friendly actions or give the impression that a much larger force is present.

The benefits of an infiltration are not limited to the offense. The light infantry defense is often overlooked as a security operation in favor of traditional, larger engagement area-type defenses common to combined arms battalions. However, small units are particularly suited to infiltrate forward of the FLOT in order to set up multiple ambushes along key avenues of approach. By moving small elements into position early and forward of a traditional engagement area, friendly forces have the ability to organize and conduct variations of attacks, especially on high-value targets such as armor and engineering assets. This early employment by small forces can successfully disrupt attacking forces long before they arrive at a main engagement area. This has the added benefit of slowing formations so they are susceptible to friendly air and artillery assets. Spoiling attacks at enemy assembly areas are also a practical use for forces who have successfully infiltrated the enemy's rear.

Infiltrations Play to the Strengths of Light Infantry

Light infantry forces are specifically suited to conduct infiltrations due to their ability to conduct dismounted movement through restrictive terrain, move with minimal signature, and minimize logistical requirements. Mechanized and motorized forces are tied to roads, especially in portions of Europe where the spring thaw prevents movement on all but the best road networks. Enemy sensors, like the UAS platforms used by Russian forces in Ukraine, will monitor movement along key routes.[9] For light infantry, the movement through restrictive terrain, such as steep or marshy terrain, increases the likelihood that a friendly formation can move behind the FLOT undetected. Once a formation is established behind the FLOT, restrictive terrain hides patrol bases or command posts until the friendly unit decides to attack. Again, restrictive terrain will assist a dismounted unit moving back into a rally point without being followed.

Figure 3 — Battalion Infiltration - Attack to Disrupt Enemy Rear Area



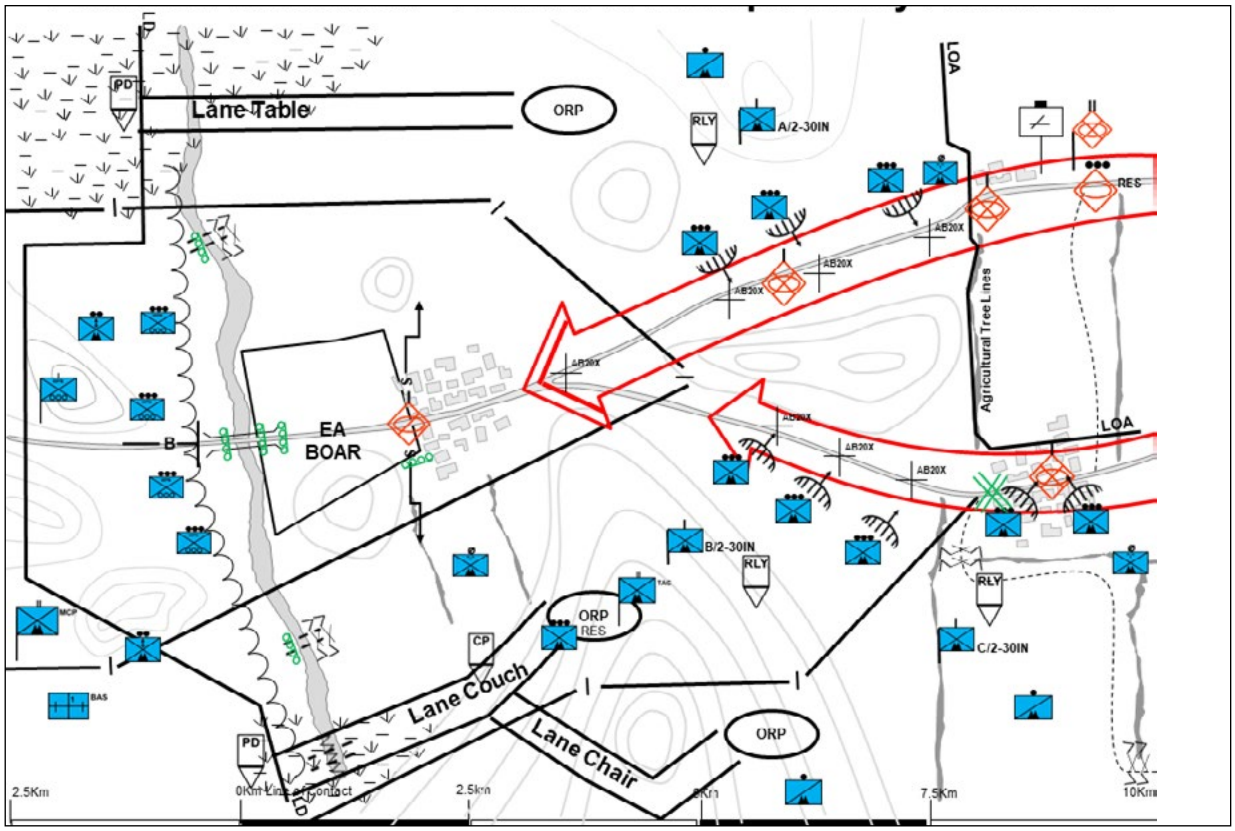


Figure 4 — Battalion Infiltration - Defend to Disrupt Enemy Avenue of Approach

Thus, key to not being tracked is a light infantry unit's ability to minimize its signature by maximizing terrain where other units cannot or will not enter.

Along with movement through restrictive terrain, light infantry units have the ability to minimize their signature and reduce the likelihood of detection. When conducting movement, these formations could separate into smaller units for movement. For example, infiltration lanes should not become a "dismounted highway" for movement, but care should be given to the size of the element moving along the lanes. A battalion should identify different lanes for each company, and, unless specified, a company can subdivide into platoon movement formations along distinct movement lanes. Subdividing into smaller organizations minimizes the possibility that a unit will be detected, and if it is detected, it increases the probability that an enemy force would decide not to dedicate artillery assets on such a small element as this would make their own guns susceptible to identification and counter-battery with a relatively low payout. It is unlikely that a dismounted platoon would exist as an enemy's value target, so this pushes the decision calculus in favor of friendly forces. A light infantry formation has an advantage in restrictive terrain, but it should evaluate all methods of possible contact, including electronic detection.

Finally, light infantry formations, if trained properly, can have a minimal logistical footprint. Although difficult to train, light formations can operate for extended durations with limited logistical resupply. When resupply is needed, light formations can conduct dismounted resupply at the company level. Additionally, water resupply, which is traditionally one of the limiting factors in dismounted movement, can be extended with water filters down to the squad level. Food, batteries, and ammunition can either be resupplied piecemeal through dismounted movement, small UAS, or air. Again, this takes extensive practice but can allow for light infantry to remain forward for extended periods and achieve sustained effects on objectives.

Hard to Train

To become proficient at infiltration requires specific training. Infiltrations can be challenging to successfully execute and require units to become proficient at long dismounted movements, conduct communications training, complete specific training with enablers, and execute rehearsals for logistics.

As a basic building block, units that want to succeed at conducting infiltrations must excel at dismounted movement under load and over time. The foundation of moving forward of the FLOT is being able to move far enough forward that you are in an enemy's operating area. This requires movements of 10 kilometers or more through restrictive terrain, a distance that requires careful consideration into Soldier load and unit equipment. A unit conducting these types of operations, especially in mountainous or marshy terrain, must be able to move light. To train for this, a unit must do more than just conduct long distance movements as part of morning physical training. Soldiers and leaders must understand Soldier load, movement rates, and rest periods. Units should practice moving through the brush, taking halts, and patrolling techniques in both day

and low visibility and under a variety of weather conditions.

Another element that is difficult for units to train is radio communications, both control of radio communications during operations and mastery on different radio types. During infiltrations, units are susceptible to detection if the enemy can identify radio traffic on the electromagnetic spectrum. Utilizing communication windows and formatted reports to minimize radio traffic takes practice. This discipline requires both proper use of the radio systems themselves and practice communicating without using radios. To talk at the distance required for infiltrations, units must use nonstandard dismounted radio antennas including dismounted OE254 kits and disassembled COM 201 antennas. Familiarity with high frequency (HF) radios and tactical satellite radios must also be obtained. Although these radios are available inside current formations, Soldiers at the individual level must be trained and comfortable with tactical satellite and HF equipment, a skill most formations currently lack outside the radiotelephone operator.

For the staff and company-level leaders, units conducting infiltrations must become comfortable planning with enablers external to the battalion. Infiltrations must be coordinated with reconnaissance elements, which may help identify infiltration lanes, pass an infantry unit through their lines, and operate forward in the vicinity of an infantry battalion during an infiltration. Operations like a reconnaissance handover, passage of lines, and adjacent unit boundaries require coordinated planning and shared understanding between the two units. Additionally, fires planning is a huge part of an infiltration. Passing targets, no fire areas, and understanding targeting guidance are key for both the forward unit and the higher headquarters providing artillery assets. Along with fires, coordinating with air assets, either for insertion or for resupply, takes time and understanding. Air resupply for units forward can be a huge advantage but requires a staff that successfully coordinates with the aviation element and conducts detailed rehearsals prior to execution.

Lastly, dismounted resupply is not something that should be overlooked; it takes planning and rehearsal to be successful. At the company level, understanding who will move back to a company logistical resupply point, cache, or helicopter landing zone is not a glorious task, but this is unbelievably essential to keep a unit forward. The advantage of light infantry is lost if a unit cannot conduct operations forward of the FLOT, and the only way to ensure this happens is through a complete logistics plan. During CTC rotations, units often struggle with resupplying units during normal operations let alone when they have a unit far forward and not accessible by road.

Conclusion: The U.S. Army Must Improve at Infiltration Tactics

The lesson taken from the war in Ukraine should not be that the U.S. Army must accomplish infiltrations to counter armor advances the way Ukrainians have with the Russians. It is that infantry forces need this skill to have success against our near-peer adversaries. Infiltrations are not trained often enough at home station, and even when they are trained at a CTC, it is only when a unit commander makes a concerted effort to conduct one. These operations are hard to train, conduct, and plan. However, the benefit of utilizing light infantry to their fullest capability is undoubtedly worth the pain of hard training.

Infiltrations should be added to light infantry mission-essential tasks lists (METLs). A METL task drives everything that a unit should train to be proficient on from the team through battalion level. This will ensure that difficult tasks associated with infiltrations are learned and practiced during a unit's training phase. Additionally, CTCs will ensure that units are evaluated on infiltrations against a thinking and independent opposing force.

In the ongoing Russo-Ukrainian War, Ukrainian units have conducted multiple successful small unit infiltrations across the depth of the battlefield and generated both tangible and intangible effects against a larger enemy force. This has enabled a significantly smaller force to defend, attack, and sustain large-scale combat operations (LSCO) for more than two years while incurring only a fraction of comparable losses in personnel and equipment. The U.S. Army cannot choose to ignore a skill set and operational knowledge that has paid dividends in Ukraine and in a way not so dissimilar to the lessons derived from the Yom Kippur War that was foundational to AirLand Battle doctrine. Now is the time to begin our next study of a battle-tested skill set foundational to LSCO — the infiltration.

Notes

[1] "Attack on Europe: Documenting Russian Equipment Losses during the Russian Invasion of Ukraine," Oryx, 19 February 2024, https://www.oryxspioenkop.com/2022/02/attack-on-europe-documenting-equipment.html.

[2] Benjamin Jensen, "Ukraine's Success Shows Mastery of 3 Essential Skills of Modern Warfare," *Defense One*, 18 September 2022, https://www.defenseone.com/ideas/2022/09/ukraines-success-shows-mastery-3-essential-skills-modern-warfare/377281/.

[3] "Field Manual (FM) 3-90, *Tactics*, May 2023, https://armypubs.army.mil/ProductMaps/PubForm/Details.aspx?PUB_ID=1026901.

[4] Ibid.

[5] Ibid.

[6] Sophie Williams and Olga Pona, "Bloody River Battle Was Third in Three Days - Ukraine Official," BBC News, 13 May 2022, https://www.bbc.com/news/world-europe-61399440.

[7] Sam Skove, "Ukraine's Soldiers Use Cheap Tech to Hide from Russia's Deadly Drones," *Defense One*, 21 December 2023, https://www.defenseone.com/threats/2023/12/ukraines-soldiers-use-cheap-tech-hide-russias-deadly-drones/392957/.

[8] FM 3-90.

[9] Skove, "Ukraine's Soldiers Use Cheap Tech."

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Hunt, Kill, Report:
A Dismounted Infantry Company's Perspective as OPFOR at NTC

CPT ANIRUDH VADLAMANI

In February 2024, the 1st Stryker Brigade Combat Team, 4th Infantry Division (Raider Brigade) sent my company to augment the permanent opposing force (OPFOR) at the National Training Center (NTC) at Fort Irwin, CA. We served as a guest Blackhorse element, acting as the dismounted infantry attached to the 2nd Squadron, 11th Armored Cavalry Regiment (ACR).

Over three weeks, we endured historic rainfall and near-freezing temperatures. Our experience at NTC showed us that the most synchronized combined arms plan is only as effective as the small units that carry out the mission. As simple as they may seem, training the fundamentals will serve as a force multiplier and help your organization win. This article will focus on valuable lessons we learned regarding the employment of our anti-tank (AT) weapons in the defense and the importance of field craft and physical fitness in the expeditionary fights that we can expect to encounter in large-scale combat operations.

Soldiers from the 2nd Squadron, 11th Armored Cavalry Regiment conduct a combined arms rehearsal at Fort Irwin, CA. (Photos courtesy of author)

We arrived at Fort Irwin with 109 Soldiers from Comanche Company on 1500 the day before the force-on-force portion of NTC Rotation 24-04 began. My first sergeant and I were standing around a vast terrain model during the combined arms rehearsal when the squadron S-2 spoke through a megaphone: "Expect 4-6 inches of rain and temperatures to hover around 36 degrees Fahrenheit." 1SG Trevor Brenner and I gave each other the same silent look, "Of course." Anyone who has been wet and cold in the field knows that is the worst combination a person can endure so of course there would be historic rainfall in the desert the month we are deployed here.

As the rain started to fall during the rehearsal, I zippered up my issued wet weather top and got closer to the terrain model. LTC Darrell Fawley, then-commander of 2/11 ACR, looked directly at me to give guidance and intent:

> *"You will use your dismounted Infantrymen to clear, seize, and hold severely restricted terrain throughout the training area. You will occupy platoon battle positions and integrate into our engagement areas to kill armor with your Javelins. Your strength is clearing complex terrain and establishing AT overwatch positions with their Javelin missiles. We require you to help us lay waste to this brigade. We make the rotational units better by killing them. You will have the most physically demanding job in this squadron over the next 10 days, and I know you are up to the task. Death rides a Blackhorse!"*

We started to get excited. I wanted nothing more than to show up here as guests from the 4th Infantry Division and win. Within days of the first battle period, we learned our first lesson.

Lesson 1:

Nine Javelin missile systems, expertly handled and concealed in severely restrictive terrain with clear fields of fire, will destroy a battalion's worth of combat power.

Our AT teams used the following techniques, tactics, and procedures (TTPs) to maximize their effect:

1. Maintenance of your Command Launch Units (CLUs) must be an infantry company's maintenance priority. CLUs serve as the Javelin missile's targeting and guiding system. CLUs are not pacing items on your equipment status report (ESR); however, they are the only item in an infantry company's weapon arsenal that delivers a munition with a 99-percent probability kill rate on a T-90.

In your unit's maintenance meetings, the CLUs need to be tracked with the vigor that pacing items are monitored.

If your battalion staff does not prioritize the CLU, you must as a company commander. If your CLUs are non-mission capable, they most likely will require evacuation to another organization that fixes them. This takes time and resources. You cannot go to a combat training center or deployment and find out they are broken there.

2. Each Soldier in your company must be able to effectively and instinctively employ the Javelin missile system. Our company made it a weekly habit to get our Soldiers behind the CLU. Every installation in the Army with a Training Support Center (TSC) can sign out the Javelin Basic Skills Trainer (BST) and vehicle multiple integrated laser engagement systems (MILES) to receive feedback from the CLUs. If you do not have access to the BST or MILES, employment of a Javelin is an Expert Infantry and Soldier Badge task. This is low-to-no-resource training that platoons and squads can execute so long as the arms room is open and your signature cards and accounts with TSC are up to date.

3. When task-organizing your AT teams in the defense, group your Javelin teams, your squad designated marksman, and your fire supporters in the observation posts (OPs) together: The squad designated marksman rifle (SDMR) and grid-producing optics carried by the fire supporters (i.e., the lightweight laser designator rangefinder [LLDR]) assist the AT team in locating targets and locking on in high and low visibility conditions. The AT teams paired with a fire supporter in the defense also allow fires to fix an armored vehicle while the Javelin can destroy it when stationary.

4. Each platoon can effectively employ three Javelin missile systems carrying six to nine rounds, depending on the physical fitness of your unit and other mission variables. We found that each platoon can employ two systems forward, with one in the rear as a reserve in case a CLU became non-mission capable. The two systems forward can conduct gun drills (for example, one Javelin fires while the other reloads behind cover and vice versa). How many rounds your platoons can carry is ultimately up to how fit your Soldiers are and how much time you have in the defense. We found that we could only effectively carry three missiles per CLU to move the distances at the speed required for the mission. Twenty-seven rounds for the company were still enough to culminate a battalion per battle period.

5. Detail and rehearsals will pay dividends: Give your AT teams specific engagement criteria and triggers to unmask and move from their concealed position to their firing point. The time it takes for them to get into position should match when they will meet their engagement criteria. Meticulously rehearse so that emplacement is fine-tuned to the second. You want to avoid unmasking your Javelin teams early and risk exposing them to indirect fire. You must operate under the assumption that you are constantly being surveilled. The following is an example of what was briefed to our platoon during the operation order for Battle Period 1:

"We expect that the mechanized infantry company will move through Engagement Area Robyn. Once four or more M1s are observed by Scout Team 1, located IVO (in the vicinity of) Jaguars F crossing Phase Line (PL) Becky, they will radio to 1st and 2nd Platoon occupied in Battle Position 1 (BP1) and Battle Position 2 (BP2). This will trigger AT teams 1 and 2 in BP1 and BP2 to unmask and occupy their firing positions. We expect this movement to take 10 minutes. At the 10-minute mark, we expect the enemy mechanized platoon to reach PL Williams. Once they cross PL Williams, they will enter Engagement Area Ryan and fire support team (FIST) 1 will call for fire using brigade tactical group (BTG) fires and fix the platoon east of PL Charlie. ***AT teams 1 and 2 will then fire two Javelin missiles, one at the lead and rear vehicle in the formation, boxing them in. The enemy will conduct survivability drills, and we assess that with direct and indirect fire we will destroy two M1s and***

SPC Samuel Stogsdill from Comanche Company, 4th Battalion, 9th Infantry Regiment, engages M2A1s during National Training Center Rotation 24-04.

mobility kill the other two. AT Team 1 will be reloaded by then and fire another missile at one of the remaining two vehicles, destroying a third vehicle. *We assess the enemy company will reinforce that platoon and begin to call for fire on our battle position. This will trigger 1st Platoon's displacement from BP1."*

If your nine Javelin AT teams are planned and synchronized to this level of detail in the defense, 27 rounds with 27 tracked vehicle kills will culminate a battalion.

At the end of our first battle period, we culminated the enemy brigade twice and stopped its advance through the Brown and Debman Pass Complex. Blackhorse had achieved its mission. Our company killed 50-plus tracked vehicles utilizing the TTPs mentioned above. We were then offered an opportunity to refit our equipment, and the rain started to fall again. As temperatures dropped to 35 degrees, we were sent back out in the middle of the night to occupy our positions for the second battle period. The next seven days taught us some harsh lessons.

Figure — Battle Period 1 Operations Graphics

Lesson 2:

Do not neglect field craft and packing lists. Mission variables will dictate your packing list and how long you expect to remain in the field until a refit.

Our company encountered unpredictable rainfall and near-freezing temperatures, which exposed many issues. We turned these into valuable takeaways, which we summarize below.

1. Our packing lists must plan for different mission variables and be tailored with the assumption that you will not receive a refit. We incorrectly assumed we could return to the barracks between our second and third battle periods and change our wet clothes. The reality was we received one refit after the first battle period, and that was it. This incorrect assumption led to Soldiers not bringing wet weather bottoms, bivy sacks for their sleep systems, and ponchos. We also found that most of our Soldiers needed to learn how to make a rain shelter.

Company-level leaders must change, review, and inspect the packing lists during daily pre-combat inspections. First sergeants must tailor packing lists to the environment they are fighting in and be flexible enough in case conditions change. In my experience, Soldiers will bring "nice to have" comfort items, not "need to have" items. For example, cold and wet weather gear met the "need to have" criteria in our situation. However, jet-boils and propane did not. Self-inflicted wounds (i.e., not bringing issued equipment) will make your formation ineffective. Throughout history, numerous armies have succumbed to environmental variables because they were improperly equipped.

Lesson 3:

Our physical fitness training plans did not prepare us for the realities of our mission.

Our rotation required our Infantrymen to travel dismounted anywhere from 5-8 kilometers at night with 50-60 pounds of external load. We would remain stationary for a day or two and then do it again. I realized that our youngest Soldiers were not prepared to execute these movements, which required our more senior NCOs to carry the load to maintain our tempo. After we returned from the rotation, many Soldiers went on profile.

We realized that we must pay close attention to our physical fitness training programs and focus on movement lethality so that our Soldiers can accomplish our tasks and

LTC Liam Walsh, commander of 4-9 IN, recognizes Manchu Soldiers between battle periods 1 and 2 of NTC Rotation 24-04.

Soldiers from 3rd Platoon, Comanche Company, 4-9 IN, patrol up the "Matterhorn" and establish a Javelin observation post during NTC Rotation 24-04.

return uninjured. As outlined in Field Manual 7-22, *Health and Holistic Fitness*, physical readiness is the ability to meet the physical demands of any duty or combat position, move lethally on the battlefield, accomplish the mission, and come home healthy.[1] We tend to forget about the "come home healthy" part. I have outlined some observations and changes I have made to our physical fitness training plans after this experience.

1. *Muscular* and *aerobic endurance*, defined as the ability to execute sustained bouts of low-intensity resistance and movement, are the most essential components of fitness. The most critical structural capabilities a Soldier can possess are *load tolerance* and *flexibility*.

Structural capabilities are intrinsic capabilities that allow a Soldier to perform physically. While creating your physical fitness plans, you must combine the components of fitness and occupational tasks with a Soldier's structural capability over time.[2]

While deciding what position each Soldier takes up in an infantry platoon, consider each Soldier's structural capabilities as a part of your talent management.

2. Movement lethality must be taught and learned with meticulous attention to the precise replication of the movement required in combat.[3]

The most effective physical fitness training plans are incorporated into mission-essential task training for your company. Your Soldiers should be wearing their carried load, moving the distances they will encounter, and replicating movement they will see in combat. We often see squads huddled around the same squat rack or bench press, working on one fitness component. A gym is a finite resource shared by all Soldiers on post; however, your authorized equipment, issued gear, and weapons in the arms room are at your disposal anytime. Use exercise ingenuity and on-hand resources to replicate combat conditions whenever possible.

3. Leverage the Army's Master Fitness Trainer (MFT) program to build experts.

Our company sent one squad leader per platoon to become MFTs, and these individuals will serve as the subject matter experts on physical fitness in our company. We cannot expect our squad leaders to lead practical physical training every morning if they do not receive expert education. This also allows our junior NCOs to lead from a position of expertise. Brigade combat teams need the H2F resources to supervise squad-level physical fitness training. Invest in your unit's education and send NCOs to school.

In April 2023, COL Michael Kloepper, then-commander of the 173rd Airborne Brigade, spoke about MFT expert power at an H2F symposium. The battalions from his brigade sent one NCO per platoon to become MFTs, and they each saw an average 21-25 percent decrease in profiles in nine months.[4]

Preparing Soldiers for their worst day in combat is our moral imperative as leaders. We must plan, resource, and execute tough, realistic training to replicate the challenges we will face in our next war. NTC and other combat training centers expose us to these challenges, but we cannot wait for the one or two times a year your brigade attends a CTC to encounter them. We must continuously place our Soldiers in environments where they must learn harsh lessons through repetition until it becomes second nature. It is the best life insurance policy we can give them.

Notes

[1] Field Manual 7-22, *Holistic Health and Fitness*, October 2023, Chapter 3: Domains.

[2] Ibid.

[3] Ibid.

[4] COL Michael F. Kloepper, "Remarks from Holistic Health and Fitness Symposium on Non-Embedded H2F Brigades," Defense Video and Imagery Distribution System, 26 April 2023, www.dvidshub.net/video/881726/col-michael-kloepper-commander-173rd-airborne-brigade-combat-team-provides-his-remarks-holistic-health-and-fitness-symposium-non.

At the time this article was written, **CPT Anirudh Vadlamani** was serving as commander of Charlie (Comanche) Company, 4th Battalion, 9th Infantry Regiment, 1st Stryker Brigade Combat Team, 4th Infantry Division. He is currently serving as commander of Headquarters and Headquarters Company, 4-9 IN. His experience includes two rotations to the National Training Center, three to the Joint Readiness Training Center, one overseas deployment to the U.S. Africa Command area of responsibility, and participation in a NATO military skills competition in England.

Scouts Vs Snipers:
Combining the Craft to Survive LSCO

SSG L. ARMANDO DE LARA II
COL RYAN T. KRANC

Modern technology has ushered in a shift toward low-risk, unmanned robots to accomplish the central tasks that define a sniper. Snipers are often viewed at times as relics of yesterday's wars, using rags and flora to disguise themselves amongst the trees. However, as history has demonstrated, the importance of properly employed snipers in military conflicts cannot be minimized, and today's snipers continue to constantly seek opportunities to conduct the tasks they are experts in to increase a unit's lethality on the battlefield. The difficulty modern snipers encounter is compounded by four major factors: **sniper training, sniper experience, force structure,** and **effective employment by battalion-level operations planners and commanders**. These four components combined play a large part in inhibiting the developmental progress of the next generation of snipers. If changes are not made to the institutional force to create and enable snipers, the Army could lose one of the most effective force multipliers necessary in large-scale combat operations (LSCO).

In the 1980s, the U.S. Army recognized the need for a scout platoon in addition to a sniper squad/section at the battalion level in mechanized, light, and airborne units. This led to formalized doctrine on the organization of sniper squads within infantry brigade combat teams (IBCTs). Light infantry battalions often attach snipers to the scout platoon for accountability purposes, administrative needs, and leadership development. Squad leaders are typically sergeants (in staff sergeant positions) who are recent graduates of the U.S. Army Sniper Course (USASC). They are often overwhelmed as newly minted squad leaders, and current structure sets these young NCOs up for failure. Sniper squad leaders often lack sniper experience and training but are placed in position by battalion leadership with assumptions of their competency. After gaining crucial experience, they then fall victim to a system that requires them to have "line time," experience as an infantry squad leader, without being able to fully utilize the skills they have developed as a sniper. Many snipers face the dilemma of being passed over for promotion because they are told if they spend an entire career in a sniper squad, it hurts career progression. The time allowed to become subject matter experts is cut short for fear of career stagnation. However, if Soldiers spend too little time in a sniper position, their lack of knowledge, dexterity, and proficiency with precision weapon systems are a detriment to the organization and those they are meant to groom and teach. In short, units become less lethal.

Required leadership skills in a sniper squad leader role rival those needed at the platoon sergeant level. Being in this position is among the most technically demanding jobs in the U.S. Army. Sniper squad leaders must facilitate training for their teams that most officers have limited or no experience with. This makes it more difficult for the training to be approved. Squad leaders must lead the way for their snipers. They are required to work with battalion and brigade-level leadership and advise commanders competently so assigned snipers can best integrate into the combined arms

Soldiers from the 1st Armored Brigade Combat Team, 3rd Infantry Division conduct sniper training on 21 March 2024 at Fort Stewart, GA. (Photo by SSG Noah Sladek)

team and achieve intent. Further, sniper squad leaders must communicate with battalion and brigade operations officers to develop, plan, prepare, resource, and execute individual and squad training that sustains and improves their Soldiers' sniper skills. Any shortcomings could lead to the underutilization and mismanagement of this critical resource. Leadership skills are one of many pillars critical to an effective sniper squad. The easy solution would see them included as part of the scout platoon. Within those ranks, a squad leader can benefit from the direct leadership of a platoon leader and a platoon sergeant.

Snipers are essential to improving mission command by helping paint a picture of the battlefield for commanders, allowing them to effectively employ each of the unit's available assets and have successful command and control. Snipers must understand the bigger picture, the scheme of maneuver, information requirements, and decision points. Substandard sniper squads induce risk to mission and personnel, preventing commanders from using them effectively. The root of this problem is the lack of trust and knowledge commanders have with their sniper squads. Accreditation is key; real experience drives realistic and effective training. It is difficult to imagine any commander ignoring a highly experienced and formally trained sniper squad.

Scout platoons will continue to envelop the sniper squad until institutional changes can be made to the modified table of organization and equipment (MTOE) and avenues of funding for the sniper and reconnaissance skillset are available. Combining scout and sniper roles could solve many of the problems inherent in the current administration of the two functions. It is paramount that scouts and snipers understand scouts rarely assume sniper duties, yet snipers are always able to perform scout tasks as part of their mission set. This dual-purpose mission would also mean that scouts must be fluent in the seven fundamentals of reconnaissance and the five fundamentals of security. Snipers train in maneuvering their small elements around objectives while remaining undetected; however, scouts do not have the same level of training and proficiency as snipers in infiltration techniques. Conversely, snipers must understand the linkage of priority intelligence requirements (PIRs) to a commander's decision to seize, retain, and exploit initiative and achieve positions of relative advantage.

The Army prides itself in having well-rounded Soldiers who can fill a variety of roles as they climb the ranks during their career. For Infantrymen, it is beneficial to diversify unit assignments. In a perfect world, a sergeant first class would have experience serving in light, mechanized, and airborne units. This experience drives flexibility and the "well-rounded Soldier" concept, an axiom which has been at the forefront of Army training and doctrine since World War II. The ability to rapidly replace losses in battle stems from lessons learned during LSCO. The problem with this concept is that it cannot apply to a job requiring such high levels of proficiency, knowledge, and leadership skill. The U.S. Army is one of the only armies in the North Atlantic Treaty Organization (NATO) that employs the sniper role as a transitional position.

A Soldier with Reconnaissance Platoon, Headquarters and Headquarters Company, 1st Battalion, 5th Infantry Regiment, 11th Airborne Division, pulls rear security during a combined field training exercise on 21 July 2024. (Photo by CPT Jamie Cottrell)

Recommendations

• Create a *Sniper Employment Course* taught at Intermediate Level Education (ILE) for combat arms field grade officers as well as employment seminars within the battalion and brigade pre-command courses.

• Create a shorter *Sniper Employment Course* as a prerequisite for those assigned as a squad leader/scout platoon sergeant/scout platoon leader. This would be similar to how the Infantry Mortar Leader Course (IMLC) is used to train leaders unfamiliar with the 11C (Mortarman) mission set.

• Integrate sniper-oriented curriculum into NCO Education System (NCOES) schools focused on both administrative and tactical requirements for advancement within the sniper platoon. Much like the current Basic Leaders, Advanced Leaders, and Senior Leaders Courses already in place, these could serve as thresholds for advancement and promotion by institutionally validating an NCO's ability to perform duties and responsibilities inherit of the next higher role.

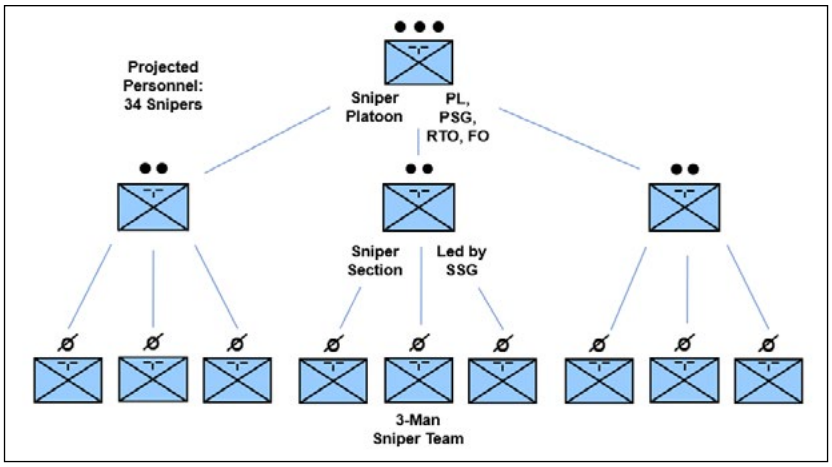

Figure — Proposed Sniper Platoon Organization

• Create a scout sniper company at the brigade level and attach scouts and snipers to subordinate units when required.

• Institute a pipeline to select scout sniper candidates at the earliest point in a Soldier's career — One Station Unit Training (OSUT). Have sniper candidates enter a pre-sniper course once OSUT basic requirements are met. Upon completion, Soldiers are assigned an 11S military occupational specialty (MOS).

• Assign Soldiers to a sniper platoon in a deployable unit upon graduation of the pre-sniper course. The Soldier must then graduate the *Basic Sniper Course* to become qualified to take a sniper team (see next bullet).

• Create a *Basic Sniper Course*. Its curriculum could contain elements of the Reconnaissance and Surveillance Leaders, Ranger, and Survival Evasion Resistance and Escape (SERE) courses and span a total of three months. Upon completion of this course, graduates will be required to attend the Scout Leader Course and hold the R7 additional skill identifier (ASI).

By resolving the current issues caused by the force structure implemented in the MTOE, senior snipers will be able to pass on lessons learned to the next generation of Soldiers and refine skills that would be lost if pushed to a line company.

Conclusion

The restructuring of snipers within the U.S. Army is necessary to preserve the integrity and employment of future snipers. This article addresses all major points currently encountered by snipers throughout the force. The organizational change will keep snipers in positions for them to truly become masters of their craft. The establishment of a pipeline starting after the completion of OSUT ensures that all sniper billets within the U.S. Army are filled and functional with the proper leaders in the most advantageous positions. This removes sergeants serving as squad leaders and places this responsibility on the shoulders of more seasoned and experienced staff sergeants. The development of NCOES curriculum ensures that the Soldiers filling sniper roles are academically prepared to serve in the next higher roles within the sniper platoon. This would also capture the sniper employment blocks of instruction to bridge the gaps seen across the force in terms of asset utilization. Sniping is an art, honed through tough and realistic training, that requires complete immersion in the craft. Snipers must possess the knowledge base to properly apply the craft and, most importantly, the trust and confidence of senior leaders to allow their snipers to take the gloves off and support them in the manner in which they were designed.

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At the time this article was written, **COL Ryan T. Kranc** commanded the 316th Cavalry Brigade at Fort Moore. He previously served as chief of Emergent Requirements, J35, The Joint Staff, Pentagon. COL Kranc's other assignments include serving as commander of 4th Squadron, 10th U.S. Cavalry Regiment, Fort Carson, CO; strategic advisor for northern affairs at the United States Consulate General in Erbil, Iraq; aide de camp to the director, Army Capabilities Integration Center, U.S. Army Training and Doctrine Command, Fort Eustis, VA; and squadron and regimental operations officer in the 11th Armored Cavalry Regiment, Fort Irwin, CA. He earned a Bachelor of Arts in criminal justice from Gonzaga University in 2000, a Master of Science in administration from Central Michigan University in 2011, and a Master of Science in national resource strategy from the Dwight D. Eisenhower School for National Security and Research Strategy in 2022.

Soldiers in the 1st Battalion, 506th Infantry Regiment conduct sniper training at Camp Adazi, Latvia, on 20 September 2023. (Photo by SGT Cesar Salazar Jr.)

Soldier Load: The Art and Science of 'Fighting Light'

LTC AARON CHILDERS
CSM JOSHUA YOST

When it comes to Soldier load, the Army has a weight problem... not with Soldiers but with how much they carry. Soldiers in the Army — and particularly those in the Infantry — carry far too much. Many people equate Soldier load with the amount you can carry and the length of the dismounted movement. For example, most Infantry Soldiers think about ruck-marching standards in terms of the Expert Infantry Badge (EIB) standard — carrying a 35-pound ruck for 12 miles in under three hours. As part of Joint Readiness Training Center (JRTC) Rotation 23-09, 2nd Battalion, 30th Infantry Regiment took a different approach to Soldier load, and this article will share some of the lessons we learned.

Understanding Soldier load requires leaders to think differently about dismounted movement. First, leaders need to know what risk is associated with overloading our Soldiers. Second, leaders need to think differently about the various types of loads and how to tailor unit equipment loads. Third, leaders need to consider how to train movement under load for planning purposes. Lastly, "fighting light" requires a disciplined approach to resupply operations. Understanding and executing operations that minimize Soldier load are difficult and take training to conduct successfully. Despite these challenges, units that master this are lighter and more lethal.

The Risk Assumed and Who Owns It

Excessive Soldier load for dismounted infantry poses both a risk to force and a risk to mission. Soldier load is often misunderstood because leaders don't understand who really owns the risk trade-off of overloading Soldiers versus not carrying something you need.

Risk to force is increased by Soldier overload. Fatigue and poor equipment positioning can offset any advantages to carrying everything you might need during a patrol, thereby increasing risk to force. "Heavy loads decrease situational awareness by tilting the head at a downward angle and increasing the amount of weight that has to be controlled when a Soldier stops quickly. In controlled experiments, loads have also been demonstrated to adversely affect shooting response times, increasing the time it takes soldiers to fire accurately by 0.1 second, relative to unloaded conditions."[1] In addition to the risk of direct fire contact, the risk of injury, both during the movement and long term, is compounded by Soldier load. "Common injuries associated with prolonged load carriage include foot blisters, stress fractures, back strains, metatarsalgia, rucksack palsy, and knee pain."[2]

Risk to mission is also increased by overloading Soldiers. An increased load directly impacts the energy Soldiers have available to conduct the mission once the movement is complete. In other words, if Soldiers use all their energy on the approach, they will be fatigued on the objective. "Loads carried on other parts of the body result in higher energy expenditures: each kilogram added to the foot increases energy expenditure 7% to 10%; each kilogram added to the thigh increases energy expenditure 4%."[3] Fatigue and its effect on Soldier performance cannot be understated.

Soldiers move to their next objective during a Joint Readiness Training Center rotation at Fort Johnson, LA, on 30 April 2023. (Photo by SPC Luis Garcia)

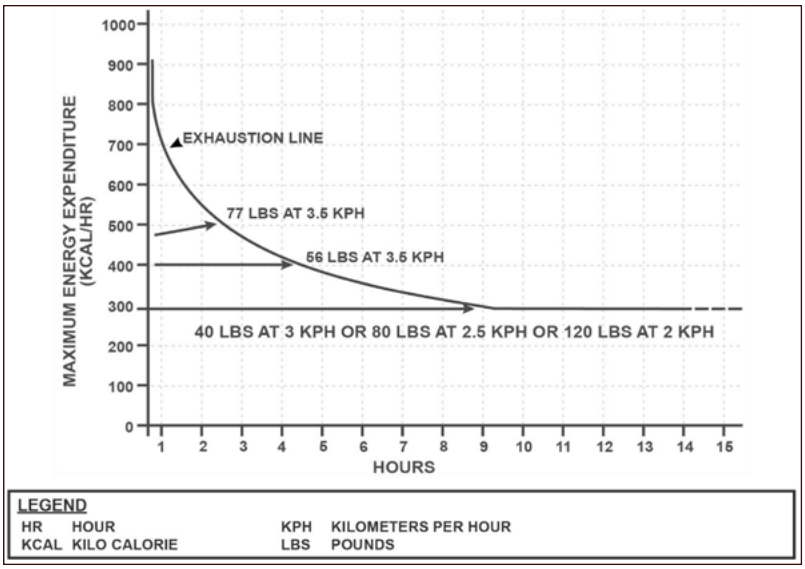


Figure 1 — Maximum Energy Expenditure (ATP 3-21.18, Figure 3-4)

The heavier the load, the less energy a Soldier has to complete the mission. Fatigue also has a direct negative impact on a Soldier's ability to engage targets. In Army studies, "the time required to determine and acquire a target increased under heavy loads from just over 3 seconds to more than 3.5 seconds in some configurations, as accuracy decreased."[4]

Soldier load impacts the mission beyond the fatigued Soldier being less able to complete a mission and engage a target quickly and accurately. Increased Soldier load also increases the risk from a slower speed of movement. The speed of movement will decrease because of both terrain and load. The longer a unit is moving, the more it is susceptible to enemy contact, thus increasing the risk to both force and mission.

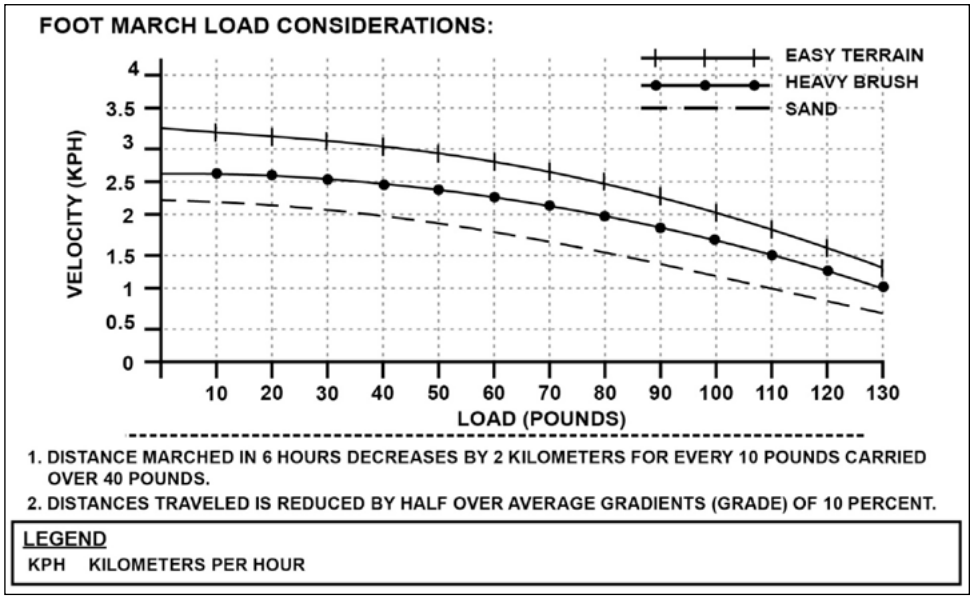
Soldier load should be managed by all leaders, and NCO involvement at the lowest level is the key element to ensuring our Soldiers remain light and responsive. At lower levels, NCOs are the ones who make the final checks and ultimately have to deal with the consequences of overburdening Soldiers. For commanders and their staffs, properly managing Soldier load can reduce the overall risk to both mission and force.

The senior enlisted member of the unit is responsible for the packing list during each training event, but junior leaders should be empowered to make risk-informed decisions. For company training events, this is the first sergeant, and for battalion training events, it is the battalion command sergeant major. Again, leaders at the lowest level should feel empowered to make decisions regarding Soldier load. Team leaders and squad leaders are responsible for conducting pre-combat inspections. If left unchecked, junior Soldiers may take more than required on a training event for fear that they may need the item. If layouts are not conducted at the squad and team levels, Soldiers may inadvertently burden themselves with additional gear, especially in the winter months.

Ultimately, the commander is responsible overall for the risk associated with Soldier load. A commander owns the risks to mission and force from having too heavy a load. This risk is obvious, especially in the summer months, so commanders at all levels must consider Soldier load in their planning. For battalion commanders, the military decision-making process (MDMP) should include Soldier load, and for company commanders, this should occur during the troop leading procedures (TLPs). At the company level, commanders and first sergeants must consider Soldier load when evaluating their own troops as part of METT-TC (mission, enemy, terrain and weather, troops and support available, time available, civil considerations), and Soldier load must be revalidated during pre-combat inspections. Remember, Soldier load INCREASES as orders go down to companies, platoons, and squads. Leaders must remain engaged to ensure unnecessary weight is not added.

During MDMP, Soldier load should be specifically evaluated during Steps 2 and 6; it will be owned by the S-4, who will maintain a running estimate of Soldier load at all times. As part of the S-4's assessment during mission analysis (Step 2), the S-4 will display the current weight with and without water and food (dry weight vs. full weight). As part of course-of-action (COA) approval (Step 6), the battalion S-4 will brief the commander on changes to estimated Soldier load when considering equipment added for that specific COA.

Figure 2 — March Velocity Depletion Based on Load during Cross-Country Movement (ATP 3-21.18, Figure 3-3)



Dictating the steps of MDMP where Soldier load is discussed may seem proscriptive, but this is essential to ensuring leaders remain aware of what we are asking Soldiers to carry. This responsibility does not end with planning — it continues into execution. The staff shares responsibility for Soldier load. The battalion S-4 must remain cognizant of the amount of ammunition and meals a Soldier is carrying during operations. Ammunition, water, and meals are the heaviest items carried by Soldiers, and staff officers must remain aware of what they are asking Soldiers to carry. Water is not negotiable, but food and ammunition are variables that can be controlled by the battalion S-4. Resupply capabilities, discussed later in this article, are ways to minimize the amount a Soldier is carrying. Hot meals brought forward not only decrease the risk of hot and cold weather injuries but also decrease the amount of food a Soldier is required to carry.

The Individual Soldier's Combat Load

We need to redefine what the term Soldier's load really means. It is often misunderstood, as in the EIB example, to indicate what Soldiers have in their ruck, but what Soldiers are carrying is again far more complicated than just what is on their back. We need to understand everything included in Soldier load and also comprehend what a realistic goal would be. With this in mind, we can redefine what we expect a team, squad, and platoon to carry, as unit equipment quickly adds up across Soldiers.

Soldiers are not only carrying what is in their rucksack, but they also have all of their individual equipment, weapon, position-specific gear, and radios. To just look at what someone is "carrying" does not give a complete picture of the demands we are placing on Soldiers, nor does it help us understand what can be removed to ease Soldier load. In their recent report for the Center for New American Security, Paul Schaffer and Lauren Fish attempted to better define what constitutes Soldier load:

> *Fighting load consists of the equipment (weapon, ammunition, helmet, body armor, water, etc.) that Soldiers carry directly on their person when maneuvering and fighting.*
>
> *Approach load consists of the fighting load plus a rucksack carried during a march, which would contain additional water, ammunition, food, and other supplies for the duration of the mission.*[5]

Another way to look at the definitions above is to look at the fighting load as everything a Soldier would carry onto an objective from the objective rally point (ORP). The approach load is everything a Soldier would carry to the ORP, which includes the fighting load. This definition not only accounts for all the weight a Soldier carries, but it also puts the items carried in an operational framework.

Tables 1-3 show an example packing list used by 2-30 IN during our August 2023 JRTC rotation and include the fighting load, approach load, and a team bag, which will be discussed

Table 1 — Example Fighting Load

ITEM	WORN ON PERSON	QTY
1	Modular Lightweight Field Load Carrier (with pouches)	1 EA
2	Magazines, 30-round	7 EA
3	Individual First Aid Kit (IFAK)	1 EA
4	Advanced Combat Helmet (ACH) with pads and cover	1 EA
5	Gloves, OCIE/RFI	1 PR
6	Ballistic eye protection (APEL approved)	1 EA
7	ID card	1 EA
8	ID tags with chains (long and short)	1 SE
9	Note-taking material	1 SE
10	Flashlight with red color lens	1 EA
11	Hearing protection	1 EA
12	Watch	1 EA
13	M4 Blank Adapter	1 EA
14	Combat uniform (OCP)	1 EA
15	Cap, patrol with rank and name tape	1 EA
16	Assigned weapon	1 EA
17	Night vision	1 EA

Table 2 — Example Approach Load

ITEM	RUCKSACK DESCRIPTION	QTY
1	Rucksack	1 EA
2	2-quart canteen	1 EA
3	Entrenching tool (E-Tool)	1 EA
4	Socks	4 EA
5	Shirt, brown	1 EA
6	Hygiene kit (72 hours) *Razor, shaving cream, toothbrush, toothpaste	1 SE
7	Bivy cover	1 PR
8	Parka, wet weather w/rank	1 EA
9	Poncho/rain fly	1 PR
10	Poncho liner	1 PR
11	Weapons cleaning kit	1 EA
12	Canteen, 1-quart	2 EA
13	Hydration system (CamelBak)	1 EA
14	Meal, ready to eat (MRE) (field stripped)	6 EA
15	Baby wipes	1 EA
16	Sunblock	1 EA
17	Bug repellent	1 EA

Table 3 — Example Team Bag

ITEM	TEAM BAG	QTY
1	Army Combat Uniform (top/bottom)	1 SE
2	Boots, tan/brown IAW Army Regulation 670-1	1 PR
3	Socks, boot, black/green	4 PR
4	Undershirt, tan/brown	4 EA
5	Personal hygiene kit (1 week)	1 SE
6	Improved Outer Tactical Vest (IOTV) with plates	1 EA
7	Protective mask	1 EA

later. The packing list is designed to get a Soldier through an entire 10-day summer rotation and has a dry weight of under 25 pounds per ruck. Additional combat load, even for medics and those carrying special equipment, did not exceed 55 pounds. Two main factors contributed to the "lightfighter" load. One, this packing list is dependent on access to company trains within 24 hours, and two, this packing list will vary depending on METT-TC requirements, especially weather.

The use of the team bag is essential. Company trains give a unit the flexibility to put items not needed during the approach onto company trains and move them forward when needed.

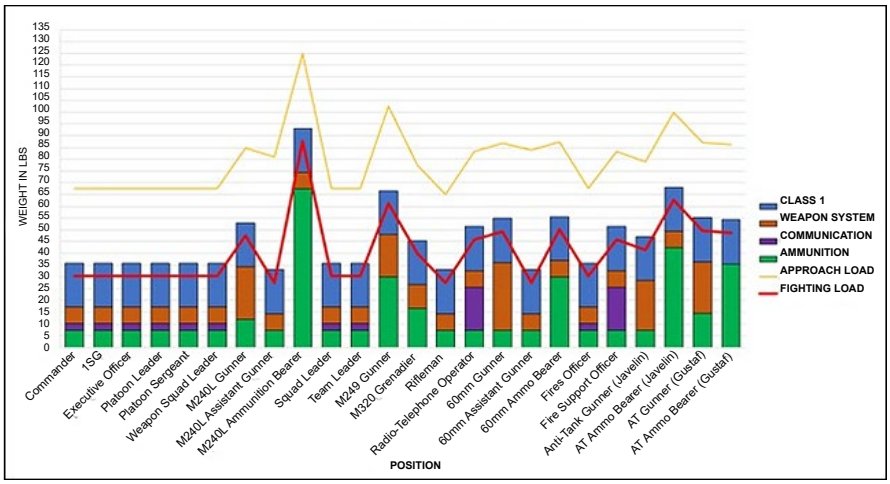


Figure 3 — Analysis of All Weight Carried (including Weapon System) Using 2-30 IN JRTC 23-09 Packing List

The one missing variable is the inclusion of equipment for each person by position. The main contributor to remaining weight is ammunition, followed by batteries. This can vary greatly by position; for example, a radio-telephone operator (RTO) might carry little ammunition and a relatively light M4 but may carry multiple batteries. Conversely, a machine gunner may transport few radio batteries but carries the most weight when considering the weight of the ammunition and weapon. Again, this requires leaders to make informed decisions and accept risk. Infantry leaders often consider carrying the entrenching tool (E-tool) as a "must-have." However, if you consider machine gunners, Soldiers who carry an extremely heavy load and are always behind their weapon (and thus never dig their own position), the question turns into whether or not they actually need an E-tool. Figure 3 shows the breakdown of weights by position when merging the above packing list with weights of batteries, weapons, and the other items required for their duty assignment.

Soldier load is often inadvertently increased because of requirements for special equipment at echelon, and leaders must limit the amount of this equipment to reduce the amount of weight individuals are carrying. Special equipment at the team level may be duplicative when operating as a platoon. For example, wire cutters carried by a team for a squad patrol should not result in six wire cutters going out on a platoon-sized patrol. Managing special equipment takes leader involvement, and Soldier load can be reduced by only carrying the minimum equipment required for a mission. As stated previously, junior leaders should feel empowered to make decisions on what is carried. The uniform should fit the requirements of the mission. Tables 4-6 specifically look at special equipment by organizational level and eliminate redundancy at echelon.

Decisions of what not to carry should be made by informed

Table 4 — Special Equipment for the Infantry Team

Traditional Special Equipment	Suggested Lightfighter Special Equipment
Aid and Litter - Skedco - Aid bag - Helicopter landing zone (HLZ) kit -OR- **Breach** - Shotgun - Wire cutters - Hooligan tool -OR- - Flexcuff - Enemy prisoner of war (EPW) tag kit -OR- **Demo** - Demolitions - Det cord - M88 & shock tube **Additional items:** - M249 spare barrels	**Aid and Litter** - Skedco - Aid bag - HLZ kit -OR- **Breach** - Shotgun - Bayonet -OR- - Flexcuff - EPW tag kit -OR- **Demo** - Only when required

Table 5 — Special Equipment for the Infantry Squad

Traditional Special Equipment	Suggested Lightfighter Special Equipment
Aid and Litter - 2x Skedco - 2x Aid bag - 2x HLZ kit **Breach** - 2x Shotgun - 2x Wire cutters - 2x Hooligan tool **EPW** - 2x Flexcuff - 2x EPW tag kit **Demo** - 2x Demolitions - 2x Det cord - 2x M88 & shock tube **Other items:** - Batteries - M249 spare barrels	**Aid and Litter** - 1x Skedco, 1x Poleless litter - 2x Aid bag - 1x HLZ kit **Breach** - 1x Wire cutters - 1x Bayonet **EPW** - 2x EPW tag kit **Demo** - Only when required **Other items:** - Batteries

Traditional Special Equipment	Suggested Lightfighter Special Equipment
Aid and Litter -6x Skedco -6x Aid bag -6x HLZ kit **Breach** -6x Shotgun -6x Wire cutters -6x Hooligan tool **EPW** -6x Flexcuff -6x EPW tag kit **Demo** -6x Demolitions -6x Det cord -6x M88 & shock tube **Other items:** - Batteries - M249 spare barrels - 2x Thermal sights for M240 - 2x Tripod	**Aid and Litter** - 2x Skedco, 3x Poleless litters - 6x Aid bag - 1x HLZ kit **Breach** - 1x Shotgun - 2x Wire cutters - 2x Bayonet **EPW** - 3x Flexcuff - 3x EPW tag kit **Demo** - Only when required **Other Items:** - Batteries -2x Thermal sights for M240 -2x Tripod

Table 6 — Special Equipment for the Infantry Platoon

leaders, even at the team leader level. Even in these examples, additional changes can be made. For example, machine gunners may not need to carry E-tools, and their assistant gunners can carry one tool for both of them. Leaders must think intentionally of creative ways to limit weight.

Training for Soldier Load

When training for long-distance movement, leaders should not fall into the trap of just carrying heavy loads over extended distances. Instead, training should replicate patrolling rather than preparing for an EIB ruck march. Similarly, at every available opportunity, units should train on dismounted sustainment. Once a unit goes light, one of the hardest challenges will be sustaining the dismounted force.

When training for dismounted movements, leaders should focus on perfecting their movement rates, rates of march, movement formations, and actions at halts. These are essential for a dismounted element away from supply lines.

Controlling the rate of march is vital to ensuring dismounted Soldiers can sustain tempo when attacking an objective. Even with the lightest of loads, an uncontrolled rate of march will fatigue units, making Soldiers combat ineffective. The rate of march should be controlled by leaders at all levels and determined in accordance with the standards set forth in Army Techniques Publication 3-21.18, *Foot Marches*.

Understanding halt timelines is also essential. For dismounted infantry movements, units will "halt for 15 minutes during the first hour [of movement] and 10 minutes every 50 minutes thereafter."[6] This pace can be adjusted by leaders at all levels according to mission requirements. Ensuring halts are executed ensures that Soldiers are not only able to close short distances but are also able to close long distances over extended periods of time. During the first hour's long halt, units should check Soldier equipment and adjust or redistribute it as necessary. During this halt, and all following halts, Soldiers will maintain security while consuming water and food. Doing this will help Soldiers maintain energy levels. Leaders will conduct foot checks as required. During halts, the formation will conduct actions normally associated with long halts, to include establishing hasty sectors of fire, performing maps check, repositioning casualty-producing weapons (M240), and conducting a hasty emplacement of mortars.

Halts should be planned whenever possible and exhibit characteristics similar to that of a patrol base (a site that is easily defendable for short periods of time, away from natural lines of drift and high-speed avenues of approach, provides cover and concealment from both ground and air, and provides little to no tactical advantage to the enemy, according to the *Ranger Handbook*, Training Circular 3-21.76). Planning should be associated with a movement control measure, specifically a planned checkpoint, or a phase line.

Movement rates through restrictive terrain should plan for a light infantry company to move at 2 kilometers per hour (kph) during the day and 1 kph at night. Although this is a generally accepted rule, route planning is the largest factor of a steady rate of march. Keeping Soldier load light helps Soldiers cross this distance more efficiently. Achieving 20-32 kilometers per day is only possible when Soldier load and rate of march are combined effectively.

Route planning should avoid moving through restrictive terrain except when the tactical situation requires. Slope, vegetation, and hydrology should all be taken into consideration when planning routes. Current computer modeling shows the impact of terrain on movement speed for a Soldier moving under 40-pound and 140-pound loads. For light infantry to utilize restrictive terrain for tactical advantage, both Soldier load and route planning must be considered.

Figure 5 uses computer models to show the fastest route over specific types of terrain when a 200-pound individual conducts movement over restrictive terrain. The goal for leaders should be to achieve the yellow line. This route combines a lighter Soldier load with a shorter and more

Figure 4 — Average Dismounted Rates of March (ATP 3-21.18, Figure 3-2)

AVERAGE RATES OF MARCH FOR:	KPH				KM PER DAY
	ON ROADS		CROSS-COUNTRY		
	DAY	NIGHT	DAY	NIGHT	
FOOT SOLDIERS	4	3.2	2.4	1.6	20 to 32

LEGEND
KM KILOMETER KPH KILOMETERS PER HOUR

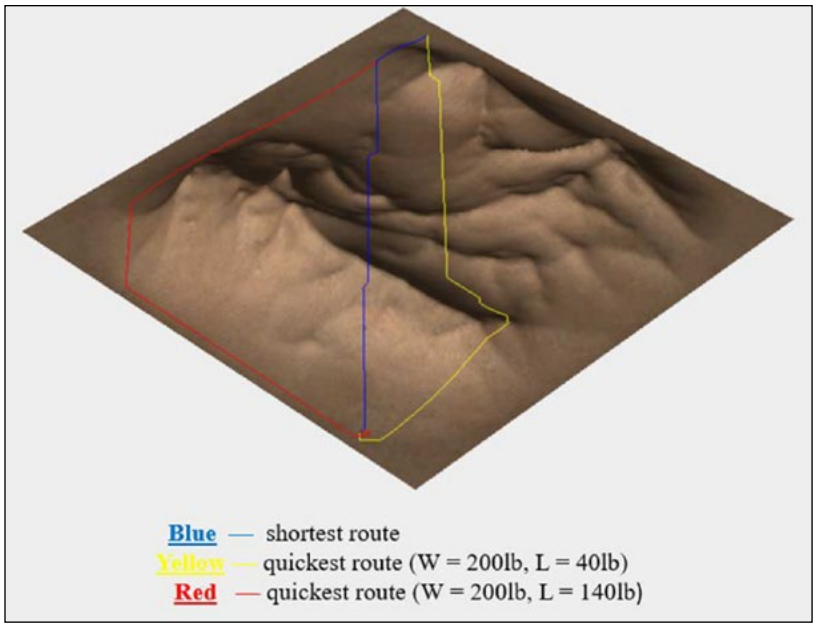


Figure 5 — The Effects of Load on Route Selection[7]

tactically advantageous route. The lighter load allows for the dismounted Soldier to better utilize restrictive terrain, thus providing a perceived tactical advantage.

Movement formations and techniques are of special consideration for dismounted movements under load. The wedge and the column remain the fastest formations, with the wedge maintaining the highest level of security. The modified column and the column should only be used when the terrain does not allow for the wedge. Although traveling and traveling overwatch are considered the fastest movement techniques, the bounding overwatch formation gives Soldiers a chance to rest while providing security. Leaders should consider the bounding overwatch technique to maintain security when movement must be maintained but Soldiers are showing signs of fatigue.

Dismounted Resupply

Dismounted resupply is one of the most difficult aspects of operating as light infantry. It involves the transfer of equipment from a logistical element to the dismounted fighting Soldier. A vehicle cannot simply move right up to a dismounted location. It takes planning, and the transfer from a vehicular or air platform to a dismounted resupply team must be rehearsed. "Fundamentally, only two great novelties have come out of recent warfare. They are: (1) mechanical vehicles, which relieve the Soldier of equipment hitherto carried by him; (2) air supply, which relieves the vehicle of the road."[8] Resupply is essential to "lightfighting." Without sustained water, food, and ammunition, light infantry units cannot operate for extended periods of time. To remain resupplied, light infantry units should remain innovative, adaptable, and disciplined. There are multiple ways to resupply dismounted infantry units, including the use of company trains, a dismounted duty platoon, speedballs, caches, and aviation elements.

Company trains remain the main method of resupply for company-level and below dismounted movements. As a planning factor, company trains should remain at least one terrain feature away from combat formations and out of direct fire contact. In a light infantry formation, the company trains may only consist of two vehicles: the commander's High Mobility Multipurpose Wheeled Vehicle (HMMWV) and the company Light Medium Tactical Vehicle (LMTV). When operating in restrictive terrain, the company all-terrain vehicle may also be utilized to transport equipment between the location of the LMTV and the company patrol base. The company executive officer (XO) oversees resupply as the first sergeant moves with the formation. This is not a rigid requirement but a planning consideration that leaders can adjust.

Dismounted resupply is the only organic method that can traverse through restrictive terrain. The company patrol base is usually located in restrictive terrain where the LMTV cannot conduct tailgate resupply. Companies should designate a platoon to conduct resupply operations. The first sergeant is responsible for conducting resupply from the trains forward to the company. As previously mentioned, duty platoons with the right equipment can assist with resupply. This will require one platoon to reduce the amount of personal equipment its Soldiers are carrying in order to carry supplies (especially Class I, III, and IV). This allows a dismounted element to move forward without bringing up company trains. The increased load of these classes of supplies, however, fatigues the troops assigned with this duty and may make them combat ineffective for the current operation.

Speedballs are a colloquial term used to describe prepackaged resupply bundles. These supplies are meant to quickly resupply at the point of need and usually consist of Class I, II, III, IV, and V. In contact, Class I and V will be the most emergent needs. These items are packaged in duffle bags or body bags and pre-staged at the brigade support area. During mission planning, the battalion S-4 should coordinate between the companies and the forward support company to configure these items. Also key to using speedballs is the need to track their location so they can be loaded onto waiting trucks or aircraft. The battalion XO or commander is usually the release authority for sending speedballs forward to troops.

Caches are another form of resupply not commonly used. "Caching is the process of hiding equipment or materials in a secure storage place with the view to future recovery for operational use."[9] Caches are another way to lighten Soldier load and require prepositioned supplies to be staged forward. The key element of a cache is that the supplies are left hidden and unsecured until the receiving unit secures them. In order to properly cache an item, two elements — the placing unit and the receiving unit — are tasked to conduct the caches. The placing unit could be a scout element, an aviation element dropping supplies, or a vehicle trailer that

was placed in the woods. The receiving element is usually larger and unable to resupply internally. The danger with caches is that an enemy element could find the cache and either take the supplies or ambush friendly forces when they come to retrieve the supplies. Key to the cache is properly marking the location, communicating this location to a higher element, camouflaging the equipment, and taking steps (like deception) to ensure enemy forces do not find the location.

Aviation elements have a unique advantage in conducting resupply operations. For a dismounted resupply, there are two main types of resupply conducted by aviation elements. Low-cost, low-altitude (LCLA) resupply involves dropping supplies from a rotary-wing or fixed-wing aircraft. LCLA requires coordination between the battalion and the aviation element. This requires pre-coordination to ensure that the resupply takes place in a timely manner. Units may also require a jumpmaster and pathfinder to assist the aviation element in dropping supplies. There are two main challenges of LCLA. First, while preplanned LCLA drops are an effective way to conduct resupply, LCLA is not especially flexible to the needs of "lightfighters." Second, parachutes do not always land where planned. A resupply package drifting off course can increase the amount of time before the resupply and risk being compromised by the enemy.

Sling loads are resupply packages moved underneath rotary-wing assets. UH-60s and CH-47s can sling various packages across all classes of supply. Sling loads are reliable and can place supplies in an accurate location. The drawbacks of sling loads are the equipment required to sling and the shortage of trained personnel to rig resupply. Again, it takes practice to get crews proficient in rigging resupply bundles. An additional drawback is that rotary-wing assets can give away positions if drop locations are not properly planned.

Finally, water resupply is the most pressing need for a dismounted rifle company, especially during warm weather. There are several ways to conduct water resupply, but all come at a cost. Water purification, if acceptable at a unit's location, can solve this problem, but purifying water takes time, requiring a unit to stop movement. Purification tablets are also an option, but these may not filter out heavy metals and all toxins, and again, are one more item a Soldier must carry. Each rifle company has a 400-gallon water "buffalo" capable of resupplying a rifle company. However, this also needs to be rehearsed. Even for a well-rehearsed company, resupplying call-backs, or water gallons, can take more than an hour.

Conclusion

Soldier load is not a simple problem that can be easily solved or viewed as merely weight and distance. Army leaders must understand the risk in overloading Infantry Soldiers. The asymmetric advantage of light infantry is the ability to move through restrictive terrain to gain a decisive advantage over the enemy. This mobility gives them the ability to capitalize on the principles of the offense, specifically surprise and audacity. Without managing Soldier load, a light infantry formation loses all principles of the offense, and this adversely impacts tempo and increases risk to the force and mission. In short, a lighter force is a more lethal force. We have to rethink how we view Soldier loads and must look at approach and fighting loads in a different light. Managing Soldier load must be done by adhering to the packing list, understanding the compounding impacts of adding weight requirements at echelon, ensuring that rate of march supports Soldier load efforts, and conducting efficient dismounted resupply. This is a leader business, and the success of America's fighting Soldiers depends on maintaining the "lightfighter" mindset.

Notes

[1] Lauren Fish and Paul Scharre, "The Soldier's Heavy Load," Center for a New American Security (En-US), www.cnas.org/publications/reports/the-soldiers-heavy-load-1.

[2] Joseph J. Knapik, Katy L. Reynolds, and Everett Harman, "Soldier Load Carriage: Historical, Physiological, Biomechanical, and Medical Aspects," *Military Medicine*, January 2004, https://pubmed.ncbi.nlm.nih.gov/14964502/.

[3] Ibid.

[4] Fish and Scharre, "The Soldier's Heavy Load."

[5] Ibid.

[6] Army Techniques Publication 3-21.18, *Foot Marches*, April 2022.

[7] Jeremiah M. Sasala, "Individual Soldier Loads and The Effects on Combat Performance," (Thesis, Naval Postgraduate School, 2018), https://apps.dtic.mil/sti/pdfs/AD1060058.pdf.

[8] S.L.A. Marshall, *The Soldier's Load and the Mobility of a Nation* (Quantico, VA: The Marine Corps Association, 1950).

[9] Training Circular 31-29, *Special Forces Caching Techniques* (discontinued).

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Soldiers in 2-30 IN move to Peason Ridge training area to conduct situational training exercises at Fort Johnson, LA, in January 2023. (Photo courtesy of 3rd Brigade Combat Team, 10th Mountain Division)

Techniques for Mortar Ammunition Planning

MAJ ANDREW PATTERSON

Battalion mortar platoons and company mortar sections provide the most responsive fire assets for maneuver formations at the battalion level and below. Force design updates align direct support field artillery battalions to divisions under division artillery (DIVARTY). This allows division commanders to weigh their main efforts and shape their deep areas, potentially leaving brigades without responsive fire support if they are a low supporting effort. Large-scale combat operations (LSCO) require adequate fire support for the forces committed and immediately available fires for maneuver commanders to influence operations. This article provides recommendations for three challenges in ammunition planning within mortar platoons and sections to assist battalion and company fire support planning.

First, haul capacities must be understood at each echelon for dismounted, motorized, or mechanized operations. Understanding how many rounds a unit can carry will facilitate the prioritization of what rounds to carry. Secondly, doctrine precludes a detailed discussion of ammunition effects to derive appropriate unit basic loads (UBLs) to support the ground scheme of maneuver. Lastly, recommendations to build cohesion within maneuver battalions, regarding mortar ammunition planning, begin with creating a shared understanding of logistical capabilities and adequate doctrinal comprehension for the tactical employment of mortars. Integrating mortars into the fight, regardless of the echelon or unit type, starts with logistics.

Haul Capacity

Haul capacity can be defined as the weight or bulk of the cargo that a vehicle, aircraft, or transporter can safely carry. In this article, haul capacity refers to the number of mortar rounds a Soldier, vehicle, or formation can carry. Depending on the formation type, the haul capacity varies by the mode of transport. This section focuses on three aspects of haul capacity: the method of transport and haul capacity for battalion mortars, the method of transport and haul capacity for company mortars, and the involvement of the forward support company (FSC) with mortar ammunition planning. Understanding the haul capacity for mortars will shape the development of what specific rounds should be brought into combat.

Mortar platoons are organic to infantry and combined arms battalions (CABs). Mortar platoons within CABs employ four mortar vehicles within their headquarters and headquarters companies (HHCs). The haul capacity for each vehicle is 69 rounds of 120mm ammunition.[1] The total haul capacity for the entire platoon is then 276 mortar rounds. Stryker brigade combat team (SBCT) mortar platoons use four vehicles per HHC. Each vehicle hauls 60 rounds and the platoon can move 240 in total.[2] Infantry brigade combat team (IBCT) battalion HHCs use High Mobility Multipurpose Wheeled Vehicle (HMMWVs) with a corresponding trailer that can hold three ammunition racks with the associated mortar stowage kit. Each ammunition rack holds eight rounds, each vehicle

Rounds for the M121 120mm mortar system are prepared for a live-fire exercise in Bemowo Piskie, Poland, on 8 December 2022. (Photo by SGT Gavin K. Ching)

can haul 24 rounds, and the entire platoon can move 96 rounds.[3] Each vehicle has a slightly different limitation when it comes to hauling ammunition. Additionally, depending on terrain restrictions, SBCTs and IBCTs can move their mortars dismounted. SBCTs can move medium mortars dismounted, and IBCTs can use medium or heavy mortars. This ability to shift to different mortar types is known as the arms room technique. SBCT and IBCT mortar platoons possess four medium and four heavy mortars but only have the requisite manpower to use four mortars at a time. Moving dismounted potentially lessens the haul capacity as individual mortarmen or riflemen will be hauling the ammunition.

Moving dismounted is exactly how company mortarmen haul light mortar ammunition. The six mortarmen within the section usually divide the ammunition amongst themselves. Each light mortar round weighs approximately 3.75 pounds, but it takes up 15x13x20 inches.[4] My personal experience is that roughly 20 rounds can be shared amongst the section. However, companies have the ability to utilize some of the riflemen to haul mortar rounds. In some cases, this can increase the lethality of the company mortar section fourfold.

"The planning factor for unit basic loads for a battalion is one with the company, one with the FSC, and one stored at the brigade's ammunition transfer and holding point. The [BN] S-4 will account for the basic loads, and the FSC and battalion should be able to transport all combat configured loads with organic assets."[5] Simply put, mortar haul capacity does not stop at the maneuver unit. FSCs and brigade support battalions (BSB) are responsible for holding two-thirds of the mortar ammunition during operations. Battalion and company fire support officers (FSOs), S-4s, the distribution platoon leader and platoon sergeant, HHC command team, and mortar leadership (platoon leader, platoon sergeant, and section leader) must come together to plan this breakdown. FSOs work in concert with the staff and commander to determine the desired effects that will help drive the apportionment of different mortar rounds.

Mortar Effects, Ammunition Types, and Apportionment

Army Techniques Publication (ATP) 3-21.90, *Tactical Employment of Mortars*, states that "combat experiences in World War II and Korea have shown that an onboard mix of 70-percent HE [high explosive], 20-percent white phosphorus, and 10-percent illumination ammunition is the most flexible."[6] These numbers provide commanders with options but are not mission-tailored. FSOs, at echelon, help develop fire support tasks (FSTs) to support the ground scheme of maneuver. The task portion of the FST is broken down into three separate parts: objective, formation, and function. The objective describes the targeting effect, and the formation is a specified element of the enemy. The function is the enemy formation's capability that should be stopped or allowed to happen.[7] An example would be: FST1 - Neutralization of the enemy support-by-fire position to prohibit their ability to place direct fire on the breaching operation.

Many different effects can be achieved through mortars; however, the definitions of these effects mean different things to different organizations. Table 1 provides a detailed list of effects and their corresponding definitions from Field Manual 3-60, *Army Targeting*. Neutralization in the fire support community is defined as "in the context of the computed effects of field artillery fires renders a target ineffective for a short period of time, producing 10-percent casualties or materiel damage."[8] The tactical mission task of neutralizing means rendering "the enemy incapable of interfering with an operation."[9] The similarity between the two exists in the temporal cessation of hostile actions. However, for indirect fires, a certain number of men or materials must be damaged. Ten percent assists in tying the neutralization effect to a weaponeering solution. Computer programs, such as the Joint Munitions Effectiveness Manuals (JMEMs) or Joint Weaponeering Software (JWS), simulate the required number of rounds to deliver a neutralization effect. This software considers the shell/fuze combination, range, terrain, weather considerations, and enemy formation type.

Table 1 — Desired Effects (FM 3-60, Table C-1)

Task	Effect/Outcome
Attrit	To wear down or weaken (an opponent or enemy).
Compel	1) To force, drive, or constrain. 2) To make necessary.
Convince	1) To overcome by argument. 2) To bring to belief, consent, or a course of action (COA).
Damage	To reduce the soundness, effectiveness, or perfection of.
Deceive	To cause to believe what is not true.
Defeat	To render a force incapable of achieving its objectives.
Degrade	1) Damage done to the function is permanent, but only portions of the function were affected; that is, the function still operates, but not fully. 2) A function's operation is permanently impaired, but the damage does not extend to all facets of the function's operation.
Deny	1) To hinder the enemy the use of space, personnel, or facilities. It may include destruction, removal, contamination, or erection of obstructions. 2) Damage done to the function is only temporary, but all aspects of the function were affected. 3) A function's operation is impaired over the short term, but the damage extends to all facets of the function's operation.
Delay	1) To slow down the arrival of a unit on the "battlefield." 2) An operation in which a force under pressure trades space for time by slowing down the enemy's momentum and inflicting maximum damage on the enemy without, in principle, becoming decisively engaged.
Destroy	1) To damage the condition of the target so that it cannot function as intended nor be restored to a usable condition. 2) Damage done to the function is permanent, and all aspects of the function have been affected. 3) A function's operation is permanently impaired, and the damage extends to all facets of the function's operation.

Table continued on next page

Table 1 — Desired Effects Cont'd

Task	Effect/Outcome
Diminish	1) To make less or cause to appear less. 2) To reduce the effectiveness of an activity. This is similar to degrade without the kinetic overtones.
Disrupt	1) To break apart, disturb, or interrupt a function. 2) Damage done to the function is temporary, and only portions of the function were affected. 3) A function's operation is impaired over the short term and the damage does not extend to all facets of the function's operation.
Divert	To restrict the enemy's capabilities to pursue a particular COA.
Enhance	To increase or make greater the capabilities of a force or a people.
Exploit	To gather information that will enable opposition ability to conduct operations to induce other effects.
Expose	1) To make known or cause to be visible to public view. 2) To make visible, to reveal something undesirable or injurious.
Harass	To disturb the rest of enemy troops, curtail their movement and lower morale by threat of loss.
Influence	1) To affect or change how someone or something develops. 2) To cause a change in the character, thought, or action of a particular entity.
Inform	To impart information or knowledge.
Manipulate	1) To influence or control someone to your advantage, often without that person knowing it. 2) Control or change information, information systems, and/or networks in gray or red cyberspace to create physical denial effects, using deception, decoying, conditioning, spoofing, falsification, and other similar techniques.
Negate/ Neutralize	1) To render an enemy weapon system and maneuver units ineffective or unusable for a specific period of time. 2) To render ineffective, invalid, or unable to perform a particular task or function. 3) To counteract the activity or effect of.
Prevent	1) To deprive of hope or power of acting or succeeding. 2) To keep from happening, to avert.
Protect/ Safeguard	1) To cover or shield from exposure, damage, or destruction. 2) To keep from harm, attack, injury, or exploitation. 3) To maintain the status or integrity of.
Suppress(ion)	1) Involves temporary or transient degradation of an actual or suspected enemy weapons system for the purpose of degrading its performance below the level needed to fulfill its mission objectives at a specific time for a specified duration. 2) Temporary or transient degradation by an opposing force of the performance of a weapons system below the level needed to fulfill its mission objectives.

ATP 3-21.90 provides a general guide that outlines how mortar ammunition can neutralize platoon-sized targets.[10] However, this is not all-inclusive. Fire supporters possess the ability to calculate how many rounds, and with what fuze combinations, are required to destroy, neutralize, or suppress. This information can be calculated on software within the battalion fire support element's (FSE's) Advanced Field Artillery Tactical Database System (AFATDS). A radio call during step three of troop leading procedures (TLPs) or the creation of FSTs during course-of-action development will help determine the amount of HE required to destroy, neutralize, or suppress a certain type of enemy formation.

Importantly, not all HE rounds are fuzed the same way, provide the same effects, or range as far. ATP 3-21.90 highlights that leaders must be aware of what combinations of fuzes and ammunition will have the greatest effect on targets. Proximity, delay, and point-detonating fuzes all provide different effects in varying types of terrain, weather conditions, and against different enemy types. For example, an M934 heavy mortar HE round comes with an M734 multioption fuze. This fuze can provide proximity, delay, or point-detonating functions. If an M57 heavy mortar HE round with an M935 point-detonating fuze is on hand, it can employed with that fuze setting. TC 3-22.90, Appendix A, covers in detail the different types of mortar rounds and the fuzes that come with them.

ATP 3-09.30, *Observed Fires*, provides a brief synopsis of mortar smoke planning data in Chapter 6 (see Table 2). When planning smoke missions for mortars, it is important to remember that all are white or red phosphorous, as opposed to some artillery that can deliver hexachloroethane smoke and white phosphorous (WP) rounds. From the data provided, in ideal weather conditions, one heavy mortar platoon can provide a 400-meter, 10-minute smoke screen with just 20 rounds. However, the weather is not always ideal. Several weather-specific factors contribute to planning quick smoke missions: temperature, wind speed, wind direction, humidity, cloud cover, time of day, and precipitation. Additionally, factors like terrain, threat disposition, and maneuver-target line need to be taken into consideration. All these considerations are calculated with the data from Table 2 and can be computed digitally in a mortar fire control system (MFCS), lightweight handheld mortar ballistic computer (LHMBC), or manually. Providing current meteorological data from a field artillery battalion's Profiler computer to mortar digital systems (MFCS or LHMBC) will ensure that the appropriate amount of WP rounds are used to achieve the desired effects. Conducting ammunition forecasting for quick smoke missions with TLPs and the military decision-making process (MDMP) will ensure mortar formations can provide the desired effects.

Table 2 — Smoke Planning Data (ATP 3-09.30, Table 6-14)

Delivery System	*Type Round*	*Time to Build Effective Smoke (minutes)*	*Average Burning Time (minutes)*	*Average Obscuration Length (meters) Per Round*	
				Wind Direction	
				Cross	*Head or Tail*
155-mm	WP	1/2	1 to 1 1/2	150	50
	HC	1 to 1 1/2	4	350	75
	M825	1/2	5 to 10	350	100 to 200
105-mm	WP	1/2	1 to 1 1/2	75	50
	HC	1 to 1 1/2	3	250	50
120-mm	WP	1/2	2 1/2	100	60
81-mm	WP	1/2	1	100	40
	RP	1/2	2 1/2	100	40
60-mm	WP	1/2	1	75	40
Note. All rounds are fired as standard missions with parallel sheafs under favorable conditions.					
Legend: HC—hexachloroethane mm—millimeter RP—red phosphorous WP—white phosphorous					

The type of operation will determine the apportionment of mortar ammunition. Units that are conducting breaches, wet gap crossings, or any other operation that requires a significant amount of WP should consider carrying a larger amount of WP ammunition within their UBL than the 20-percent guideline. Holistically, mortar operations should be planned in conjunction with TLPs and MDMP to determine how many rounds are required to achieve the desired effects. Unit basic loads should be built in conjunction with FSOs to ensure the appropriate rounds are present on the mortar line, FSC, and BSB. To fully understand the proper apportionment of HE, illumination, and WP rounds a mortar section or platoon should haul, an analysis must occur first. What effect is to be achieved, against what enemy formation, and in what operating environment?

System	Mode	HE	WP/ RP	Illum	Effects	Remarks
Heavy Mortar (IBCT infantry battalion)	Towed	46	48	2	Neutralization of x3 ENY PLT dug in; Neutralization of x1 ENY INF PLT i/o; x1 Immediate Suppression Mission; x3 300m 10min SMK screen; x1 Lateral or Range Spread Illumination Mission	Heavy smoke consideration in open terrain
Heavy Mortar (IBCT infantry battalion)	Towed	68	22	4	Neutralization of x2 ENY PLT dug in; Neutralization of 1 ENY INF PLT i/o; x2 Immediate Suppression Mission; x1 300m 10min SMK screen; x2 Lateral or Range Spread Illumination Missions	Doctrinally recommended 70% HE, 20% WP, and 10% Illum breakdown in forest/jungle terrain
Light Mortar (IBCT company)	Section	14	6	0	x1 100m 3min SMK screen; 6 min of HE Suppression or x3 Immediate Suppression TGTs	Mortar section carrying ammunition only in open terrain
Light Mortar (IBCT company)	Section + Company	70	6	4	x1 100m 3min SMK screen; Neutralization of x1 ENY PLT dug in; 5 min of HE Suppression; x2 Lateral or Range Spread Illumination Missions	Mortar section w/ infantry company carrying ammunition in open terrain
Note: Ammunition considerations here are given with standard meteorological conditions and from doctrinal adjudication templates. It is highly recommended to use MFCS, LHMBCs, AFATDS, and JWS to forecast the necessary ammunition allocation to achieve desired effects.						

Table 3 — Example Heavy and Light Mortar Ammunition Configurations

A Way Forward

This article recommends two ways to improve mortar ammunition planning. First, logistical planning for mortar employment must be a team effort. This team should consist of FSOs, mortar leaders, HHC command teams, battalion S-4s, and elements from the FSC. All three portions of mortar haul capacities must be understood. This is critical at the battalion and brigade levels to ensure that the FSC and BSB maintain the secondary and tertiary mortar ammunition required to sustain the fight. Continued dialogue must occur between FSOs, HHCs, and FSCs during operations to ensure the ammunition that should be brought forward from logistical nodes. Secondly, we must understand each other's doctrine. TCs 3-20.33, 3-22.90, and 3-22.91; the Mortar Tabular Firing Tables; and ATPs 3-21.20 and 3-21.90 all provide imperative information for the employment of mortars at any echelon. ATPs 3-09.30 and 3-09.42 provide the knowledge of integrating fire supporters to the brigade and below. This list is not exhaustive, but it provides a baseline for anyone who wants to incorporate mortars into the fight.

Notes

[1] Training Circular 3-22.90, *Mortars*, March 2017, 5-41.
[2] Ibid., 5-53.
[3] Ibid., 5-15.
[4] Army Techniques Publication (ATP) 3-21.90 *Tactical Employment of Mortars*, October 2019, 6-7.
[5] ATP 3-21.20, *The Infantry Battalion*, December 2017, H-13.
[6] ATP 3-21.90, 6-6.
[7] Field Manual (FM) 3-09, *Fire Support and Field Artillery Operations*, April 2020, A-3.
[8] FM 1-02.1, *Operational Terms*, February 2024, 53.
[9] Ibid.
[10] ATP 3-21.90, Table A-1.

Soldiers in 2nd Battalion, 69th Armor Regiment, 3rd Infantry Division, fire a 120mm mortar system on Fort Stewart, GA, on 6 October 2021. (Photo by SGT Trenton Lowery)

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The Future of the Fire Supporter

CPT JOHN E. RUSNOCK

During combat operations, forward observers — military occupational specialty 13F — play a critical role for platoon leaders as well as company and battalion commanders. They serve as the experts in the execution and coordination of joint fires by air and ground integration, which enable these formations to maneuver and complete their objectives. The last two decades have been a different story. Due to the lack of use of indirect fire at scale, tactical-level 13Fs played a less integral role, thus diminishing their importance in the formation. As the Army continues to refocus from counterinsurgency to large-scale combat operations, we must ensure that 13Fs reestablish their significance at the tactical level. The resurgence of fire supporters will be crucial to success at the tactical level since they will be making first contact with the enemy beyond line of sight.

Here in the Army Capability Manager Fires Cell Targeting (ACM FC-T), part of the Fires Capabilities Development and Integration Directorate, it is our job to be the user representative in the acquisition process. As the Army focuses on modernizing the force with an emphasis on readiness for a near-peer fight, we are working to provide fire supporters what they need to be successful on the battlefield. These transformation efforts are one of our main priorities. The analyzed Human Machine Interface (HMI) technology will give 13Fs at the lowest tactical level the ability to observe, coordinate, and manage fires at scale. Along with managing fires, we envision fire supporters managing lethal launched effects and teaming with lethal drones. By implementing HMI technologies, fire supporters can create an any sensor-best shooter kill chain at machine speed. This increased capability will significantly increase the lethality of the formations to which fire supporters are attached.

A 13F joint fire support specialist in training at the Fires Center of Excellence at Fort Sill, OK, keenly observes his target on 1 February 2024. (Photo by Bryan Araujo)

Part of what informs our transformation efforts is seeing what is happening in conflicts worldwide. That leads us to observations from the current war in Ukraine and how fire observers are doing on the battlefield. The heavy use of drones in calls for fire is true for both the Ukrainian and Russian forces.

Russian forces use the Orlan family of unmanned aerial vehicles (UAVs), which comprises the Orlan-10 (comparable to the Raven) and the Orlan-30 (comparable to the RQ-7 Shadow). The Orlan-10 is smaller and has a reduced range and endurance time, which causes Russian forces to use it primarily in close fights. Orlan-10s are typically seen operating in groups of two or three called complexes. The standard operating procedure has two UAVs conducting operations while the third acts as a retransmitting node back to the ground station. This would be consistent with published Russian doctrine and technological capabilities. Reporting suggests that two complexes work together in the same brigade plus-sized area of operations (AO). Russian commanders use the Orlan-10 complexes to feed real-time data on fighting, as an electronic warfare (EW) sensor to feed information into their "Strelets system" (digital fire control system like our Army Field Artillery Tactical Data System [AFATDS]), and to observe and adjust fire from assigned batteries on targets of opportunity. The time for artillery engagements using visual sensors on the Orlan-10 is 3-5 minutes. Utilizing the EW sensors for artillery engagements takes 20-30 minutes.

The Orlan-30 has a greater range and operating capacity than its Orlan-10 predecessor. This increased capability has given Russian ground commanders greater ability to shape the deep fight. Reports show the Orlan-30 being utilized as far as 120 kilometers behind the Ukrainian forward line of own troops (FLOT). The exact organic composition within the Russian order of battle is unknown due to the relatively recent fielding of this equipment starting sometime in 2023. Observed operations in the deep fight include cueing ZALA Lancets (loitering munitions), observing fires for Tornado-S multiple launch rocket system (MLRS) 40 kilometers behind Ukrainian armed forces (UAF) lines, and laser-guiding Krasnopol-guided 152mm artil-

lery onto UAF targets. Reports from 8 January 2024 show that a Russian UAV, likely the Orlan-30, had direct observation and helped to target a Ukrainian MLRS while firing and in hide sites. Whether the platform was destroyed or damaged is still in dispute. This is the second instance of Ukrainian High Mobility Artillery Rocket System (HIMARS) being spotted and targeted by Russian drones in the span of three months. These munitions, combined with the Orlan-30, had deadly effects on the battlefield and caused massive disruptions in the Ukrainian support zone during offensive operations in the spring and summer of 2023.

A Soldier uses a handheld controller to get an unmanned aerial system's camera feed to call for fire during Operation Smokehouse at Fort Sill, OK, in April 2024. (Photo by Monica Wood)

The Ukrainians are also utilizing drones in their fight against the Russian invasion. While the Russian acquisition and fielding of drones is characterized by a traditional military-industrial system, the Ukrainians, especially at the tactical level, rely on commercial off-the-shelf options. Popular drones in use by frontline commanders include the DJI3 and Autel Search & Rescue drones. Both of these options are considered cheap and attritable, but it is worth noting the Autel is about double the cost. The Autel may be the preferred option for calls for fire as it can be equipped with a camera that can pull eight-digit grids for the kill chain. The DJI3 cannot produce a grid, but this can be worked around by creating a fire sector map with target reference points that can be used to call for fire. Both drone options can pull their video feeds into a larger network that any command post in the AO can access. The Ukrainians are also making use of a teaming concept for drones. One drone, like an Autel, will observe for high-payoff targets. When those targets are spotted, a first-person view (FPV) drone with a munition will fly to/into the target to achieve effects.

In the immediate and near term, the ACM is working on multiple lines of effort to meet the Army's priorities on fire supporter transformation. The first line of effort is persistent experimentation of HMI technology hosted by the ACM and in events across the Army. Another line of effort is updating documentation and DOTMLPF-P (doctrine, organization, training, materiel, leadership and education, personnel, facilities and policy).

Demonstrations and experimentation are essential lines of effort. Recently ACM FC-T hosted Operation Smokehouse, a fire support HMI demonstration showcasing technologies for mounted and dismounted fire observers. We took away many valuable lessons from the demonstration to inform our future efforts. We demonstrated the ability to integrate various unmanned aerial system (UAS) platforms with the current fire support enterprise to increase lethality. These UAS platforms can provide immense value to armored and infantry brigade combat teams by extending beyond line-of-sight targeting ranges, extending line-of-sight communication, and providing a clear visual picture of targets and effects. They also retain the software framework to enable fire support teams to make near-immediate corrections when adjusting fire. This UAS integration also increases fire supporter survivability since they would not need a direct line of sight to operate. While this demonstration was relatively large due to the number of scenarios run and outside entities included, we plan to host much smaller demonstrations regularly and not limit ourselves to a yearly event. We will also continuously sponsor relevant HMI technologies in demonstrations and experiments happening around the Army.

We are also updating requirements documents and annexes for the various UAS systems that the Army seeks to become programs of record. Updating this documentation will ensure that fire supporters can utilize these platforms. One of our main short-term efforts is integrating current end user devices, such as Precision Fires-Dismounted and Precision Fires-Mounted, into these future UAS systems. The DOTMLPF-P process is another function we are continuously working on to reflect the user's needs and keep them in line with our modernization plans.

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The Defensive Linchpin:

Unveiling the Vital Role of Class IV Combat Configured Loads in LSCO

MAJ OLIVIA SCHRETZMAN
MAJ WILLIAM LONGWELL

As the sun sets over the National Training Center's (NTC's) Central Corridor after a long day of combined arms breaching, a common phrase is echoed from leaders at all echelons to their subordinates as they prepare for the transition to the defense. Bracing for the imminent transition, the commander immediately asks those around them, **"Where are the CCLs (combat configured loads)?"** In this pivotal moment, the question underscores the strategic foresight and meticulous preparation essential for success in modern warfare.

Introduction

Imagine your unit has been fighting throughout the day for key terrain, and the sun is quickly going down. You receive the order to establish a hasty defense and begin engagement area development.[1] You call forward your Class IV CCLs, which are dropped off just as the sun sets, and the Soldiers on the line begin to pull everything off the flat rack. When they remove the ratchet straps or cut the bands, concertina wire and stakes start getting tangled and stacks begin falling over. Conducting this disassembly in the dark under night-vision devices makes it that much harder.

The scenario above is a common trend at NTC and is the linchpin for a successful transition to the defense. Every minute is important, and a commander's determination to build survivability and countermobility obstacle effects grows stronger throughout the operation. To build a robust defense, it is imperative that construction material (concertina wire, pickets, barbed wire, etc.) and equipment, ammunition, and manpower are in the right place at the right time. Following a successful offensive operation, leaders are already thinking about minimizing risk in the defense. One of the most important ways to mitigate risk to mission and force during the defense is the strategic emplacement of obstacles in specified engagement areas using Class IV CCLs. These loads are one of the most vital resources maneuver commanders can utilize during their defensive operation.

In this article, we explain how properly built CCLs can increase lethality protection while mitigating risk to mission and risk to force as well as provide examples of integrating Class IV CCL preparations into unit standard operating procedures (SOPs). We emphasize the need for streamlined processes and a comprehensive understanding of resource allocation across all levels of command synchronization matrix (SYNCMAT) and execution checklist (EXCHECK) integration. We hope this article can help units enhance their defensive capabilities and prepare leaders with the tools to plan for contingencies with greater efficiency and readiness in defensive operations and large-scale combat scenarios.

Background

According to Army Techniques Publication (ATP) 3-90.8, *Combined Arms Countermobility*, "obstacle resource planning, delivery, and emplacement are facilitated by CCLs."[2] In a brigade combat team (BCT) large-scale combat operations (LSCO) fight, CCLs are mostly referred to as Class IV (construction and barrier materials) and Class V (ammunition) packages, which are prepared ahead of an operation to be moved forward to units in need of those supplies on a M3 Container Roll-in/Out Platform (CROP) flat rack. The term "CCL" can be used for any pre-configured load package of any class of supply; however, this article will focus on Class IV CCLs for defensive preparations. CCLs can be configured in any method to best enable forward elements to quickly receive the supplies they need to prepare to continue fighting or defending against an enemy. Additionally, CCLs of Class IV should be developed based on the identified terrain and the most likely type of obstacles or fighting positions a unit expects to emplace. CCLs cannot solely be a logistics officer's or an engineer planner's priority. The management of CCLs is a leader priority across all warfighting functions.

There are hundreds of Class IV CCL configurations that a BCT may utilize in LSCO operations. For example, these loads may include construction materials to build marking or "fratricide (frat)" fences, 300-meter triple-strand concertina wire obstacles, and include concertina wire, pickets (long and short), barbed wire, and even plywood. Class IV CCLs optimize resource utilization by providing standardized sets of construction materials tailored to specific defensive requirements. This standardization reduces logistical complexity, minimizes waste, and ensures that units have the necessary resources to execute defensive operations effectively. A unit's tactical SOPs (TACSOPs) outline their desired CCL configurations and is vital for shared understanding at echelon.

Engagement areas utilize multiple Class IV CCLs, which need to be strategically emplaced close to the desired obstacle location to maximize setup time for the emplacing unit. While it may seem simple to have the Class IV CCLs on hand before the transition to the defense, moving CCLs through specified breach points or restricted terrain can take many hours. Additionally, having the CCLs on hand is not always the most significant factor in CCL management. Instead, the way that CCLs are managed and configured can impact mission success the most. During NTC rotations, it is a common trend that CCLs are not always built or maintained in accordance with their unit SOPs. These poorly assembled CCLs can significantly slow down defensive operations and prevent obstacle effects (block, fix, disrupt, turn) from being accomplished within the mission timeframe.

While it might not be the main effort, planning for CCL

Figure 1 — Example of a Poorly Built Combat Configured Load Packed with Concertina Wire, Pickets, and Barbed Wire
(Note the concertina wire falling over and randomly placed ratchet straps.)

Figure 2 — Consequences of a Poorly Built CCL

movement is still an enabling operation (movement of CCLs to the forward line of own troops) and is vital in maintaining tempo and flexibility. In order to transition successfully to the defense during LSCO, planners need to focus on the efficient handling and deployment of the Class IV construction materials contained within CCLs, which represents a pivotal yet often overlooked aspect of defensive planning. At venues like NTC, the hurried preparation and poorly built resource packages during reception, staging, and onward integration (RSOI) can significantly impact defensive operations in LSCO.

During NTC rotations, units often utilize CCLs of concertina wire and pickets to build disruption obstacles of wire integrated with direct and indirect fires. Building a 300-meter-long obstacle of triple-strand concertina requires 160 long pickets, eight rolls of barbed wire, and 60 rolls of concertina wire. Observer-coach/trainers have witnessed how removing one picket from an improperly packaged and secured stack can cause the entire package to fall apart during transportation. If not labeled properly, the forward receiving unit may be unable to identify what obstacle can be built with the supplied Class IV.

During a previous rotation, the brigade's protection SOP specified how CCLs should be built, but not a single CCL was built to that standard. This became a larger issue when the battalion protection officer assumed there was enough wire to prepare 300 meters of triple-strand concertina wire but only 200 meters had been in the delivered CCL.

Proposed Solution

A simple way for BCTs and their downtrace battalions and companies to be more effective while preparing for a defense and save valuable time is to spend the time up front creating a SOP for how CCLs are assembled, marked, and managed. The unit must then train on this SOP to validate it. At NTC, rotational units usually train on at least two defenses. Most rotations include a hasty defense and a deliberate defense. Despite knowing they will train on defenses up front, we often see CCL preparation and

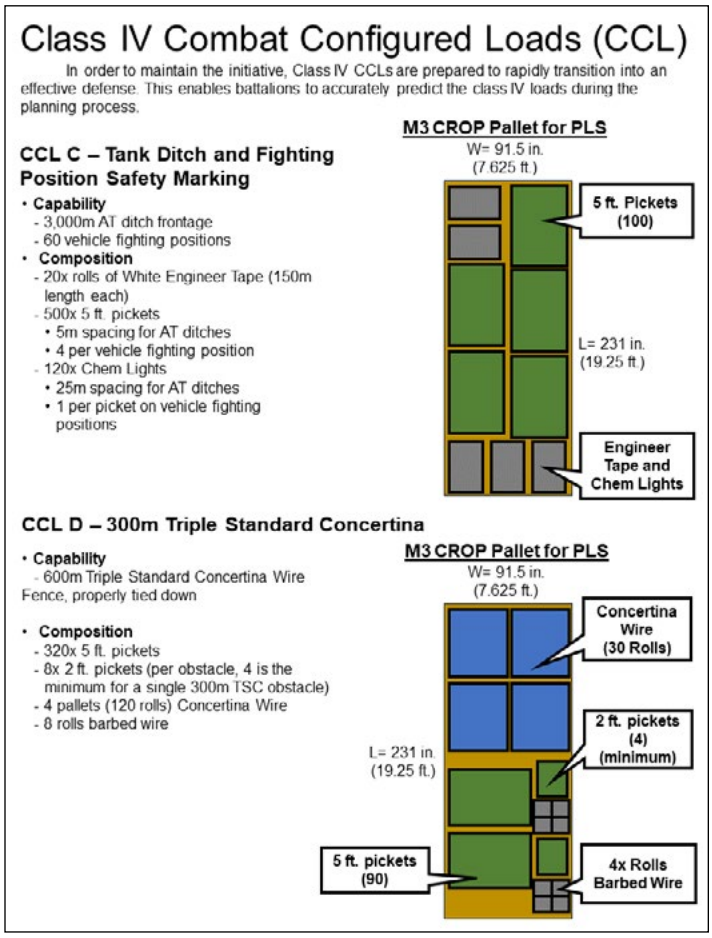

Figure 3 — Example CCLs from a Brigade Tactical SOP

management take a back seat to other tasks the rotational training unit must do during RSOI.

How Class IV CCLs are built, labeled, and disassembled to build wire obstacles and fighting positions should be understood across a BCT formation and included in the brigade and battalion TACSOPs. Figure 3 is an example of a CCL standardization in a protection SOP.

When preparing for the defense, it is imperative that the composition and location of CCLs are integrated into unit planning and rehearsals. All leaders need to understand the unit's CCL disposition; however, it is particularly important for brigade S-4s and brigade engineers to thoroughly understand and brief this aspect during orders production and rehearsals. At the battalion level, leveraging the expertise of S-4s and battalion engineers or battle captains to brief CCL locations and composition during rehearsals can significantly enhance operational readiness. Additionally, tracking the movement of CCLs throughout defensive preparations is equally important as it ensures seamless coordination across the battlefield.

Incorporating CCL transfers into SYNCMATs or EXCHECKs can foster shared situational awareness within the formation. Including CCLs in friendly force information requirements (FFIRs), specifying their location, current ownership, and disposition, enhances battlefield transparency for all subor-

Figure 4 — Marking Examples

(Note: The key is to have a shared understanding of what these markings denote.)

dinates. Additionally, a critical decision point for commanders arises in determining when to deploy CCLs to facilitate obstacle emplacement. To aid staff members and leaders in risk mitigation, a risk mitigation strategy example is provided as Figure 5 and identifies how you can mitigate risk using other assets for a defense. Recognizing the pivotal role of Class IV in defensive planning, strategies utilizing target reference points (TRPs) and vehicle fighting positions (VFPs) are recommended to mitigate shortages. However, insufficient Class IV resources can significantly constrain engagement area development and increase the risk of minefield fratricide, underscoring the importance of adequate logistical support.

Ultimately, the responsibility for CCLs falls on maneuver and sustainment leaders at both battalion and company levels. By integrating CCL management into operational rehearsals and decision-making processes, units can ensure the effective utilization of vital logistical assets, which will lead to mission success and increased lethality during LSCO.

Figure 5 — Risk Mitigation if Class IV CCLs Are Limited

Example Situation: Shortage of CL IV available for brigade defense				
Risk	**Initial Assessment**	**Example**	**Mitigation Strategy**	**Residual Risk**
Risk to Force	EH	Increased casualty rate due to fewer emplaced wire obstacles	Increase amount of blade (i.e., AVD) and explosive (i.e., minefields and road craters) obstacles in engagement area	H
Risk to Mission	H	Desynchronization of brigade OBS plan due to planned obstacles not being emplaced	Replace/supplement non-supportable wire obstacles with blade/explosive obstacles	M

Conclusion

To streamline efficiency and enhance readiness for future operations and training at NTC, we propose the following recommendations:

1. Establish an SOP for Class IV CCLs at the brigade level and disseminate it down to the platoon level.

2. Specify stacking and securing procedures for Class IV CCL materials to ensure consistency, stability, ease of access, and disassembly.

3. Clearly label each Class IV CCL with its contents and indicate the type of obstacle that can be constructed using the materials provided. This could be on a meals, ready to eat (MRE) box, 100 mph tape, or other available material that is weather proofed.

4. During planning, designate responsibilities for transporting and receiving Class IV CCLs to ensure smooth and timely coordination and execution.

5. During rehearsals, the brigade/battalion S-4 and engineer should brief the composition and locations of CCLs for planned defenses. Individuals owning the CCL at each phase and position should also brief their ownership during the rehearsal.

By implementing these measures, leaders at all echelons will have a clear understanding of the contents and purpose of Class IV CCLs. This will enable units to efficiently plan, prepare, and employ obstacles for both hasty and deliberate defensive operations. The adoption of these practices will undoubtedly yield significant dividends in terms of operational effectiveness and preparedness for challenges encountered in LSCO.

Notes

[1] Army Doctrine Publication 3-90, *Offense and Defense*, July 2019, paragraph 4-29.

[2] Army Techniques Publication 3-90.8, *Combined Arms Countermobility*, November 2021, paragraph 3-79.

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The Need for Less:

Making Mission Command Nodes More Mobile, Discreet, and Survivable

MAJ MIKE HERRICK
CPT JAKE ALBRECHT

The U.S. military had just ended a long, costly counterinsurgency and found itself out of practice in waging large-scale combat operations. A conflict then ignited in a far-flung corner of the world as the birth of a new generation of conventional warfare came to fruition and painted a grim picture of what the United States' next war could look like. It is 6 October 1973, and as Israel defended itself against a coalition of 12 other nations, the United States and the Soviet Union furiously took notes.

The lessons the U.S. Army learned from the Yom Kippur War helped fuel an age of innovation and change in our Army that led to landmark success in Desert Storm. Now, almost exactly 50 years later, the world finds itself in a similar position as the Russo-Ukrainian War continues to rage, and our Army is faced with the same decision every military must make in times of relative peace: grow or die.

This sentiment is no less valid for any aspect of warfare than it is for our mission command nodes and how we employ them. The days of static forward operating bases and fires supremacy have been violently cast aside as the war in Ukraine illustrates the stark reality of mass artillery barrages and ever-shifting front lines. The U.S. Army must change the way it employs its mission command nodes in response to the evolving nature of war as evidenced by the Second Nagorno-Karabakh War and Russo-Ukrainian War. To address this need, 1st Battalion, 38th Infantry Regiment sought to employ a new kind of tactical operations center (TOC) during National Training Center (NTC) Rotation 23-10 — a more mobile, discreet, and survivable mission command node.

After years of seeing the Army employ costly pop-up tents supported by maintenance-intensive environmental control units that staffs could not quickly tear down, the leaders of 1-38 IN desired a TOC free of these limitations. To achieve this, the unit built its TOC into two existing Light Medium Tactical Vehicles (LMTVs) that could be pulled up alongside each other and covered with camouflage nets to minimize their signature and create shade for the staff. The two LMTVs carried a payload of four Advanced System Improvement Program (ASIP) radios (with mounts and speakers), two Joint Battle Command-Platforms (JBC-Ps), a Secure Voice Over Internet Protocol (SVOIP) system tied to a Tactical Communications Node (TCN), and a handful of tables, chairs, and whiteboards. A 15-kilowatt generator was installed into

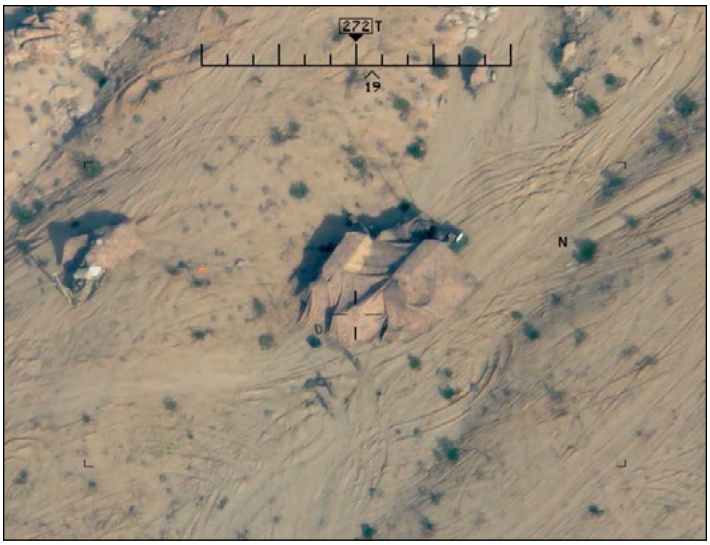
The 1st Battalion, 38th Infantry Regiment's tactical operations center consists of two Light Medium Tactical Vehicles that are covered with camouflage nets to minimize signature and create shade for staff. (Photos courtesy of authors)

the bed of one of the LMTVs for power generation, but 1-38 IN also purchased multiple commercial off-the-shelf (COTS) battery generators prior to the rotation to minimize the need for this generator. The unit would use the 15K generator to quickly charge the quieter, more discreet COTS generators which would be used to run the TOC's systems. The last aspect of this new design is its minimal signature. Multiple techniques were used to lessen the TOC's signature such as utilizing camouflage nets, deterring the enemy's ability to detect it on the electromagnetic (EM) spectrum, and attempting to disguise the TOC as a lower-priority target. With these measures in place, 1-38 IN deployed to NTC to test its new TOC.

Signature

In *The Dynamics of Military Revolution, 1300-2050*, the editors explain that the modern world has undergone five military revolutions.[1] These revolutions were not simple changes in military affairs so much as they were political, economic, and societal paradigm shifts that had unpredictable and dramatic effects on how wars were fought. Arguably, we find ourselves amid a sixth military revolution as digital systems continue to play a larger role on the battlefield. The rising use of drones in both conventional and unconventional warfare has provided armies, ranging from world powers to insurgents, cheap and easy-to-use systems to sense, shape, and act on the battlefield. As a result, a commercially available drone can now identify and target a mission command node several kilometers behind the front line. In response to this threat, 1-38 IN minimized the signature of its TOC during NTC Rotation 23-10 to attempt to deprive the opposing force (OPFOR — 11th Armored Cavalry Regiment "Blackhorse") the ability to target its primary command and control (C2) node. The effectiveness of this new TOC setup was measured across the visible light and electromagnetic spectrums as well as how it was perceived by Blackhorse. The results were mixed.

As 1-38 IN's TOC used camouflage nets instead of tents for shelter, light was able to radiate from outside of the planning area. In response, the unit employed red lens flashlights and a larger, tripod-mounted red light for illumination. This solution was adequate but far from perfect. While it did appear to help prevent the OPFOR from locating 1-38 IN's TOC at night (the TOC never came under direct fire contact), planning under the red light's low illumination was an arduous process, often dragging out the planning process and making shared understanding difficult to achieve. One advantage of the design was its minimal signature. Based upon feedback from the NTC, the unit's EM emissions were approximately 40-percent less than other battalion TOC footprints. This smaller signature made the 1-38 IN TOC a lower priority target for Blackhorse. While it was targeted with indirect fire during the rotation, feedback from the observer-coach/trainers (OC/Ts) revealed that these fire missions were often delayed as the Blackhorse targeting cell misidentified the TOC as a company-level command post.



A small unmanned aerial system photographs 1-38 IN's TOC during National Training Center Rotation 23-10 at Fort Irwin, CA.

Power Generation

The Army's current method of power generation involves heavy, fuel-powered, and often trailer-pulled diesel generators. These generators provide exceptional durability but fall short in terms of logistical requirements (i.e., fuel, maintenance, and mobility), noise and thermal signature, and ease of use. The 1-38 IN recognized these shortfalls and purchased two different portable power stations with lithium-ion batteries. The first of these systems was the Eco Flow Delta 2 Portable Power Station with an additional Smart Battery. This configuration produced up to 3,600 watts and could power four ASIP radios and a JBC-P TOC kit for nearly seven hours with an A/C recharge time of only one hour. The battalion purchased and employed two of these sets (power station and smart battery) for our NTC rotation and were able to fully operate the battalion's main command post with these systems.

The second power station system was the Goal Zero Yeti 3000X. At nearly 90 pounds, the Goal Zero power station was a slightly larger solution than the Eco Flow but provided 3,000 watts of power without the need for an additional battery. The Goal Zero's biggest drawback was its seven-hour recharge time compared to the one-hour Eco Flow recharge time. During the rotation, 1-38 IN used its Army-issued 15-kilowatt generator to charge its Goal Zero power stations and then utilized the Goal Zero to power the Eco Flow batteries. While this solution did allow 1-38IN to power its entire TOC for up to 24 hours without needing to use its 15-kilowatt generator, it was an overly complicated arrangement. To refine this, the unit identified that purchasing four additional Eco Flow generators would allow it to employ and charge the systems in shifts, while sustaining operations indefinitely with only three hours of recharge per day.

The employment of lithium-ion batteries carried multiple benefits. First, the portable power stations were nearly silent; stations only charged for five to 10 hours every two days through the 15-kilowatt generator. This ensured briefings and operations were uninterrupted by generator noise. Most

importantly, this also greatly reduced the TOC's signature during nighttime when ambient noise was at its lowest. Second, the use of smaller, lighter power generation systems provided enhanced mobility through the ease with which they could be dismounted to support urban operations. Lastly, the lithium-ion power stations were exceptionally easy to use. As opposed to standard Army generators that have an entire military occupational specialty (MOS) devoted to their maintenance, these power stations could be operated by a junior enlisted Soldier with only a few minutes of training. Given these facts, it's difficult to argue against the efficacy of using COTS power stations to augment battalion-level C2 nodes. Their ability to reduce a TOC's signature and relative ease of employment significantly contributed to the TOC's survivability.

Mobility and Survivability

Recently, C2 nodes have become increasingly vulnerable to enemy artillery missions, as evidenced in the Second Nagorno-Karabakh War and the Russo-Ukrainian War. In response to this threat, the 1-38 IN leadership sought a TOC design that could better react to indirect fire and quickly displace to an alternate location. Therefore, the ability to quickly set up and tear down the TOC was an integral requirement of this new low-signature design. During home-station training, the TOC could be set up in less than 11 minutes and torn down in seven minutes. These numbers increased to roughly 25-35 minutes during the rotation, which is more than likely attributed to fatigue, stress, and continued battle-tracking requirements. The greatest friction point during the setup process was the time it took to establish the JBC-P and SVOIP systems.

The TOC design included a handful of tables, chairs, and whiteboards.

Balancing the need for faster TOC displacement while meeting protection requirements is an ongoing challenge to refine for the unit's upcoming training progression.

While additional training could enable faster set up, the time required to establish the digital systems and connections can only decrease so much. The biggest shortfall 1-38 IN observed in its new design was that adopting a faster, minimalist design sacrificed protection. Without sufficient overhead, side, and floor cover, the digital systems were largely unprotected from the elements. Severe weather could have severely degraded operations and rendered the JBC-Ps and SVOIPs inoperable. Balancing the need for faster TOC displacement while meeting protection requirements is an ongoing challenge to refine for the unit's upcoming training progression.

Conclusion

Throughout NTC Rotation 23-10, 1-38 IN gained invaluable feedback on its new TOC design. The minimalist structure reduced the TOC's signature, improved its power-generation capabilities, and greatly enhanced its mobility and ability to react to enemy indirect fires. The remaining problems to solve lie within its ability to manage light and offer protection from the elements. The proposed way forward is the inclusion of one to two small tents with floors that would serve as a planning bay and current operations cell. Should the unit incorporate this minor addition without significantly degrading the TOC's ability to displace, it would offer a remedy to the light pollution and protection shortfalls of the current design. The 1-38 IN leadership believes these relatively minor improvements will provide the innovation needed to thrive in a large-scale combat environment and represent the first steps toward adapting to the changing nature of modern warfare.

Editor's Note: *As with all* Infantry *articles, any mention of items does not constitute an official endorsement by the U.S. government or any of its departments or agencies.*

Note

[1] MacGregor Knox and Williamson Murray, eds., *The Dynamics of Military Revolution, 1300-2050* (Cambridge, UK: Cambridge University Press, 2001).

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Airborne Is Relevant

SGM BRADLEY S. WATTS

World War II brought many advancements to warfighting, but perhaps none were more innovative than the use of airborne forces. The Army's ability to seize terrain by dropping warriors from the sky is decisive and cunning. Since the inception of airborne warfare, the practice of using parachutes to insert troops has turned the tides of conflicts. The invasion of Normandy during World War II used airborne forces to seize key terrain and cripple German forces, allowing the Allied powers to win the war.[1]

As warfare evolves, so do tactics and strategy. Some military strategists believe large-scale airborne operations are irrelevant, risky, and ineffective. The current operational environment is dynamic and dangerous, and this will require military leaders to assume greater risk on the battlefield to seize the initiative and gain terrain.[2] An instrument of audacity, airborne forces have participated in small-scale conflicts in recent history. The ongoing war in Ukraine demonstrated a failed assault at Hostomel Airport. If this operation had been successful, the airport's seizure may have changed the outcome of the Russian invasion of Kyiv.[3] Airborne operations have a place in large-scale combat operations (LSCO). They allow commanders to be bold and audacious and gain an advantage against an adversary. However, they are high risk and may not be suitable or feasible to accomplish a commander's intent.

Paratroopers from the 2nd Infantry Brigade Combat Team (Airborne), 11th Airborne Division execute an airborne operation as part of Joint Pacific Multinational Readiness Center 24-02 at Donnelly Training Area, AK, on 8 February 2024. (Photo illustration by SGT Keon Horton)

Background

Commanders use airborne forces to seize the initiative. A brigade of paratroopers can envelop the ground from the sky in moments, allowing an army to strike deep inside enemy territory to gain key terrain and rapidly build combat power. During LSCO, military forces that possess dynamic assets will be victorious.[4]

Joint forcible entry operations rapidly place combat power in a contested operational environment. The use of airborne forces in these specific operations is proper force utilization. Airborne forces can execute a parachute assault and gain key terrain. A joint force commander can use this capability to expand a lodgment, allowing a joint force to mass combat power.[5]

The U.S. Army has conducted airborne operations in Korea, Vietnam, Grenada, Panama, Afghanistan, and Iraq, all with immense success.[6] As the great power competition between the U.S. and its near-peer adversaries continues, along with wars in Europe and the Middle East, the propensity for a global conflict increases, further emphasizing the need for airborne capabilities within our instruments of national power.

Airborne operations are relevant and have application in LSCO. The argument that the dangers of airborne operations are high risk has existed since their inception and will continue to be present in future conflicts.[7] Airborne forces jump, fight, and win for strategic purposes.

Jump, Fight, Win

Concentrating forces and building combat power rapidly is desirable for any military commander. Airborne operations possess unique characteristics that allow a commander to seize the initiative and gain momentum through vertical envelopment. LSCO will require forces that can quickly gain and retain terrain without intensive sustainment.

Light and Lethal — Airborne operations require heavy planning and resources to execute, but to their advantage, airborne forces are incredibly light and mobile compared to heavy or mechanized troops. Airborne forces are dropped deep behind enemy lines and resupplied via airdrop. LSCO will need decisive and swift actions on the battlefield, striking far in the realm of operational reach and providing an ability to gain a marked advantage.[8] Airborne forces typically carry all the required equipment to sustain themselves for initial entry operations. Commanders can maintain the initiative without being overly concerned about a logistically exhausting force. Logistics will have a tremendous impact on the success of campaigns during LSCO, and forces that require little help and can sustain themselves will be valuable. Airborne forces possess this quality.[9]

Seize the Initiative — Concentration and surprise are two characteristics of offensive operations and where airborne operations excel. A brigade of paratroopers can be on the ground through vertical envelopment relatively quickly; this means a combatant commander can strike a blow in the heart of enemy territory.[10] An airborne force executes an assault on an objective, such as an airport, to seize control and expand a lodgment.[11] Paratroopers can then capture a piece of key terrain in the darkness of night against an unsuspecting enemy and transition to sustained combat operations in a matter of hours. Using both concentration and surprise in concert is a strategic advantage for a military with a capable force. Airborne operations provide these unique capabilities to commanders.

Airborne operations possess unique characteristics that allow a commander to seize the initiative and gain momentum through vertical envelopment. LSCO will require forces that can quickly gain and retain terrain without intensive sustainment.

The LSCO environment will challenge commanders with complexities not seen during the global war on terrorism (GWOT). The operational environment has drastically changed in nature. Modern warfare will evolve and regress as technology merges with large division-sized campaigns. This new paradigm creates a void for swift and decisive actions that need to occur in this operational environment.[12] The great power competition is fostering a resurgence of an ability to rapidly put a significant force on the ground. Airborne operations penetrate an enemy's defense to seize the initiative. The joint forcible entry concentrates forces and sets conditions for future operations through audacity.

Joint Forcible Entry is a Key

The hallmark capabilities of airborne forces are penetration and envelopment. Commanders can exercise audacity by assuming risk and using airborne operations to devastate enemy forces. Access to contested areas will pose a challenge to commanders in LSCO, and joint forcible entry may be a solution to this access problem. Campaigns require audacious and bold operations to gain an advantage against the enemy and envelop a contested area in the operational environment.[13] In future conflicts with peer threats, the U.S. must consider using airborne operations to gain access and expand a lodgment to enable future operations.

Gaining Access — In a world of complex and dynamic threats, the capability to surpass an enemy defense and vertically envelope terrain through joint forcible entry is advantageous to nations that possess airborne forces. In the paradigm of peer threats, gaining dominance in as many domains as possible will be imperative to execute offensive operations.[14]

A joint forcible entry employing an airborne assault is the pinnacle of audacity. A sizable airborne force envelopes a location (ideally one with an airfield), seizes this port of

entry, and then defends it to allow for a lodgment. This type of operation can turn the tide of a campaign in a drastically short period. This ability is a strategic key to gaining access. Once access is gained, the lodgment is expanded.

Expanding Lodgment — The joint forcible entry aims to expand the lodgment, building combat power to maintain the tempo and pressure an enemy. An airborne operation opens lines of communication by strategically inserting forces far beyond the forward line of own troops to gain the ability to increase lethality across the land domain. After the airborne force seizes and controls an objective, follow-on forces arrive. Their presence allows the joint force to safely expand control of an area of operation. The capability to achieve this through airborne assault versus an extensive ground campaign is less resource intensive. Once forces gain a foothold beyond enemy lines, they can conduct campaigns beyond their natural operational reach.[15]

Risk, Reward, Relevant — Joint forcible entry through airborne assault is a relevant strategic concept in LSCO. In future conflicts, the ability to seize key terrain and expand a lodgment will be a highly desired capability.[16] The U.S. strategy of dropping paratroopers deep behind enemy lines is as relevant today as it was during World War II. Winning in the cyber and air domains can mitigate risks by advancing air defense technology. For commanders, risk mitigation is a factor; the reward and pay off are worth the risk when viewed in the scale of success. These types of operations will be valuable in multidomain conflicts.

Airborne operations will be strategic in future conflicts. U.S. forces can execute a joint forcible entry, expand a lodgment, and set conditions for sustained unified land operations.[17] Looking at recent examples of airborne operations, they will have a place in future conflicts.

Recent Airborne Operations

Airborne operations have occurred in every U.S. conflict since World War II. The lessons learned from Korea, Vietnam, Grenada, Panama, and GWOT provide a template for how commanders can execute airborne operations to succeed in LSCO. Airborne operations during World War II consisted of divisions of paratroopers (thousands of Soldiers) jumping to secure key terrain. Airborne operations during the Korean War were also large scale, using brigade-sized units to execute airborne operations.[18] In the Vietnam War, the military inserted battalions of paratroopers and squad-sized elements behind enemy lines during smaller airborne operations. On 25 October 1983, the 1st and 2nd Ranger Battalions conducted a parachute assault on Point Salines on the island of Grenada. Approximately 600 Rangers seized an airfield in the first American military use of troops since the Vietnam War. On 20 December 1989, the 82nd Airborne Division and the 75th Ranger Regiment executed parachute assaults in Panama to overthrow dictator Manuel Noriega's regime and restore civil order during Operation Just Cause.[19] These operations have one common trend: Each seized vital terrain.

Paratroopers of the 187th Airborne Regimental Combat Team, 2nd and 4th Ranger Companies, and the Indian Army Parachute Field Ambulance unit jump into combat at Munsan-Ni, Korea, on 23 March 1951. (Photo courtesy of National Archives)

The 9/11 attacks changed the world. The United States conducted its first strike in Afghanistan with a parachute assault on 19 October 2001. More than 300 Rangers jumped into the darkness of night to secure a field landing strip to enable future operations. Rangers again accomplished a similar mission in March 2003, this time in Iraq. On 26 March 2003, the 173rd Airborne Brigade jumped into Northern Iraq during Operation Northern Delay. The envelopment prevented an enemy division from making its way to Baghdad.[20] These operations contributed to the strategic purpose of a larger goal.

In 2030, the battlefield will witness a higher prevalence of technological advancements, making the operational environment more contested than ever before. Commanders will need to choose bold and decisive courses of action to achieve strategic purposes. These courses of action will include airborne operations consisting of multiple brigades vertically enveloping key terrain to seize and exploit the initiative. A mass airborne operation has not occurred since World War II because there has not been a need for one. However, U.S. forces continue to prepare to execute them. Swift Response is a multinational joint military exercise in Europe that enhances readiness and builds airborne interoperability. Both the 82nd Airborne Division and 173rd Airborne Brigade have executed simultaneous airborne operations in Europe to demonstrate the effectiveness and lethality of these forces.[21] The joint force of 2030 will require

airborne forces to execute large package force delivery missions to enable deep penetration of enemy lines. Commanders and senior leaders must weigh the risks of airborne operations against the potential strategic, operational, and tactical rewards.

Airborne Risk Versus Reward

Commanders should factor risk management into every decision, as they assume risk at every echelon when committing their forces to action. Airborne operations are inherently high risk. The risk of losing combat power and lives may not be worth the reward; some modern military strategists consider airborne operations irrelevant.[22] LSCO will require large formations fighting in division-sized elements.[23]

During World War II, thousands of paratroopers descended from the sky. The airborne mission injured or killed approximately 2,000 paratroopers in Normandy. The loss of thousands of Soldiers in airborne operations would not be as acceptable in a conflict today.[24] Leaders are responsible for preserving the force and ensuring success. A significant threat to airborne operations is the threat of enemy air defense.

Air defense technology and surface-to-air missile (SAM) threats will be prevalent in LSCO. Man-portable air defense systems pose threats to aircraft and jeopardize airborne operations. A well-aimed and placed enemy missile could destroy an aircraft loaded with paratroopers. Commanders planning airborne assaults must suppress enemy air defense.[25] The challenge of eliminating the threat of SAMs is daunting. The risk is exceptionally high, and the loss could be even more detrimental.[26] Technology can suppress or defeat these threats; however, the risk may not be worth the reward. To mitigate risk, we must dominate the multidomain battlefield. This means our forces must find and neutralize enemy air defense capabilities long before they identify a coming airborne attack. Leaders must also consider early warning and sensor technology.

Enemy forces can detect aircraft using radar and satellite technology. The ability to detect an airborne assault force gives the enemy valuable time to mobilize and prepare a counterattack. If commanders employ preparatory strikes to overcome detection capabilities, the enemy can still prepare themselves for an attack if they receive an early warning. This poses a threat to the attacking airborne force.[27] Despite the risk and dangers, the characteristics and boldness of airborne operations can prove their worth in LSCO.

Airborne operations have a clear and defined role in LSCO for deep penetration. During LSCO, casualties of both friendly and enemy forces will be increased. Risk is an element of any combat operation; the responsibility of risk management is on the commander. As commanders weigh risk, they must closely examine and understand the objective. They should not allow fear or hesitancy to force decisions on how to fight and win and use sound judgment and wisdom in planning operations. Airborne operations will always have unique associated risks, but comprehensive planning and execution can mitigate and, in some cases, eliminate these risks. Seizing key terrain offers a reward that far exceeds the risk of an airborne operation.[28]

Conclusion

A joint forcible entry is audacious and can demoralize an enemy force. Airborne forces are more lethal, agile, and flexible than ground-based formations. LSCO will force leaders to assume risk and take bold, decisive action to defeat the enemy. Airborne forces possess unique and critical abilities to shape the battlefield. To penetrate an enemy, the attacker must strike beyond the horizon.

As a part of Swift Response 24, Soldiers in the 173rd Airborne Brigade conduct an airborne operation onto Krivolak Drop Zone in North Macedonia on 8 May 2024. (Photo by Elena Baladelli)

Airborne forces meet this need well. A light, lethal, agile force that can strike from the sky and seize key terrain provides an indispensable asset for commanders to utilize to achieve strategic goals. Airborne forces do not require the extensive and robust maintenance support of mechanized or vehicular-based forces. In recent years, parachute assaults have proven successful in the U.S. invasions of Grenada, Panama, Afghanistan, and Iraq. These successes display a track record of excellence as the U.S. prepares to face threats of equal or greater size and capability.

Airborne forces will mass combat power quickly; their speed and lethality will shock an opposing force.

During LSCO, tempo will be critical to decisively forcing the enemy to be ineffective and unable to gain momentum. Airborne forces keep an enemy on guard and off-balance through audacity. They face unique challenges and vulnerabilities, particularly SAM and technical threats. However, airborne formations can counter these threats by maintaining a competitive technical edge and continually innovating. We need to prepare for LSCO, and the ability to envelop an operational area from the sky will be crucial for success. Risk is prevalent in all military operations, but it cannot stifle audacity. Airborne has been, is, and will always be relevant.

Notes

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The Importance of Measuring Mid-Air Winds for Airborne Operations

MAJ MATTHEW ZAREK

Imagine being a paratrooper, one minute away from exiting an aircraft, with your jumpmaster echoing that winds are only three knots. Thirty seconds later, after exiting the aircraft, you feel betrayed and confused as you drift quickly across the sky. Most paratroopers can recall a static line jump where their descent felt faster than the reported wind speed. Mid-air winds range from the drop altitude, approximately 1,500-1,000-feet above ground level (AGL), to the surface winds, approximately 200-feet AGL (about tree-top level). However, for military static line operations, the Army only requires jumpmasters to observe surface-level winds when determining whether it is safe to release paratroopers.[1]

Mid-air winds encompass most of a static line jumper's flight, but currently there is little emphasis on the importance of monitoring how it affects paratroopers. This results in paratroopers assuming they will experience three knot winds for their entire descent instead of understanding this figure only pertains to surface winds. While there is a lack of quantifiable evidence, experiences shared across the airborne community demonstrate the need for researching the effects of mid-air winds on static line airborne operations. Efforts to initiate quantitative and qualitative studies on mid-air winds can create a path forward that could improve point of impact (PI) accuracy, reduce airborne-related injuries, and reduce costs associated with these injuries.

Purpose

Inaccuracy and injuries continue to play a role in the risk assessment for conducting airborne operations, which increases the reasoning to monitor mid-air winds during static line operations. Although there is a prevailing belief among the airborne community that faster winds at elevation can cause a faster horizontal drift for paratroopers during landing, substantiated data is extremely limited. Two anecdotal cases from 2022 and 2023 highlight the potential impact, but further research is necessary to draw definitive conclusions. During both airborne operations, mid-air winds exceeded 25 knots, but surface winds remained within tolerance. In both instances, six experienced jumpers exited with MC-6 parachutes, which are steerable canopies with 10-knot forward drift capability. Even though the jumpers assumed the appropriate parachute landing fall (PLF) positions, they all drifted backward quickly and landed with extreme force. Most required some form of medical attention. If these same paratroopers exited with a T-11 parachute, the potential injuries could have been exponentially worse.

Paratroopers assigned to 2nd Battalion, 503rd Parachute Infantry Regiment, 173rd Airborne Brigade, descend onto Juliet Drop Zone in Pordenone, Italy, on 22 March 2023. (Photo by Paolo Bovo)

To prevent injuries and mitigate risk, the Army spends the most resources and training on individual paratrooper actions during airborne operations. Soldiers receive three weeks of training on proper methods throughout their entire descent to the body posture and process for proper PLFs. Paratroopers then perform basic airborne refresher training at every new unit and sustained airborne training before every single jump. When the Army approves new parachutes, equipment, or techniques, it spends a lot of resources and time preparing paratroopers before execution.

In my opinion, the Army needs to dedicate more resources and equipment to observing and measuring wind for static line operations. The two main contributing factors affecting

PI and release point (RP) are the drop altitude and wind speed, but the Army only dedicates personnel and equipment to measuring surface wind. During most airborne operations, the drop zone safety officer (DZSO) or drop zone safety team leader (DZSTL) uses only an anemometer to measure surface-level winds and wind direction. Personnel airborne operations can only occur if the surface winds remain within a 13-knot wind tolerance.[2] This is one of the prevention methods in place to reduce the number of paratrooper injuries.

Mid-air observations and calculations need equivalent emphasis to individual training for paratroopers. The Army currently has a regulatory process to measure mid-air winds, and the necessary equipment is within the supply system and available at most airborne organizations. Additionally, there are advances in technology available that provide fast, real-time updates on mid-air winds to ensure airborne operations remain seamless. As the Army continues to improve airborne equipment and types of training, the methods and ways to measure factors affecting operations need to evolve as well.

Background

For static line airborne operations, the PI location for personnel is 300 yards from the lead edge of the drop zone during the daytime and 350 yards at night.[3] To achieve the standard, the Army relies on two systems that estimate the release point to achieve the desired personnel PI. Most fixed-wing aircraft utilize the computed air release point (CARP) system, and rotary-wing aircraft use the verbally initiated release system (VIRS).

CARP is based on average parachute ballistics and fundamental dead reckoning principles.[4] From the parachute type to the wind speed and direction of drift, the CARP system analyzes many factors. After each pass, the DZSO updates the aircrew on the actual point of impact to validate calculations or propose adjustments. Rotary-wing airborne operations rely on a DZSTL to estimate the RP and PI through VIRS. After determining wind drift, the DZSTL then radios to the aircrew when to release the paratroopers.

The Way Ahead

As safety and risk mitigations continue to increase in urgency, the implications of mid-air winds are too important to ignore. The Army has a method to estimate a paratrooper's total wind drift, but it only needs one slight modification. It determines the total wind drift by inputting data into the wind drift formula [wind drift (D) = velocity (V) x altitude (A) x load drift (K)]. Multiplying velocity (surface winds) by drop altitude and load drift (a constant for personnel) produces the estimated overall drift experienced by a paratrooper on that airborne operation.[5] This means airborne operations from 1,000 feet AGL (expressed as A=10), 11 knots surface winds (V=11), and a load drift (which is a 3-meter constant for personnel airdrop, K=3) would produce an expected 333 meters of wind drift per individual paratrooper using a non-steerable category. The two main issues with this practice are the use of surface winds for velocity instead of total winds and using these calculations only for rotary-wing airborne operations.

To measure the total expected wind drift, replace surface winds with the mean effective wind (MEW) for velocity in the same formula (D = KAV). The MEW calculates the average wind speed between surface-level and drop-altitude winds. A DZSTL can calculate the MEW using a helium balloon called a pilot balloon (PIBAL). The DZSTL releases the PIBAL, observes its flight path, and annotates the elevation angle based on the PIBAL conversion table.[6] The number produced from the conversion table represents the average wind speed during a paratrooper's entire descent. If the PIBAL is unavailable or if a unit wants a more expedient method to monitor total wind drift throughout the day, there are other available options. A wind streamer is the second option available within the Army supply system. Dropped out of the aircraft, a wind streamer measures the RP to PI to determine total wind drift.

The wind streamer and PIBAL are great options, but units may not always be able to delay lifts or use available aircraft time to utilize one of these methods to monitor mid-air winds. With advances in technology, certain applications such as Windsaloft provide real-time data with accurate wind measurements from 1,000 feet AGL and above.[7] Although 1,000 feet AGL is the lowest available wind reading on

Paratroopers release a pilot balloon during an airborne operation in Germany on 7 September 2023. (Photo by Kevin Sterling Payne)

A paratrooper checks wind metrics during an airborne operation in Germany as part of exercise Saber Junction on 19 September 2018. (Photo by SGT Jennifer Amo)

Windsaloft, it provides enough information to gain a quick average of the total wind drift to improve calculation accuracy.

The MEW wind speed factor provides a more realistic wind drift for paratroopers because it includes the average winds from their RP to PI. Maintaining the same constants with the D=KAV formula and increasing velocity by one knot to include total winds produce an overall change in PI by at least three meters for every paratrooper. The slightest increase in drop altitude or wind speed, the greater the drift effect.[8] Drop altitude winds typically range from a few knots to more than 10 knots higher than surface winds depending on the atmosphere and location. This slight difference could result in a 3-knot disparity in PI, which results in a significant difference in landing location (at least 30 meters) per paratrooper. Using the appropriate velocity calculations can help prevent paratroopers landing off of the drop zone or may even save them from a potentially devastating injury.

Recommendations

Combining the available equipment and weather applications would allow Army airborne forces to begin observing winds immediately. Mandating units to incorporate mid-air wind observations over the next few years demonstrates the emphasis on risk mitigation while validating any potential effects. If research determines mid-air winds produce an effect on paratrooper landings, the Army could begin incorporating protocols into airborne operations seamlessly starting tomorrow. Updating regulations to incorporate mid-air wind tolerances could reduce the number of airborne-related injuries. Current operations will become more efficient and improve requirements for future airborne equipment. Long-term effects when accounting for mid-air wind includes increased longevity and survivability for personnel and equipment.

Conclusion

As the military emphasizes safety and efficiency, assessing the effects of mid-air winds must become a priority to ensure success for current and future operations. Surface winds can no longer be the only level of wind monitored during an operation, especially with unknown implications of mid-air winds and the ease of available technology. Including mid-air winds in total wind drift calculations can increase PI accuracy and mitigate airborne-related injuries.

Notes

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Taking Your Operational Performance ‘To the Limit’

CPT WILLIAM TAYLOR

In November 2023, the 5th Battalion, 20th Infantry Regiment, 1-2 Stryker Brigade Combat Team (SBCT), 7th Infantry Division, achieved a high degree of success during our rotation through the leader training program (LTP) hosted at the National Training Center (NTC) at Fort Irwin, CA. It is easy (and perhaps common) to think of LTP as just another repetition that the staff gets before deploying to the proverbial “box” at NTC. Our battalion, known as Sykes’ Regulars, made a deliberate decision to maximize the opportunity, choosing two primary goals: refining our systems and learning the capabilities of our digital equipment.

Where We Started

In the weeks before the LTP, our staff identified seven essential fighting products that were required for successful mission execution: mission statement, commander’s intent, synchronization matrix, enemy event template, decision support matrix, fire support products, and execution checklist (EXCHECK). We then worked to convert these products into an easily transferable data package through the Joint Battle Command - Platform (JBC-P) and Command Post Computing Environment (CPCE). Identifying the correct format and file size was essential in developing a product that could be quickly disseminated and shared in the field across JBC-Ps that are mounted in more than 75 percent of our Stryker and Joint Light Tactical Vehicle (JLTV) fleet. We then conditioned ourselves through repetition by publishing garrison weekly tasking orders (WTOs) and holding battle-rhythm events across the JBC-P forum to streamline our garrison and field staff processes. We ultimately developed a Microsoft Excel order file that subordinates and staff became familiar with viewing and editing on JBC-P and CPCE to support daily battalion operations.

LTC Tom Angstadt, commander of 5th Battalion, 20th Infantry Regiment, briefs during the combined arms rehearsal.

Setting Conditions at LTP

Before we settled into our tactical operations center (TOC) in the LTP building, we did our best to configure the room to match our actual TOC layout, which consists of two Strykers and two JLTVs with a small table in the center. Our communications shop (S-6) configured multiple JBC-Ps, a Tactical Server Infrastructure (TSI) Small, and several CPCE systems for us to use throughout the planning process. The use of these systems from receipt of the mission through planning, order production, and execution supported our ability to help the commander visualize, understand, and rapidly transition to describe and direct without putting a significant strain on our energy. This provided our entire staff more time to think through the primary, secondary, and tertiary effects of the decisions we were planning.

One of the key challenges in the military decision-making process (MDMP) is the amount of time it takes to complete mission analysis and publish the orders to subordinate elements. Based on recent trends at combat training centers (CTCs), the last step of MDMP is most often missed, which results in staffs spending a large amount of energy helping the commander visualize and understand. When it comes time to describe and direct, the staff is then often unable to operationalize the commander’s intent, which means subordinate units receive too little information and guidance from the commander at a time that is too late for them to plan effectively at echelon, specifically at the company and platoon levels. We simultaneously flattened communication with subordinate elements while also speeding up the MDMP process by leveraging a CPCE along with a JBC-P to immediately publish all mission analysis products to companies. This enabled effective parallel planning, the sharing of graphics, and generally allowed for a common understanding of the situation.

Army Battle Command Systems Basics

Let's get down to the nuts and bolts of our technological approach. The core of our technique consisted of four key systems: CPCE, JBCP, ShareDrive, and SharePoint. CPCE emerged as the linchpin for creating a digital common operating picture (COP) that facilitated our tactical decision-making through MDMP, and it communicated directly to JBC-P systems which enabled real-time communication. JBC-P was used as the primary means of communication to the company commanders and our brigade TOC. ShareDrive and SharePoint provided tools to maximize collaboration and allow for parallel planning across the staff during windows of limited connectivity. We purposely only used legacy-fielded Army Battle Command Systems (ABCS) to prevent building systems and processes around commercial off-the-shelf (COTS) or experimental programs that may not be available across the Army.

More than Secure Messaging

The global war on terrorism era produced leaders familiar with JBC-P primarily as a secure form of messaging and unit location identification. At the LTP, we strove to integrate ABCS early and beyond the current operations (CUOPS) battle-tracking method. During mission analysis, the staff used the Digital Terrain Elevation Data (DTED) software feature for line-of-sight analysis to support intelligence preparation of the battlefield (IPB). Integrating the JBC-P and CPCE DTED feature was a value-based addition as our staff progressed through course-of-action development and analysis, using the tool to continuously help the commander understand, visualize, describe, and direct the staff.

Historically, there has been a hard shift from garrison PowerPoint planning shells and orders to a tactically produced product. The battalion developed baseline MDMP staff products that directly fed into a "fighting product" or an order annex. After standardizing the products, the next step was ensuring compatibility with ABCS and file size to support rapid dissemination. We began to use the tactical secure internet protocol router (TACSIPR) due to ergonomic considerations, and it freed the JBC-P and its operator to battle track and communicate more freely. The Secure Mission Data Loader (SMDL) allows staffs to transfer products that were made on a TACSIPR computer to the JBC-P for distribution. Using the SMDL this way is a great time saver compared to trying to create everything on a JBC-P. To share imagery and shorten the targeting cycle, we used the Long-Range Scout Surveillance System (LRAS3) to transfer photos and real-time scout reports to the JBC-P, where they are available for rapid sharing. The goal was to build efficiency within the staff to maximize any system, product, or action to contribute to the operation directly.

What digital systems do not replace is the need for occasional physical meetings between subordinate elements on the battlefield; the psychological impact of in-person contact on the battlefield is a net positive. According to a 2018 article, "Research shows face-to-face requests are 34 times more effective than those sent by email, and that a physical handshake promotes cooperation and influences negotiation outcomes for the better."[1] The importance of seeing your counterparts, peers, and superiors for a quick meeting or sync pays dividends for the psychological health of the force when stress and demands are high. In addition, technological vulnerabilities such as jamming, spoofing, phishing, and other electronic attack methods can hinder communication and operational planning.

Staff members in 5-20 IN plan around the analog COP.

After the Final After Action Review

Our battalion's decision to set two achievable goals during LTP proved pivotal in advancing our operational effectiveness. We achieved these goals by setting the ground rules and expectations up front, working as a team, and allowing for sufficient rest periods. By harnessing the full potential of cutting-edge tactical systems that were widely available to us, we refined our command-and-control processes and elevated our communication and operational planning.

Notes

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Putting the 'C' Back in BCT:

Creating Change Agents Through Initiative Ownership

COL SCOTT C. WHITE
CSM JONATHAN M. DUNCAN

In a message to our Army team on 26 October 2023, GEN Randy A. George, the 41st Army Chief of Staff, reinforced that our enduring purpose as a force is to fight and win our nation's wars. He further stated that to do this we must stay grounded and dedicate our energy in four focus areas: warfighting, delivering combat-ready formations, continuous transformation, and strengthening the profession.

As of 2022, Basic Combat Training (BCT) lacked a focus on sustained ground combat and failed to prepare new Soldiers for large-scale combat operations (LSCO). It was challenging but concentrated on events rather than tactical-based training which better prepares new Soldiers to fight and survive on the modern battlefield. As the character of war changes, so must our training strategies, leader development, and resulting culture. Change is a difficult process, as "it's the way we have always done it" clouds the thoughts of some practitioners and creates roadblocks. By giving subordinate elements and external entities significant initiatives to own, develop, and create solutions for, change becomes less about the new idea from "them" and more about how "we" make things the absolute best that they can be.

Throughout 2023, the 193rd Infantry Brigade at Fort Jackson, SC, focused heavily on creating a warfighting mindset and culture within our trainees and cadre. This transition aligned with GEN George's vision of bringing warfighting back to the forefront of our profession and was already in motion within Initial Military Training (IMT) when he became the Army Chief of Staff. Due to the changing character of war, MG John D. Kline, the commanding general (CG) of the U.S. Army's Center for Initial Military Training (CIMT), envisioned a BCT environment that immersed cadre and trainees within a scenario-driven LSCO environment. This vision was further discussed with IMT senior leaders for several months before MG Jason E. Kelly, the CG of Army Training Center and Fort Jackson (ATCFJ), tasked the 193rd Infantry Brigade to develop a BCT training concept that better prepared new Soldiers for LSCO. MG Kelly's guidance focused on increasing individual survivability and ensuring that the nation's largest BCT enterprise was not only "Making American Soldiers" but "Making Our American Soldiers Better." This evolution, envisioned by MG Kline, embraced by MG Kelly, and operationalized as Forge 2.5 by the 193rd Infantry Brigade, focused on warrior tasks and battle drills (with a primacy on marksmanship), tactical discipline, grit, physical fitness, and teamwork. This field training exercise (FTX) is executed within a 72-hour, scenario-driven format and led by drill sergeants.[1] We aimed to produce not just Soldiers but incredibly proud warfighters who were ready and able to be value added to our profession's purpose and ready to fight and win our nation's wars. As recently attested to by a battalion command sergeant major in the 193rd, "We're now running continuous operations in austere conditions, and you can almost see a company of light Infantrymen by the time we get them back to Hilton Field. They're tired, dirty, hungry — and most importantly, proud of what they were able to accomplish over those 72 hours. I include our drill sergeants in that pool of people as well. You can clearly see the amount of pride they have during the Soldier Induction Ceremony when they're slapping 'Star' patches on new Soldiers." Forge 2.5 is not about a change to the program of instruction (POI). It's about a change in mindset, through which we are creating a warfighting culture among trainees and cadre. Simply put, Forge 2.5 puts the "C" back in BCT!

Refocusing on Warfighting

The process within the 193rd Infantry Brigade began in early April 2023 with a brigade commander/command sergeant major (CSM) whiteboard session and the establishment of the Forge 2.5 operational planning team (OPT). This council was made up of senior drill sergeants from each of the five BCT battalions in the brigade and led by a company commander from the 2nd Battalion, 13th Infantry Regiment. This group of experienced professionals met throughout that month, operating with initial guidance from the brigade commander to embed a tactical focus, defined as noise and light discipline, personal and positional camouflage, to-standard fighting positions, security, and situational awareness within the Forge with drill sergeants, fulfilling the roles of squad leaders and platoon sergeants, leading trainees through. Battalion staffs were to deploy to the field to establish tactical operations centers and perform their duties in a quasi-wartime manner. Every Forge iteration was to be evaluated utilizing training and evaluation outlines (T&EOs) by a brigade-level evaluation team to enable continued refinement through each battalion-level execution. The Forge was to remain 72 hours in duration and all POI tasks were to be completed, but significant work was needed to transition the existing event-driven administrative exercise into a true tactical FTX built around a LSCO scenario.

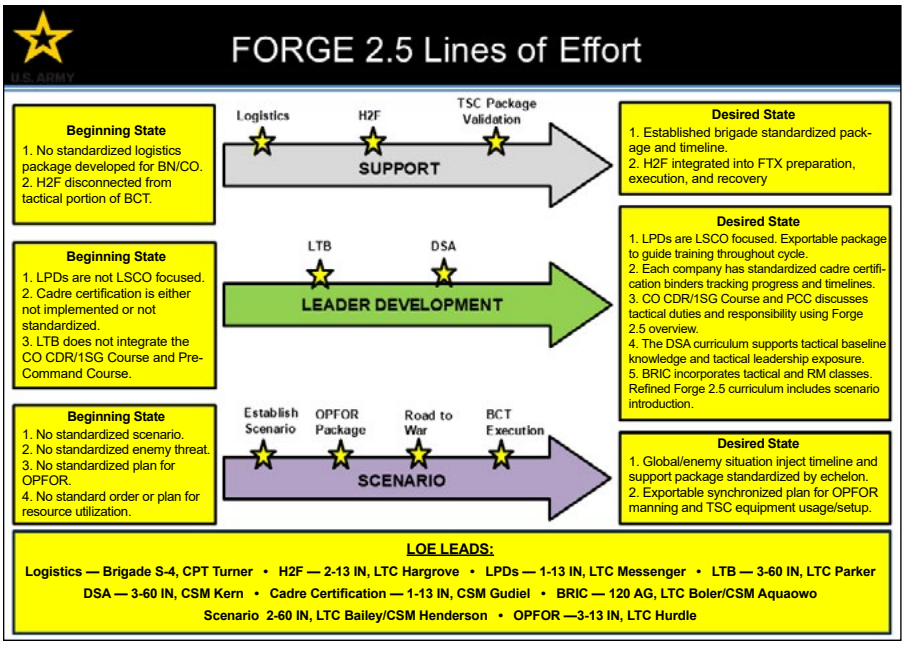


Figure 1 — Forge 2.5 Lines of Effort

The OPT developed a viable plan and briefed it to the brigade commander and CSM on 27 April 2023. The important work conducted by the OPT's NCOs started to steer the aircraft carrier into the necessary direction. The first and second iterations of the transitional Forge were conducted by 2-13 IN and 2nd Battalion, 60th Infantry Regiment from 15-18 May and 10-13 July 2023 respectively. They were not without serious setbacks though; the most significant of which were the identification of structural shortcomings within the brigade and a realization of major deficiencies in the basic tactical knowledge of our cadre. We addressed these by developing lines of effort (LOEs) focused on increasing structural support to the battalions and the tactical competence of the cadre.

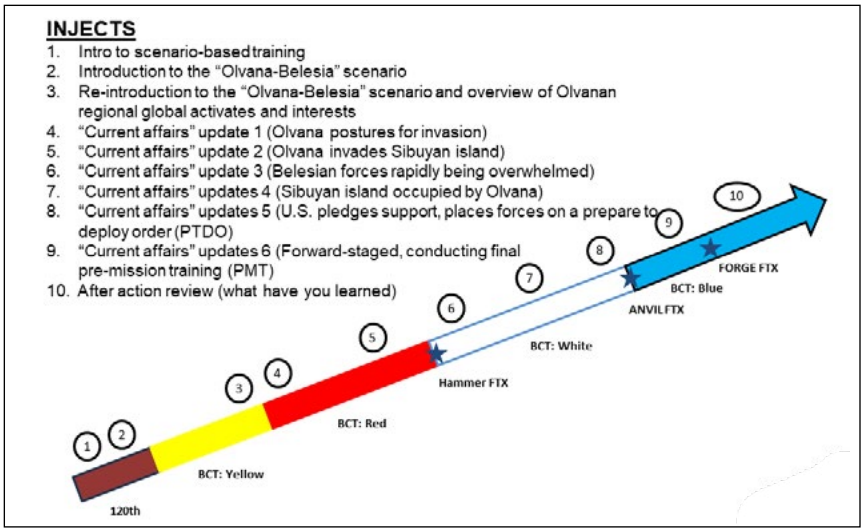
The brigade executive officer led the staff in the development of three broad LOEs that were identified as essential in moving forward with the Forge 2.5 process. (See Figure 1). The LOEs served two major roles: to push the brigade from current state to desired state and to design an improved Forge with input from as many stakeholders as possible while using as many of our mission-enhancing resources as practical. This process, although cumbersome at times, gave every battalion within the brigade (as well as key stakeholders external to the brigade) an active role in the transformation process. The result of this approach was increased understanding, a sense of extreme ownership, and a culture that encouraged and incentivized creativity and proactive solutions. What began as the vision of the CIMT CG was operationalized with input from six battalions and many entities external to the brigade, and thus the initiative became transformational vice transactional.

As the brigade iterated through executions of the Forge with each battalion, the lack of an overarching LSCO-focused scenario proved to be problematic. It prevented the creation of realism and detracted from the purpose of the enhanced FTX. The U.S. Army Training and Doctrine Command (TRADOC) G-2 became the brigade's main effort for enabling the achievement of training realism and scenario immersion. Coordination between the 2-60 IN command team and the TRADOC G-2 led to the development of an overarching global scenario, informed by the National Defense Strategy, that provided the operational framework, through the backdrop of a series of nine scenario injects that added training realism and tactical purpose to every BCT event, starting with reception (see Figure 2).

In addition to the important LSCO scenario contributions, 2-60 IN developed the brigade's overarching friendly situation and the battalion linear defense concept. This was not without debate within the brigade, but a standardized execution enabled a quicker organizational transition and provided for more accurate and consistent evaluations. Henceforth, every 193rd unit conducting the Forge, except for 3-60 IN, would establish a battalion linear defense.

From the outset, MG Kelly was laser focused on ensuring the exportability of the Forge 2.5 concept. Out of the three major BCT installations (Fort Jackson; Fort Leonard Wood, MO; and Fort Sill, OK) only Fort Jackson operationalizes BCT at the battalion level. This makes Fort Jackson's throughput much greater but also puts a battalion commander, CSM, and the requisite support staff on top of every Soldier's initial military training experience. The differences between levels of command involved created some skepticism to this initiative at first. The 3-13 and 3-60 IN commanders

Figure 2 — Overview of Forge 2.5 Scenario Injects



conducted site surveys at Fort Leonard Wood and Fort Sill respectively to better understand their operating conditions and procedures. From their visits, the brigade acquired a wealth of knowledge that enabled them to meet the exportability intent. Accordingly, over the course of two BCT cycles, 3-60 IN developed and implemented a concept by which four companies operated detached from the battalion throughout the execution of the Forge and its preparatory tactical FTXs. This important initiative proved that the support received by the battalion headquarters could be provided at echelon by the company, and that the level of command in control of the exercise had no measurable impact on the focus, training value, or supportability of Forge 2.5.

The 120th Adjutant General (AG) Battalion is charged with receiving and in-processing upwards of 30,000 civilians annually who are destined for both the 193rd and 165th Infantry Brigades. Under the legacy BCT culture, the 120th AG was where Fort Jackson welcomed civilians into the Army. As the warfighting culture within BCT began to root and develop, the battalion identified an opportunity to introduce the newly arrived civilians into the concept of scenario-based training, begin the LSCO scenario immersion, and more appropriately welcome these new trainees into their future warfighting profession. Scenario injects, battle-focused discussions, and physical training were easily threaded into the standard reception tasks to immediately provide a stronger sense of purpose and increased excitement and pride about what these trainees had committed to accomplish over the next 10 weeks.

While working to transform how we welcome civilians into our warfighting profession, the 120th AG also refocused the brigade's permanent party onboarding mechanism, the Bayonet Reception and Integration Course (BRIC). It took a multi-day event that served as an administrative onboarding of new cadre members and completely revised it by adding blocks of instruction on rifle marksmanship, holistic health and fitness (H2F), and the Forge 2.5 scenario and expectations. This effort, coupled with the refined reception initiative, began to plant the warfighting mindset in trainees and cadre before even arriving to BCT.

The 120th's renewed focus on onboarding warfighters created a desire to revisit our standardized handoff mechanism — structured and disciplined pickup. The handoff between reception and the BCT battalions has morphed through the years, but the standard at ATCFJ developed into an extremely professional event focused on Army and unit history, discipline, and Army Combat Fitness Test demonstrations. With the newly found emphasis on warfighting, this event again changed, but this time with the addition of instilling our Army's warfighting purpose. The Army and unit histories were maintained as a means of ensuring ongoing education on the important feats accomplished by those who had previously filled the ranks of BCT while also applying these important lessons learned to the present and connecting the new crop of trainees to the Army's future. Adding a LSCO-driven scenario into the disciplined pickup affords drill sergeants an early opportunity to introduce the unit's history and lead trainees through physically demanding tactical tasks. The early inculcation enables their absolute connection to the Army's past and future. Through the introduction to the tactical scenario and our warfighting profession in reception, built upon through a refined structured and disciplined pickup, and then codified throughout BCT, realism, purpose, and pride emerged to replace anxiety and confusion.

As in any tactical FTX, the presence and realistic use of opposing forces (OPFOR) within Forge 2.5 became essential. The enemy concept, created by the TRADOC G-2, called for a Southeast Asia-focused threat situation with a fictitious country named Olvana. With the assistance of the Fort Jackson Training Support Center (TSC), 3-13 IN developed and sourced a complete package of OPFOR support items: tiger stripe uniforms, pneumatic guns, improvised explosive device (IED) simulators, and a full complement of Kalashnikov assault rifles (AK-47s), Soviet-type light machine guns (RPKs), and rocket-propelled grenade (RPG) launchers. With the equipment packages sourced and built, the team developed what became the brigade's tactics, techniques, and procedures (TTPs) for OPFOR utilization, including element size, where they are sourced from, tactical control, scenario control, and day-by-day OPFOR mission sets to ensure the training objectives were achieved. Scenario immersion was further solidified by 3-13 IN's creation of more than 20 World War II-inspired propaganda posters (see Figure 3). These were devised and designed by the battalion, produced by TSC at Fort Eustis, VA, and posted around the BCT battalion and company areas on Fort Jackson to immerse trainees in a realistic and well-sourced scenario that provides added benefit to, and purpose for, every training event within BCT.

Figure 3 — Example Propaganda Poster Developed for Forge 2.5

Strengthening the Profession

The quest to better prepare our cadre focused internally through the development of a LSCO-focused leader professional development (LPD) program, led by 1-13 IN. They developed a holistic plan that progressed weekly throughout cycle reset and the weeks of BCT leading up to the Forge. This LPD plan provided cadre the education necessary to break the mold produced by 20 years of the global war on terrorism (GWOT). It enabled them to think and act in preparation for the next war instead of being anchored to the lessons learned from the GWOT. Simultaneously, 1-13 IN worked diligently

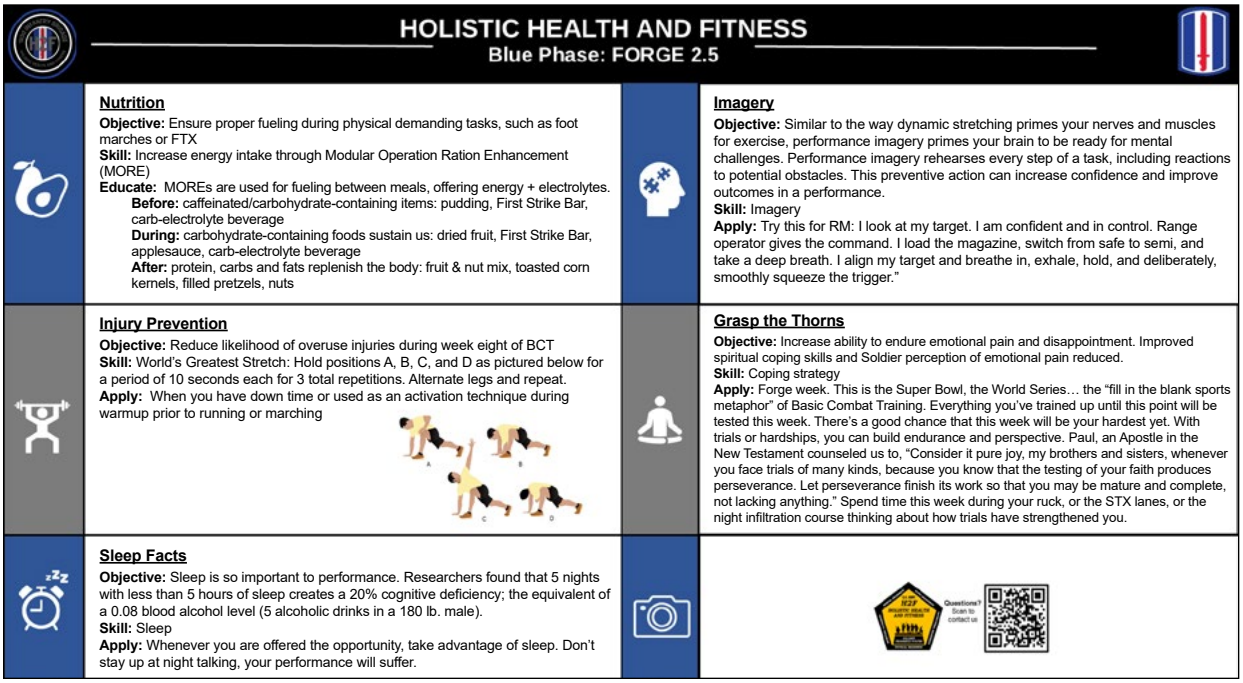


Figure 4 — H2F Training Strategy

to identify the key tasks that were imperative for cadre to master. This resulted in the creation of a certification process that succeeded in enabling all cadre, no matter their military occupational specialty (MOS), to embody competence and confidence as tactical leaders.

Although the leadership within the brigade developed effective solutions to the immediate concerns uncovered from our initial iterations of Forge 2.5, lasting change would require education of new cadre members before they were to fill their important roles within BCT. LPDs and cadre certification were enough to get us back on track, but foundational change in our future cadre, instituted through the Leader Training Brigade (LTB) and the U.S. Army Drill Sergeant Academy (USADSA), was necessary to create the "competence to be confident" across every IMT installation. These efforts were spearheaded by 3-60 IN.

Drill sergeants are masters of training the POI and have been finely honed by the USADSA to expertly train basic Soldier skills. However, without a focus on tactical leadership and survivability in LSCO, we had asked our drill sergeants (and company command teams) to enter a realm where they weren't competent enough to be confident. There existed a grave delta between what our cadre knew and understood about tactical leadership and where we were demanding that they go during Forge 2.5. Tactical leadership across the cadre spectrum was integral to bringing realism and relevance into training, and the brigade's initial Forge 2.5 iterations uncovered a need for significant cadre investment.

The 3-60 IN worked hard refining and establishing the means to fully prepare the battalion's cadre to excel as tactical drill sergeants (as squad leaders and platoon sergeants leading trainees in simulated combat). Their experiences were enthusiastically received by the USADSA. With 3-60 IN's assistance, USADSA staff members immediately identified where they could evolve training and education to produce not only a better drill sergeant but a better NCO who was ready to lead trainees in a tactical environment. Similarly, 3-60 IN Soldiers worked with LTB to investigate their portfolio and identify where they could assist with the endeavor. LTB's offerings, the TRADOC Company Commander and First Sergeant Course and the TRADOC Pre-Command Course, provided other essential venues to educate on and market the growing tactical focus in BCT. LTB developed and refined blocks of instruction to better prepare incoming command teams for the new training environment. The efforts with the USADSA and LTB, led by 3-60 IN, resulted in institutional change that ensured cadre and leader training evolved at pace with the changing character of war.

H2F is a powerful weapon in the Soldier's arsenal, the application of which makes them the absolute best versions of themselves possible. As the brigade sought to create irreversible change in the mindset of those within the unit, it became apparent that cadre/trainee investment in each of the five H2F domains (Mental, Sleep, Nutritional, Physical, and Spiritual) was necessary to reach peak performance due to the stress created by 72 hours of simulated combat. Not only would this prepare them for Forge 2.5 and empower them throughout execution, it would also facilitate post-execution recovery. The 2-13 IN, in conjunction with the 193rd's H2F Team, led the operationalization of H2F as a mission-enhancing element of our Forge 2.5 transition. This effort started by immersing our H2F team within the BCT environment throughout the cycle while simultaneously instituting full five-domain assessments on the brigade's entire cadre population. The assessments educated cadre on their performance blind spots, while the immersion enabled the H2F team to assess the physical and mental demands on both trainees and BCT cadre. Once the

subject matter experts understood the stressors on both cadre and trainees, they were able to devise a training strategy to increase performance, not just in Forge 2.5 but throughout BCT (see Figure 4). This led to many supporting H2F initiatives, all geared towards increasing individual and collective performance, developing a strong sense of a warfighting purpose, increasing confidence through competence, and strengthening the sense of team at every echelon.

Continuous Transformation

After nearly nine months and almost 15 iterations of Forge 2.5, the 193rd Infantry Brigade had achieved a complete transition. Throughout the process, leaders at every echelon within the brigade laid a substantial foundation of tactical knowledge and capability within their cadre. The combination of the BRIC, LPDs, cadre certification, and USADSA and LTB instructional modifications, assessments, and battalion/company-level training improvements laid the groundwork for the added complexity that was necessary to complete the LSCO-focused transition and incorporate lessons learned from the ongoing war in Ukraine such as the use of small unmanned aerial systems (sUAS).

Since their first usage in the GWOT, sUAS have continued to become ever more present throughout global conflicts. From Syria to Ukraine, sUAS have proven to be a normal aspect within modern warfare, and with that, they have reinforced the need for the basic tactical skills that Forge 2.5 produces as part of the foundation of our warfighters. The inclusion of sUAS in BCT provided a means by which cadre could train and reinforce foundational tactical skills, using real-world threat scenarios to provide the "why" behind tasks inherent to individual survival on the modern battlefield. Reacting to sUAS is as important to the individual Soldier today as the GWOT's signature "5s & 25s" were to individual avoidance of IEDs in Iraq and Afghanistan.

The 193rd's quest for realism and relevance through the inclusion of sUAS began with cross talking and visits with the 197th and 198th Infantry Brigades, as well as cadre from the U.S. Army Sniper Course, all under the Maneuver Center of Excellence at Fort Moore, GA. The 197th and 198th conduct Infantry One Station Unit Training (OSUT) and have spearheaded sUAS usage within their training evolutions for almost a year. The OSUT brigades shared valuable lessons learned with reference to gaining approval for sUAS in the airspace, training of operators, and the implementation of sUAS in training. Additionally, they developed and implemented the first react to sUAS battle drill for usage in OSUT, which sparked further refinement and development for usage at BCT. Furthermore, they trained and certified ATCFJ's first operators (one from each brigade). The U.S. Army Sniper School assisted 193rd leadership with understanding how best to defeat detection through the application of basic tactical skills, such as personal and positional camouflage, noise and light discipline, cover/concealment, situational awareness, security, and proper tactical movement (all important basic tasks to be trained in BCT).

Open-source lessons learned from Ukraine illustrate sUAS being used primarily in two ways: to identify adversary formations and to drop munitions or spot for artillery. The 193rd's use of sUAS within Forge 2.5 followed these two tactical applications, and hence, our mitigation techniques focused towards diminishing a sUAS's ability to identify forces to target. This was conducted primarily through reinforcing the foundational tactical standards called for initially in Forge 2.5: noise and light discipline, personal and positional camouflage, to-standard fighting positions (including overhead concealment), security, and situational awareness (SA). The brigade developed two reactions to sUAS that were passive in nature, did not call for engaging the platforms, and required no specialized equipment or skills. These reactions address the types of sUAS contact in the individual Soldier task framework that is essential in BCT (see Figure 5). In a defensive scenario, the emphasis was put on overhead concealment using natural vegetation. While patrolling or stationary in the open, vertically aligning oneself against a tree trunk enabled the usage of the tree's branches to conceal the Soldier from observation. While "seeking cover" oftentimes involves laying prone, in a sUAS scenario a horizontal body is much easier to observe from the air than a vertical one.

Figure 5 — Photos from sUAS of Trainees during Forge 2.5

Trainees in the 193rd Infantry Brigade man a fighting position at Fort Jackson, SC. (Photo courtesy of the 3rd Battalion, 60th Infantry Regiment)

Delivering Combat Ready Soldiers

By incorporating a LSCO scenario and continuous tactical operations, the Forge became purposeful, realistic, and more challenging; ensured a firmer foundation of basic skills within our trainees; and empowered our cadre and staffs to develop as leaders. By focusing on the foundational tactical skills of noise and light discipline, personal and positional camouflage, to-standard fighting positions, security, and situational awareness (including SA of aerial threats), it creates an entry-level Soldier with the skills inherent to survive on the modern battlefield.

As the process began, it was evident that change within a TRADOC BCT brigade materialized like the turn of an aircraft carrier. But serious change needed to happen, and it needed to take place on a compressed timeline much more like the turn of a speed boat. Every BCT cycle that graduated before we could accomplish it was another 800-1,200 new Soldiers that were not prepared for the wars that might lie ahead. They would be disciplined and fit yet would lack the tactical foundation necessary to survive in LSCO. A team comprised of these Soldiers would be sub-optimal on the modern battlefield, regardless of their combat mission.

As illustrated throughout the preceding text, creating a warfighting mindset in BCT was a whole of brigade effort. Every battalion had an essential piece of the initiative. Change started with guidance from a few but was planned for, refined, and operationalized by a brigade staff, six incredibly talented battalion command teams and their respective formations, as well as a few key external stake holders (USADSA, LTB, TSC).

These types of initiatives are difficult and not without resistance from cadre who operated under the antiquated and process-driven FTXs. A clear vision and initiative ownership at the lowest echelons are essential to transformational change, both increasing relevancies now and in the future. This process has created incredibly proud warfighters who are ready, able, and capable of taking on the responsibility of our Profession of Arms to fight and win our nation's wars.

Notes

[1] Emphasis added to highlight a major shift in how drill sergeants operate. A key aspect of this warfighting focus is drill sergeants leading as squad leaders and platoon sergeants. As they transition from trainers to leaders, they show trainees true NCO leadership and what it can accomplish.

At the time this article was written, **COL Scott C. White** served as the commander of the 193rd Infantry Brigade at Fort Jackson, SC. He currently serves as the U.S. Army Special Operations Command G-3. His former assignments include serving as the assistant chief of staff, G-3 for the United States Army John F. Kennedy Special Warfare Center and School; commander of 6th Battalion, 1st Special Warfare Training Group (Airborne); operations officer for 2nd Battalion, 3rd Special Forces Group (A); commander of Delta Company, 2nd Battalion, 1st Special Warfare Training Group (A); and commander of Charlie Company, 2nd Battalion, 3rd Special Forces Group (A). COL White holds a Bachelor of Arts in political science from The Citadel, a Master of Science in defense analysis (irregular warfare) from the Naval Post-Graduate School, and a Master of Strategic Studies from the U.S. Army War College.

CSM Jonathan M. Duncan currently serves as the command sergeant major of the 193rd Infantry Brigade. His former assignments include serving as command sergeant major of 1st Battalion, 34th Infantry Regiment; operations sergeant major in 1st Battalion, 6th Infantry Regiment; operations sergeant major in 3rd Squadron, 2nd Cavalry Regiment; first sergeant of Iron Troop, 3-2 CR; and first sergeant of Headquarters and Headquarters Company, 1st Battalion, 29th Infantry Regiment. CSM Duncan holds a Bachelor of Science in organizational leadership from the University of Louisville and a Master of Science in human resources and organization development.

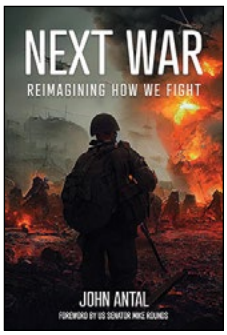
Book Reviews

Next War: Reimagining How We Fight

By John Antal

Philadelphia: Casemate Publishers, 256 pages, 2023

Reviewed by LTC (Retired) Jesse McIntyre III



Retired Army COL John Antal, best-selling author and thought-leader in military affairs, has written one of the more thought-provoking works about future warfare in *Next War: Reimagining How We Fight*. In it, Antal examines recent conflicts — to include the Second Nagorno-Karabakh Conflict (2020), Israel-Hamas War (2021), and Russia's invasion of Ukraine (2022) — and offers sound advice to survive and win on tomorrow's battlefield. His work goes beyond the traditional futuristic description of warfare in providing sound analysis of the changing methods of warfare and advice for making the transition now.

Antal begins with introducing the reader to nine disrupters that are changing the methods of war: Transparent Battlespace, First Strike Advantage, Artificial Intelligence and the Tempo of War, Top Attack, Fully Autonomous, Super Swarm, Kill Web, Visualize the Battlespace, and Decision Dominance. He describes how modern sensors can see targets in the optical, thermal, electronic, acoustic and seismic, and quantum realms, creating a transparent battlespace where nothing can hide or avoid being targeted. On 11 July 2014, Russian drones were able to identify Ukrainian forces and then conduct a three-minute Russian fire strike that virtually destroyed two Ukrainian mechanized battalions near Zelenopillya, Ukraine. He informs us that ubiquitous sensors and precision attacks are the future of warfare and that multi-domain masking is essential if we expect to survive and win on future battlefields.

The tempo of war is accelerating exponentially due to technological advances and artificial intelligence that provide the ability to overwhelm an opponent's ability to counter friendly forces' actions and exploit short windows of opportunities on the battlefield. Antal describes how Azerbaijani forces quickly neutralized Armenian terrain dominance by mobilizing first, striking first, achieving air dominance, and then using loitering munitions and precision fires. The author warns us that China will strike first in any conflict on Taiwan and that we must be prepared.

The emergence of drone warfare in current conflicts is the reality of future warfare. Antal uses examples from both the Second Nagorno-Karabakh and Russia-Ukraine conflicts in describing how drones with loitering munitions are changing the tactical battlefield with strategic consequences. Unmanned combat aerial vehicles (UCAVs) provide the warfighter both real-time aerial reconnaissance and robotic missiles and bomb launch platforms. Furthermore, UCAVs can stay airborne up to 18 hours, providing warfighters the ability to engage multiple targets across the battlespace and any emerging targets of opportunity. Antal further elaborates how UCAVs provide the ability to strike first and strike hard against an adversary. Readers will find his chapter titled "The Super Swarm" extremely insightful on the massing of drones in large swarms to eliminate key targets on the battlefield.

Antal informs us as weapons become more autonomous, military forces will transition from a traditional kill chain to an artificial intelligence kill web that connects sensors and shooters to automatically execute targeting at machine speed. He elaborates how this will transform warfare as we know it with weapon systems becoming fully autonomous to give warfighters a distinctive advantage over their adversaries. Antal warns that western militaries are at a historical watershed. If they fail to learn the lessons from current conflicts and understand how forces can disrupt our traditional methods, they will not get a second chance.

His chapter "Command Post Rules" may be the most instructive portion of his work. Recent conflicts demonstrate that one of the biggest challenges facing our military in a future conflict is the vulnerability of our command posts (CPs). In their current configurations, our CPs are nearly impossible to mask and difficult to defend. Antal has developed 18 rules to assist us in creating CPs that are masked, survivable, and a share an all-domain common operational picture.

Next War's final chapter, "Forging Battleshock," brings all of its concepts together. Antal defines "Forging Battleshock" as operational, informational, and organizational paralysis induced by the convergence of key disrupters on the battlespace. In essence it is overwhelming an adversary through the pace, scale, and scope of activities, preventing them from adapting or responding to one's actions. Here he elaborates how we need to lead, design, train, fight, support, and win to generate battleshock in an adversary.

Next War's strengths are Antal's ability to explain complex concepts and technology in a way that is easy to understand. His writing is clear and concise. Each concept is presented in a short, readable chapter that builds the foundation for its conclusion. It is a clarion call for the threats we will face and actions we must take in winning the first fight of a future conflict. This book is a must read for any commander's professional reading list, policy makers, and military professionals of any grade or service.

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