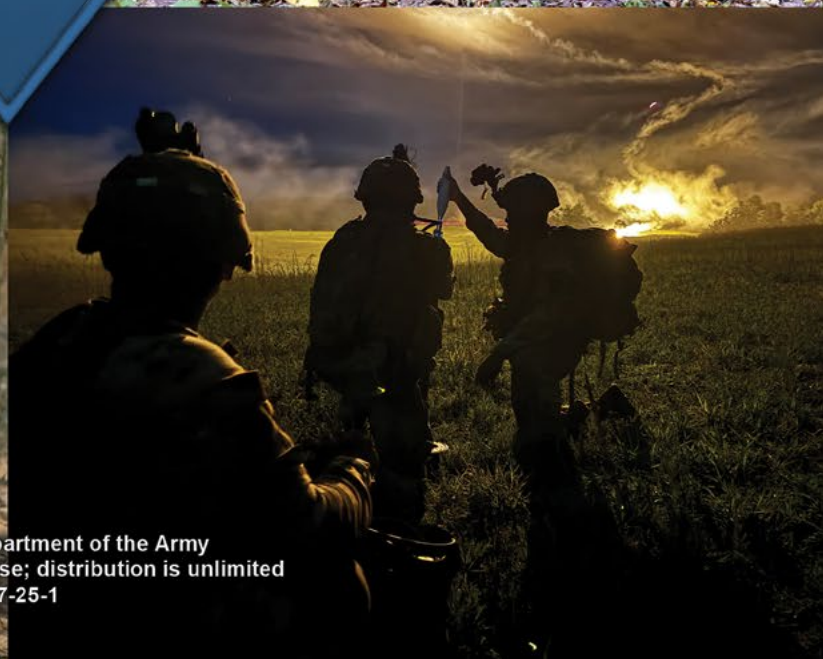
Infantry

Spring 2025

250 YEARS OF THE U.S. INFANTRY 1775-2025



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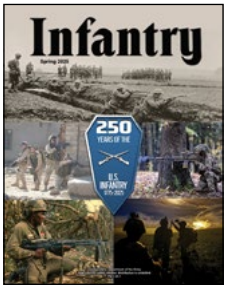

FRONT COVER:

This year the U.S. Army Infantry Branch celebrates its 250th anniversary. Photos by (clockwise from top): National Archives, Mark Scovell, SPC Stephen Scharf, National Archives, and SGT Jeremiah Johnson)

BACK COVER:

The Doughboy and his weapons — A 1930 photo displays the weapons an Infantry Soldier had at his disposal: 37mm cannon, rifle, pistol, bayonet, automatic rifle, hand grenade, rifle grenade, machine gun, trench mortar, tank, and smoke bomb. (National Archives photo)

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Infantry

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Commandant's Note

BG PHILLIP J. KINIERY

We look forward to celebrating the 250th anniversary of the U.S. Army, and the Infantry Branch, on 14 June 2025. As we approach the date, it's important to reflect on our history as we continue to focus on preparing for future battlefields. I am extremely honored to lead the Infantry Branch, which is the backbone of all U.S. Army combat operations. Our contributions to this warfighting organization have played a critical role in protecting the United States both domestically and abroad. Our storied lineage is full of examples that demonstrate the American fighting spirit and emphasize the importance of leadership and technological innovation.

Two-hundred-and-fifty years ago, the Continental Congress appointed George Washington as Commander in Chief of the newly founded Continental Army, now known as the U.S. Army. This newly formed Army would stand as a united colonial response against the British threat. Continental Soldiers leveraged cutting-edge guerrilla-style tactics, decisive leadership, courage, and terrain to their advantage. Their efforts proved to be highly successful in defeating the British in combat and helping America earn its independence. Achieving our independence was only the beginning of the challenges our great country would face. Over the past two-and-a-half centuries, we have been relentlessly challenged by global threats, yet we remain steadfast in our strength and readiness.

The U.S. Army relies on the Infantry Branch to produce competent leaders and warrior Soldiers who, as the Queen of Battle, can rise to any occasion. Our comprehensive approach to creating Infantry Soldiers guarantees that they are the toughest fighting unit the Army can deploy. Additionally, we've re-tooled our approach to producing leaders at the Infantry Basic Officer Leaders Course (IBOLC) and the Infantry Advanced Leaders Course (11B and 11C ALC), providing the Infantry with junior leaders who are more ready than ever to tackle today's problems. We're doing our part to ensure that the legacy of the Infantry is intact 250 years later, and that we are ready to face any opponent on a global stage.

Our Spring edition of *Infantry* features articles from some of the most experienced and skilled leaders in the Infantry Branch today that cover a spectrum of topics, ranging from discussions on Transformation-in-Contact (TiC) initiatives to ways to improve training for large-scale combat operations. Three articles that I'd like to highlight are "Move Further, Mask Emissions, Make Explosions" by LTC D. Max Ferguson; "Trailblazers of Tomorrow: The Evolving Legacy of Pathfinder Operations" by LTC Chaveso Cook, LTC Michael Hamilton, and MAJ Jessica Colsia; and "Managing Chaos at the Brigade Combat Team" by MAJ John Tydingco.

LTC Ferguson's article examines how light infantry units at the 10th Mountain Division are preparing to win tomorrow's wars. As TiC units like the 10th Mountain's 3rd Brigade experiment with the latest advancements in technology and force design, "some time-honored light infantry features have renewed advantages in the technologically enhanced battlefield." LTC Ferguson argues that Soldier endurance, deliberate emissions control, and well-placed high explosives will be critical for rifle platoons and squads in the next conflict.

"Trailblazers of Tomorrow" discusses the history of Army pathfinders and how pathfinder operations have evolved over the years. The article also offers a fresh approach to how pathfinders could be utilized in future fights to include multidomain operations. The introduction of technological advancements such as unmanned aerial systems provide pathfinders with enhanced intelligence and reconnaissance capabilities, but they should also be prepared to fight under degraded conditions. Pathfinders' essential skills of navigation, communication, and coordination will always be vital.

Lastly, "Managing Chaos at the Brigade Combat Team" explores various techniques that units can employ to stay at peak readiness and accomplish numerous tasks and no-fail missions effectively. The concepts of "P2P" and fighting product development are spot-on and can benefit any operations team working in a brigade combat team with a high operational tempo.

As you read through this edition, I encourage you to try and adopt some of these shared lessons at your unit. Professional discourse is critical in our branch, and we must continue to learn from one another to stay ahead of the curve. I hope that you enjoy the Spring edition of *Infantry* and take time to celebrate our 250th birthday on 14 June!

I am the Infantry! Follow Me!

A painting by Edwin Austin Abbey depicts Baron von Steuben drilling American recruits at Valley Forge in 1778.

14 June 1775 — 250th Anniversary of the Infantry and the U.S. Army

DR. DAVID S. STIEGHAN

This year, the U.S. Army Infantry Branch celebrates 250 years since its creation by the 2nd Continental Congress. Several events commemorating the anniversary are planned throughout the year at Fort Benning, GA, and around the world by infantry units.[1]

Upon receiving the news that New England militia resisted British regular troops at Lexington and Concord, MA, the 2nd Continental Congress, meeting in Philadelphia, decided that the rebels required a formal military organization. On 14 June 1775, Congress passed an act creating a "Corps of Riflemen" to act as skirmishers and light infantry to scout and screen in front of the main army in the field. The next day, the representatives appointed George Washington as Commander in Chief and directed all Patriot efforts to support the American forces surrounding Boston. These riflemen served as the first formal unit of the Revolutionary Army and ensured that the first troops in the American Army were Infantry Soldiers.

Wednesday, 14 June 1775

The resolutions being read, were adopted as follows:

Resolved, That six companies of expert riflemen, be immediately raised in Pennsylvania, two in Maryland, and two in Virginia; that each company consist of a captain, three lieutenants, four serjeants, four corporals, a drummer or trumpeter, and sixty-eight privates.

That each company, as soon as completed, shall march and join the army near Boston, to be there employed as light infantry, under the command of the chief Officer in that army.

That the pay of the Officers and privates be as follows, viz. a captain @ 20 dollars per month; a lieutenant @ 13 1/3 dollars; a serjeant @ 8 dollars; a corporal @ 7 1/3 dollars; drummer or [trumpeter] @ 7 1/3 doll.; privates @ 6 2/3 dollars; to find their own arms and cloaths.

That the form of the enlistment be in the following words:

I ____ have, this day, voluntarily enlisted myself, as a soldier, in the American continental army, for one year, unless sooner discharged: And I do bind myself to conform, in all instances, to such rules and regulations, as are, or shall be, established for the government of the said Army.[2]

Originally, the congress specified that the rifle regiment comprise six companies from Pennsylvania and two each from Maryland and Virginia; however, the desire to march north by American riflemen resulted in 13 companies being created by the time the long hunters arrived around Boston.

The recruits for the new command applied for enlistment in a unique manner. Those appearing for muster brought

their own rifles and ammunition and wore their own hunting "cloaths." Handmade by riflesmiths, their weapons required custom bullet molds as they ranged from .40 to .80 caliber. In a variation of the local "rifle folic" matches held along the frontier, communities held rigorous competitions to select the best of the regional shooters. To gain acceptance in the rifle companies, each rifleman had to fire at a human-sized target from 100 yards away. Many of the frontiersmen easily performed this feat, so many companies marched with more than the 100 Soldiers specified.

On the outskirts of many towns on the route to Massachusetts, the recruits held rifle demonstrations to showcase their marksmanship skills. For hunters and townspeople, the accuracy of the shooting far surpassed others' ability with musket or fowling piece. The feats of accuracy and range impressed the citizens providing food and drink to the new Whig warriors as they marched to join the volunteers surrounding the British Regulars in Boston.

Marching overland to join in the Siege of Boston, General Washington welcomed the frontiersmen and planned to use them as sharpshooters and to patrol and raid around the enemy. Within months, the Pennsylvania companies combined to create a regiment, and other volunteer rifle companies took their place. The regiment grew as states raised additional companies, and the long-term unit commander, Daniel Morgan, led a battalion of these marksmen into Canada in the fall of 1775. Though the Patriots failed to win over the largely French colonists in the north and defeat the British garrisons around Quebec, the force returned and joined the rest of the Continental Army facing British and Hessian mercenary troops of the Crown around New York City in 1776.

Around the time that Washington's Army fought the battles of Long Island, Brooklyn Heights, Fort Washington, and more, the troops listened as leaders read a draft of the Declaration of Independence. These Soldiers realized that they no longer struggled only for their rights as British citizens but fought for the independence of a new nation. Their strengthened resolve kept the Patriots in the Army through a series of defeats from New York, across New Jersey, and around the capital of Philadelphia. Just as Soldiers' enlistments approached their end, Washington ordered the Army to cross the ice-choked Delaware River in the dark to capture a Hessian detachment at Trenton. Returning across the river a few days later by another route, Washington led the rejuvenated troops to capture the British supply depot at Princeton, NJ. While many of the victorious troops returned to their homes after valorous service, others reenlisted and joined new recruits to continue the fight to free America from British rule.

The Rifle Regiment fought in battles for independence from Saratoga, NY, through Cowpens, SC, to the last major battle at Yorktown, VA. Used as skirmishers in front of the battle line, the riflemen conducted patrols and raids, serving as the first United States Rangers. The 2nd Continental Congress founded other specialized units that evolved into the other branches now serving in the U.S. Army. While 14 June is proudly recognized as the birthday of the Army, the Corps of Riflemen set the precedent of the Infantry serving as the first branch of the U.S. Army.

Notes

[1] To access U.S. Army Infantry School official social media accounts, visit: https://www.facebook.com/usarmyinfantryschoolUSAIS/ and https://www.instagram.com/usarmyinfantryschool/.

[2] *Journals of the Library of Congress, 1774-1789, Volume II, 1775, May 10-September 20*, Library of Congress, edited from the Original Records in the Library of Congress by Worthington Chauncey Ford, chief, Division of Manuscripts, (Washington, D.C.: Government Printing Office, 1905), 90, https://tile.loc.gov/storage-services/service/ll/llscd/lljc002/lljc002.pdf.

Dr. David S. Stieghan serves as the U.S. Army Infantry Branch Historian at Fort Benning, GA. His published works include editing the reminiscences of Doughboys in World War I, *Over the Top!* and *Give 'Way to the Right!*

NGSW in E3B — ***The 1st Mobile Brigade "Bastogne," 101st Airborne Division (Air Assault) has taken a significant leap forward in modernization with the fielding of the Next Generation Squad Weapon (NGSW). The NGSW's XM7 and XM250 variants boast 6.8mm cartridges, providing Soldiers with a critical advantage on future battlefields: increased range and punching power. As part of the Army's Transformation in Contact and modernization initiatives, Bastogne Soldiers have been equipped with the NGSW for several months. Recently, they participated in Expert Infantryman, Soldier, and Field Medical Badge (E3B) testing at Fort Campbell, KY, from 3-7 February. This marked the first time Soldiers were assessed on their ability to employ, troubleshoot, and operate the XM7 and XM250 as part of E3B testing. The successful execution of the testing required close coordination between the 1/101 E3B committee and the badge committees to ensure that all lanes met the required standards. (Photo by SGT Jewell Fatula)***

Move Further, Mask Emissions, Make Explosions

LTC D. MAX FERGUSON

This article examines how light infantry units like the 10th Mountain Division maximize the lethality of rifle platoons and squads conducting dismounted operations on the modern battlefield.

The essential experience of a rifleman is largely the same from 1775 to today. For 250 years, American Infantry Soldiers have fought to protect and defend the American people. For two and a half centuries, American Infantrymen have marched to battle in leather boots with rifles pressed against their shoulders. Every Infantry Soldier from 1775 to 2025 has shaken their canteen at the end of a long march, hoping there's an extra swig of water left. In all these years, they've all slept in mud, waded through swamps, shivered, and bled in the pursuit of our enemies.

Soldiers in the 10th Mountain Division know these aspects all too well. Training in northern New York and Louisiana keeps us ready to fight in the "*heat and cold of snow.*" Our heritage — from battles on Mount Belvedere and Riva Ridge 80 years ago to Somalia in 1993, to Afghanistan, Iraq, and Syria in recent years — reminds us of what it takes to fight "*where others dare not go*."

These shared hardships continue to calcify the bonds of Infantry from across generations because boots, rifles, mud, thirst, and blood are timeless features of the close fight. But ground warfare is changing — the *way* we fight is changing.

Transformation in Contact (TiC) units like the 3rd Light Brigade Combat Team, 10th Mountain Division are helping the Army experiment with the latest technology, equipment, and formation designs. But transformation comes in many forms. Sometimes the most impactful advancements come from changes in habit and mindset, not just equipment. Transformation is as much about shaping culture as it is about updating kit.

Soldiers from across the 10th Mountain Division compete in the second D-Series XXIV on 19 January 2024 at Fort Drum, NY. (Photo by SPC Kaylan T. Joseph)

Being the "Blue Collar Division" generates some inherent advantages for the 10th Mountain. Not always having priority for the latest equipment and newest fieldings drives us to build lethality with classic means. What's old may not be completely new again, but some time-honored light infantry features have renewed advantages in the technologically enhanced battlefield.

What this article calls for isn't really about transformation (at least not in the TiC brigade sense). This is about **adaptation**. It's less about costly equipment or advanced technology. It's about shifting the mindset and culture of the light infantry to thrive in the next major war.

Three principles that will maximize light infantry lethality on the modern battlefield are for rifle squads and platoons to:

Move further. Mask emissions. Make explosions.

Moving further is about ***endurance*** — both in physicality and sustainment — to enable grueling movements up, over, into, and through restrictive terrain. *Moving further* is about infantry forces remaining self-reliant and fighting out of our rucks for 48-72 hours without resupply. It's about carrying what you NEED and ruthlessly shedding unessential weight. Every pound they carry will matter, whether that weight is in their kit, in their ruck, or strapped to their bodies.

Moving further into rugged, austere, and isolated terrain requires the Infantry to cut our sustainment requirements. The U.S. military's sustainment capacity throughout the War on Terror was incredible. The battlefield was littered with thousands of bases, combat outposts, and other nodes of tactical infrastructure, ensuring steady access to food, fuel, ammunition, and medical evacuation. Even when improvised explosive devices turned ground corridors impassable, we retained uncontested control of the air. Veterans of the next conflict will likely have the exact opposite experience.

Sustainment will be constantly challenged in the next major war. The availability of supplies, repair parts, replacements, and medical evacuation will be a major challenge. Light infantry forces will find themselves isolated from their supply lines much like the 101st Airborne Division in Bastogne. In such circumstances, self-reliant infantry formations will need to extend their operations by sourcing supplies and equipment with what they find on the battlefield, including food, vehicles, and fuel.

Soldiers from across the 10th Mountain Division climb Lower Wolfjaw Mountain near the Adirondack Mountain Range as part of Warrior Alpine Readiness Week on 8 August 2024. (Photo by SPC Elijah Campbell)

There are a multitude of resupply options that also reduce our reliance on ground logistics and reduce risk to our aviation assets. These include expanding our proficiency with Low Cost Low Altitude (LCLA) aerial delivery systems and increasing our applications of unmanned drones to resupply troops with ammunition, batteries, and food.

Future fights in austere and isolated terrain will also limit our ability to evacuate casualties within the "Golden Hour" and have them on a surgical table within 60 minutes of being injured. Infantry platoons and companies will rely on methods of prolonged casualty care and administering whole blood from their internal walking blood banks to keep their wounded alive long enough to orchestrate a deliberate medical evacuation plan — likely hours after a battle ends.

Moving further also necessitates a shift in how we approach physical fitness to a distinct mindset of building physical endurance. High-intensity and mass-building workouts are easier to embrace, but sustaining low-intensity actions for hours on end will be the key to light infantry employment in a major war. Light infantry will win fights because of their distinct ability to move for extended periods — under load — as small units across *rugged and austere terrain*. The Expert Infantryman Badge 12-miler is a deceiving benchmark for our capacity to move dismounted. Endurance for the light infantry means squads going up, over, into, and through restrictive terrain, where you're lucky to manage 1-2 kilometers per hour — day after day.

Endurance requires pushing our physical training to extended periods where the body experiences caloric deficit: to learn what it feels like to *bonk* — for individual Soldiers to detect and anticipate that teetering cliff of stamina and learn how to keep their body hydrated and fueled throughout a continuous activity. That is what the 10th Mountain Soldier experiences while conducting alpine training in the Adirondack High Peaks in northern New York, where it takes 6-12 hours to cover 12-16 miles in the backcountry to reach a summit and back. The mountains have a humbling way to expose the distinction between being fit and having endurance. Therefore, repeated exposure to caloric deficit teaches Soldiers how to avoid that cliff and keep the body performing over extended periods of activity.

Another aspect of *moving further* is remaining vigilant on the constant struggle for individual Soldier load. Water becomes one of the greatest weight factors. Simple habits like self-procuring water and proficiency in caching supplies improve the self-reliance of small units in isolated terrain. Climbing in the Adirondacks allows 10th Mountain Soldiers to routinely use individual water filters to procure water instead of carrying it. It is not viable to carry enough water for a 72-hour mission. The more we embrace basic habits like water procurement as a common practice for our light infantry formations, the more we shift our formations to self-reliance and expand their endurance.

The weight of batteries remains the other constant struggle for our dismounted forces, especially as more and more advanced battery-powered systems become available. Any system that requires power has a compounding impact on the Soldier: the weight of the batteries/hardware and the subsequent need to resupply additional power and fuel to keep them running.

Some new equipment is essential, such as the dual-tube PSQ-42 Enhanced Night Vision Goggle-Binoculars (ENVG-B) we have in the 10th Mountain Division. Their thermal outline features are incredible, but ENVG-Bs require four lithium AA batteries for approximately 8 hours of run time, which means each rifleman needs to bring 16 lithium AA batteries just to power their night vision for three nights.

A Soldier from the 2nd Brigade Combat Team, 10th Mountain Division adjusts his night-vision goggles during the Cold Weather Indoctrination Course on 8 February 2025 at Fort Wainwright, AK, ahead of Arctic Forge 25. (Photo by PFC Makenna Tilton)

However, the number of radios we carry in a platoon or squad is certainly something to revisit after our habits from the last 20 years of combat. For the radios we do carry, limiting how long they remain on reduces the amount of power consumed, which then reduces the frequency for resupply. And as we'll discuss next, reducing radio emissions also reduces the electronic signature of our dismounted formations.

Masking emissions takes a renewed look at the different forms of contact and how we see ourselves across the ***electromagnetic spectrum*** (EMS). This includes developing a sophisticated understanding of our visual, radio, and thermal signatures so we can understand how our peer adversaries see – detect – target – and anticipate our movements beyond what we can readily see with the naked eye. Our goal should be to adapt our current habits, so we emit less while still maintaining steady communications as we maneuver dismounted during both day and night.

On the modern battlefield, the invisible forms of contact are among the most dangerous. "If you're seen, you're dead" is the message being quietly noted out of the war in Ukraine. Whether it's cheap commercial drones with thermal cameras, ground-based electronic communications sensors, or aerial reconnaissance platforms, our ability to hide on the battlefield is shifting under our feet.

Though our communication systems are more integrated and enhanced than ever before, their distinct radio wave signatures become a major vulnerability for enemy detection.

There are two fundamental approaches to masking radio emissions: either 1) hide in plain sight by flooding the area with decoys or transmitting within the natural electronic clutter of a populated area or 2) simply emit less signals. We are accustomed to such dichotomies in the Army: We can either "breach *or* bypass" when facing obstacles or "dig down or build up" when making a fighting position. Masking radio emissions from a capable adversary shouldn't be an either/or option: We can both "dig down *and* build up" by increasing the surrounding clutter with decoys AND transmitting less. Neither countermeasure is sufficient on its own to mask the signature of our dismounted troops against the multiplying means available to detect our forces. Applying both approaches in tandem offers the greatest advantage to our dismounted formations.

Transmitting less includes embracing the old method of using communication windows. Adapting this old practice to the distinct capabilities and wave forms of our various comms platforms today makes applying comms windows more nuanced than it once was, but the underlying principle of embracing comms windows remains the same. We developed a "nicotine addiction" to real-time data and communications after 20 years of fighting in the Middle East. The next war will not let us maintain those old habits of transmitting radio waves with impunity.

Radio emissions are not the only way to readily spot maneuver elements on the modern battlefield. The ever-increasing access to thermal cameras on drones and ground systems levels the playing field for our adversaries to detect our forces.

Thermal masking is a bedeviling issue, especially for maneuver forces, but we cannot ignore it. We will never be able to hide completely, but there are ways to make a platoon look like a squad or exploit a complacent enemy operator into mistaking a small element for something less than what it is. Therefore, the goal of thermal masking isn't to become invisible to thermal detection, just reduce the size or purpose of a formation by either fooling the sensors or their operators.

Opportunities to partner with the U.S. Army Combat Capabilities Development Command (DEVCOM) through our innovation labs make it possible for us to experiment with different thermal-masking techniques to reduce the signature of our dismounted troops. Camouflage nets work particularly well for reducing thermal signatures. Even a poncho "hooch" offers helpful protection from overhead thermal detection (in addition to respite from the rain). The key is to create overgarments that dissipate body heat while retaining functionality to move over and through restrictive terrain.

The modern battlefield will be unforgiving to units that ignore the increasing threat of detection across the electromagnetic spectrum where our adversaries will likely fire on signatures alone. The light infantry is uniquely capable of operating with a significantly reduced EMS signature compared to the rest of the Army. Every effort to minimize our electronic signatures reduces the likelihood of being detected by electronic sensors. Signal-emitting decoys will help. But like any cat-and-mouse game, our decoys only work until the enemy learns how to filter out fake emissions.

Emitting less signals will become a distinct advantage for light infantry units on the modern battlefield. Masking our emissions will help our forces to close with the enemy. The final step is to destroy them with fires.

Making explosions is about embracing all shrapnel-producing systems available to a rifle platoon: M3A1 Carl Gustaf Recoilless Rifles, M320 Grenade Launchers, Javelins, Stingers, dismounted mortars, and loitering munitions.

Marksmanship will always be critical, but we need to reexamine what systems we, as the Infantry community, covet. We put so much emphasis on the weapons we know (M4, M240, M249), but well-placed high explosives can shut down fights. Too often, we revert our focus on building expert marksmen with our M4s and M240s and only familiarize ourselves with our high-explosive (HE) weapons. The true lethality of the light infantry comes from delivering high explosives, not ball rounds. An old mantra echoed by leaders like COL (Retired) Mike Kershaw recall, "make contact with small arms, then gain freedom of maneuver with your belt-fed weapons and kill the enemy with high explosives."

The options for dismounted elements to employ HE with precision are only expanding. The inclusion of loitering munitions like the Low Altitude Stalking and Strike Ordnance (LASSO) and first-person view attack drones. These types of systems expand the ability of small formations to deliver HE at extended range (often beyond what a battalion 120mm mortar system can range) at pinpoint targets, both stationary and moving.

As global conflicts limit our supply of full caliber HE rounds to train with, greater access to simulated systems and lower cost training munitions will make a difference. Installations need virtual trainers for our HE weapons systems — including the M3A1 with Fire Control System 13 optic, the M320, and loitering munitions — to allow Soldiers to experience the full arsenal of munition types and enable repetitions at firing both day and night at multiple target types in various firing positions.

The M3A1 with its integrated fire control system optic is the new crown jewel already sitting in infantry brigade combat team arms rooms. The new M3A1 is lighter, has extended range, better accuracy, and more munition options

Infantry Soldiers in the 3rd Brigade Combat Team, 10th Mountain Division fire anti-tank rounds during a live-fire exercise in Estonia on 13 November 2024. (Photo by SPC Trey Gonzales)

than the legacy M3 Carl Gustaf. There is a general lack of familiarity with the weapon across the infantry community. It is certainly more than a reloadable AT-4. The embedded computer in the fire control system with its internal range finder calculates everything from the distance, ambient temperature, and altitude along with the specific ballistics of every munition type to enable gunners to hit targets both day and night well beyond 1,000 meters. For moving targets, the optic will calculate and depict the necessary aim point for gunners to hit vehicles. Troops in defilade 2,000 meters away? There's airburst for that. Enemy sniper somewhere in a building? Take out a floor (or in some cases the entire building) with the anti-structural munition.

A Soldier assigned to the 19th Special Forces Group fires a Hero-120 loitering munition during a demonstration as part of Operation Summit Strike 24 on 20 November 2024 at Fort Drum, NY. (Photo by PFC Kade M. Bowers)

Some wider questions about our HE proficiency to review: How proficient are our M320 gunners at night? How often do our M3A1 Carl Gustaf antitank teams shoot their recoilless rifles (at both static and moving targets)? How often do our squad and team leaders practice call for fire? When can our Soldiers start training how to employ loitering munitions? We need to be more than familiar with the basic functions of our HE weapons systems for the fight ahead. *Making explosions* will be the essence of infantry lethality.

Shifting from familiarity to true proficiency with our HE systems requires the same approach to training with our M4s and crew-served machine guns. Primary and alternate gunners need repetitions at engaging select target types at various distances, in different firing positions, during both day and night, at both static and moving targets. For many HE systems, there are distinct munition types with multiple fuse settings. A couple rounds a year will never get our teams beyond basic familiarity.

True proficiency with HE also necessitates training practice rounds with both acoustic and visual signatures for gunners to train with. One of the reasons why the M320 remains underappreciated in our community is the prevalence of the underwhelming orange chalk rounds for training (day only). The new 40mm low visibility training rounds being fielded will greatly enhance M320 marksmanship going forward. Overall, not enough of our gunners have fired the host of available munitions in the M320 or M3A1. Those who get to fire 40mm HE gain a new appreciation for what the M320 is capable of in a firefight. And obliterating a fortified bunker with 84mm HE from the Carl Gustaf — at night, hundreds of meters away — will make a convert out of any rifleman. While the M240 will always have a place in our Ranger hearts, it's time for an HE revolution in the light infantry culture.

Light Infantry Lethality

Armored brigades, fighting from platforms like the M1 Abrams and M2 Bradley, are rightly seen as the most lethal formations in the U.S. Army. Certainly, nothing matches the speed, protection, and firepower of an armored brigade in open terrain. Yet there are clearly conditions when armored units historically lose the advantage — when sustainment is contested; when mud begins to swallow tracks, confining vehicles to the roads; and when the fight shifts to rugged terrain, among dense forests, rubbled cities, or up cragged rock. These very features — the mountains, the swamps, the cities and sewers — all become the infantry's protective platform to fight from.

The very conditions that reduce the lethality of heavy formations are the same conditions that amplify the potential lethality of the light infantry. Small formations that are buried deep in unforgiving terrain, emit minimal signatures, and wield high explosives will have a dominant effect for the U.S. Army. American rifle squads and platoons that ***move further***, ***mask emissions***, and ***make explosions*** will decimate our opponents in the next war, just as American Infantry Soldiers have done since 1775.

Author's Note: *This article touches on a couple ways for the light infantry to maintain the advantage in a large-scale combat operations fight. It concentrates on habits and mindset shifts with limited expectation for material solutions. As a catalyst paper, it was written to spark discussions. There is no difference whether readers agree with any of the suggestions above or not if it helps provoke thought. It was written for a distinct infantry audience but certainly touches on issues that apply across the Army, not just for combat training center rotations but for the fight that awaits us all.*

LTC D. Max Ferguson currently commands 2nd Battalion, 14th Infantry Regiment, 2nd Brigade Combat Team, 10th Mountain Division. He is a career Infantry officer with six deployments to Iraq, Afghanistan, and West Africa with conventional and special operations units. He recently earned a PhD in public policy through the Army as an Advanced Strategic Planning and Policy Program Goodpaster Scholar.

Reconnaissance in the Light Brigade Combat Team

CPT SEAN PARROTT

The Army's Transformation in Contact (TiC) initiative leverages emerging technology and future-forward force design to transition existing brigade combat teams (BCTs) into agile, hyper-enabled fighting formations.[1] As the character of war has shifted, the Army has begun to adapt its BCT structure to better suit a division-centric fight. In 2024, the 25th Infantry Division's 2nd Brigade Combat Team transitioned from an infantry brigade combat team (IBCT) to a light brigade combat team (LBCT-prototype). This experimentation is currently ongoing, with a Joint Pacific Multinational Readiness Center (JPMRC) rotation executed in October 2024.[2] Initial returns are promising, but past and present training observations highlight challenges the LBCT has in fighting without a dedicated reconnaissance capability.

The LBCT is designed to be a lethal and adaptable formation that can fight in heavily restricted terrain. Traditional enabling assets like the brigade engineer battalion (BEB), cavalry squadron, and brigade sustainment battalion (BSB) have been restructured or eliminated entirely to lighten the formation and unburden the brigade staff. Building a more robust enabling capability at the division level facilitates the Army's desire to return to it as a unit of action while allowing the brigade to focus on training and employing its rifle companies. The rifle battalion has also not been immune to change. Battalion scouts and mortars were combined with the remnants of the cavalry troop to form battalion-level cross-domain effects companies (CDEs). These companies have been employed as force generators, training specialty platoons that are attached to rifle companies for operational control. CDEs combine robotics and autonomous systems with traditional reconnaissance platoons to form lethal and highly enabled teams. The LBCT rifle company has more assets than ever to sense, see, and strike the enemy. Equipped with Infantry Squad Vehicles (ISVs), the LBCT's infantry formations can rapidly move combat power around the battlefield while providing more off-road capability than legacy vehicles.

The transition from a brigade cavalry squadron to three battalion CDEs leaves the brigade commander short of intelligence capability. The loss of the military intelligence company (MICO) and its Shadow tactical unmanned aerial system (UAS) platoon leaves the brigade with no organic ability to set conditions for the rifle battalions' success. To answer priority intelligence requirements (PIRs), the commander must task a subordinate CDE to act as a reconnaissance element, diverting crucial combat power from its parent battalion. This gap in manned reconnaissance also exists at the division level and has compounding effects in the LBCT construct. To address this gap, both LBCT prototypes have stood up provisional recon-

Soldiers assigned to 1st Battalion, 27th Infantry Regiment, 2nd Light Brigade Combat Team (Prototype), 25th Infantry Division, use a drone to survey the area during Joint Pacific Multinational Readiness Center 25-01 at Pōhakuloa Training Area, HI, on 9 October 2024. (Photo by SFC Ryele Bertoch)

naissance companies to answer brigade PIRs directly. The 2nd Mobile Brigade Combat Team (MBCT), 101st Airborne Division (Air Assault) has successfully tested a multi-functional reconnaissance company (MFRC), while 2/25 deployed its reconnaissance and strike company (RSC) at the most recent JPMRC iteration.[3] These concepts mirror previous experimentation conducted by 2/25 during fiscal years 2022 and 2023 at Twentynine Palms, CA, and Japan. Combining electronic warfare (EW), UAS, and traditional human reconnaissance techniques can have a tremendous effect in the brigade fight. The Army should consider standardizing this structure across its TiC formations to speed the development of tactics, techniques, and procedures, and the acquisition of equipment for reconnaissance companies. In this article, I will articulate a structure for a multidomain reconnaissance company (MRC) that can answer PIRs in the brigade deep area while enabling rifle battalions to succeed in the close fight.

The Multidomain Reconnaissance Company

The MRC consists of a company headquarters, a strike platoon, and four multidomain reconnaissance teams (MDRTs) that can operate independently for extended periods of time. This structure allows the brigade staff flexibility during transitions, as well as the ability to cover a larger frontage than a single CDE can at present. The MRC headquarters includes both a command and control (C2) element and a liaison capability. The C2 package should have both dedicated communications and intelligence analysis capabilities to help "make sense" of collections from the MDRTs. Depending on the situation, the headquarters element can operate autonomously or serve as a reconnaissance operations center (ROC) in the brigade command post to coordinate and deconflict reconnaissance operations. The strike platoon is armed with loitering munitions and medium-range reconnaissance (MRR) UAS. Its role is to independently find and attrite targets in the brigade deep area in support of the brigade high-payoff target list. The MRC headquarters serves as a crucial link between the strike platoon and the MDRTs in the field.

Each MDRT is a self-contained element capable of operating in the brigade deep area to answer PIRs and facilitate targeting of high-payoff targets. The team consists of 8-10 personnel and is able to deploy in two ISVs, using EW collection and short-range reconnaissance (SRR) UAS to locate the enemy in multiple spectrums. Previous experimentation in this area has identified the importance of training to maximize multidomain capabilities. Merely establishing habitual relationships between EW specialists and conventional scouts is not enough. MDRT leadership should understand the best way to employ their EW assets, and EW Soldiers must become proficient in fieldcraft to avoid becoming a liability to survival. Trust and familiarity are best built through an organic training relationship. Marine Corps radio reconnaissance teams (RRTs) provide a good model for training and equipping this capability. The mobility capability of the MDRT allows for increased endurance over legacy reconnaissance formations like the dismounted cavalry troop. An MDRT in support of a Marine division emplaced and fought for an entire battle period (over five days) without external sustainment during a maneuver warfighting exercise (MWX) in 2022.[4] This feat was repeated in harsh sub-Arctic conditions during Artillery Relocation Training Program (ARTP) 23.4 in Hokkaido, Japan. Multiple MDRTs operated in the enemy rear area to locate and destroy High Mobility Artillery Rocket System (HIMARS) launchers, C2 nodes, and other high-value assets.[5] In summary, the MDRT offers a measure of self-sufficiency that helps the brigade combat team set conditions for its main effort (often a rifle battalion) while freeing up critical logistics assets for other missions. As expected, however, these types of operations rely on proper manning and training.

Training the Multidomain Reconnaissance Company

The MRC mission set is complex and often highly ambiguous in nature. The Soldiers assigned to the MRC should be selected for assignment. The LBCT has no shortage of highly qualified 19Ds and 11Bs with experience in reconnaissance operations, and only the best should be chosen to serve in the MRC. Officers and NCOs should be second-time leaders with proven experience leading reconnaissance missions. Most BCTs already have informal processes for filling out their scout platoons, and those populations are ideal funnels to the MRC. EW and UAS operators need to undergo the same screening process and be selected for both physical fitness and mental agility. The MRC needs Soldiers comfortable operating in highly dynamic environments, as no two missions will look the same. MRC commanders will need to aggressively seek out training opportunities for MDRTs to include working for organizations outside the LBCT. One of the biggest lessons we learned during our experimentation was the friction that comes with operating in others' battlespace. The MRC will often be the first contact point between the brigade and other formations, especially during transitions. The division artillery brigade (DIVARTY), combat aviation brigade (CAB), and intelligence and electronic warfare battalion (IEW) make natural partners.

Coordination requires communication. The MRC and its teams must master the full spectrum of communications technologies. High frequency (HF) radio is one of the most powerful yet underused capabilities in a spectrum-contested environment. Proper use of HF allows the MDRT to push voice, text, and data to higher and adjacent units while minimizing electromagnetic signature. The Army should also seriously look at procuring joint communications capabilities like Link-16 interoperability to allow the MDRT to integrate into kill webs. The Reconnaissance and Surveillance Leaders Course (RSLC) already offers critical training in reconnaissance and training techniques, and it should be a prerequisite for all members of the MRC. If fire supporters and joint terminal attack controllers (JTACs) are not assigned to the MDRT, the Joint Fires Observer Course (JFOC) can help bridge that gap. In previous experimentation, region-specific training like the Cold Weather Leader Course (CWLC) and

the Jungle Operations Training Course (JOTC) have proven to be force multipliers.

Employing the Multidomain Reconnaissance Company

To maximize utility, the MRC requires considered employment. The brigade staff must nest the MRC into its intelligence collection plan, though the endurance of the formation offers plenty of post-deployment flexibility. Additionally, the MRC requires patience and autonomy from leaders at echelon. Reconnaissance formations develop the situation in accordance with the commander's reconnaissance guidance and should be afforded the time to emplace, collect, and report intelligence. In competition, the MRC can partner with the reconnaissance elements of allies and partners, a mission that was formerly the domain of the cavalry squadron. In conflict, the MRC offers diverse capabilities.

Soldiers from the 2nd Light Brigade Combat Team (Prototype), 25th Infantry Division travel by Infantry Squad Vehicle during Joint Pacific Multinational Readiness Center Rotation 25-01. (Photo by SSG Katelyn Vazquez)

We see three major missions for the MRC that can help guide the eventual creation of a mission-essential task list (METL). The first is multidomain area reconnaissance. The MDRT can answer PIRs aligned against a specified area, based on terrain or enemy activity. In this task the team conducts reconnaissance of the area in both the physical and electromagnetic spectrum, using small UAS and other cross-domain capabilities to develop a robust picture of the named area of interest (NAI). The second task is to conduct an anti-armor screen. The nature of the MDRT's mobility platform, coupled with the devastating killing power of modern anti-tank weapons, allows the team to lock down key ground lines of communication (GLOCs). During MWX, one eight-man MDRT used Carl Gustafs and Javelin anti-tank weapons to interdict and fix an entire light armored reconnaissance (LAR) company in a key mobility corridor. The MDRT in conjunction with the company's strike platoon can attrite enemy motorized and mechanized formations in advance of brigade defensive and offensive operations. Finally, the MRC can synchronize multidomain effects at the tactical level. Previous experimentation saw the company operating as a hub for multiple cross-domain "spokes," including tactical cyber operations, organic EW effects, and joint munitions delivery. As the forward brigade element, the MRC is in the best position to help coordinate and apply certain kinetic and non-kinetic effects. This last task needs further refinement but will only become more critical as multidomain capabilities are fielded to progressively lower echelons.

Conclusion

The light brigade combat team is a long-needed evolution of the IBCT construct. The character of war is changing, and Transformation in Contact acknowledges this reality, focusing on the future while retaining the core focus of the infantry brigade to close with and destroy the enemy. Transformation offers an opportunity to holistically rethink what reconnaissance formations look like at echelon. Units across the Army are conducting informal campaigns of experimentation to understand the best structure for the future reconnaissance company. The multidomain reconnaissance company concept is born from more three years of trial and error with lessons learned through training in the desert, the jungle, and the sub-Arctic. The interwar period has historically been the most fertile ground for innovation and development of new fighting concepts. TiC offers the Army a chance to build a lethal and adaptive reconnaissance formation that maximizes the potential of its newest warfighting formations.

Notes

[1] Ashley Roque, "Army Using 'Transformation in Contact' to Make Case for New Weapons, Formation Decisions," *Breaking Defense*, 27 August 2024, https://breakingdefense.com/2024/08/army-using-transformation-in-contact-to-make-case-for-new-weapons-formation-decisions/.

[2] SSG Tiffany Banks, "US and Multinational Partners Prepare for Largest Indo-Pacific Army Exercise," U.S. Indo-Pacific Command, 24 October 2024, https://www.pacom.mil/Media/News/News-Article-View/Article/3930566/us-and-multinational-partners-prepare-for-largest-indo-pacific-army-exercise/.

[3] Sam Skove, "Army Puts New Unit Loaded with Cutting-Edge Tech to the Test," *Defense One,* 22 August 2024, https://www.defenseone.com/technology/2024/08/army-puts-new-unit-loaded-cutting-edge-tech-test/398980/.

[4] Anthony Perez and Sean Parrott, "The Future of Army Reconnaissance: Lessons from a Marine Corps Exercise in the Mojave Desert," Modern War Institute, 31 March 2023, https://mwi.westpoint.edu/the-future-of-army-reconnaissance-lessons-from-a-marine-corps-exercise-in-the-mojave-desert/.

[5] A.J. Vitanza and Sean Parrott, "The Joint Reconnaissance Strike Complex: Marine and Army Experimentation in the First Island Chain," Modern War Institute, 16 August 2024, https://mwi.westpoint.edu/the-joint-reconnaissance-strike-complex-marine-and-army-experimentation-in-the-first-island-chain/.

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Building Maneuver Live Fires for Company-Grade Officers:

What I Learned From My Time in the Ranger Regiment

CPT PATRICK KNERAM

> *"Our training must take into consideration that the enemy will fight back, that he is attempting to kill us while we are going through our own motions. We must not fall into this trap; we must understand the fundamentals of combat and train flexibility."*
>
> **— Regimental Command Sergeant Major (Retired) Michael T. Hall,**
> "Fundamentals of Combat (And How to Train for It)"

Introduction: A Lesson from Ukraine

Shortly after the conflict in Ukraine began, a video surfaced on Twitter of Russian infantrymen attempting to cross a courtyard between two buildings. Unbeknownst to them, the Ukrainians had placed an armored vehicle overwatching the courtyard approximately 200 meters away. With no discernible security or overwatch of their own, the Russians took multiple casualties in the courtyard. Still without returning fire, another squad attempted to pull their fallen comrades to cover, taking further casualties. The video ends, reminding us that failure to enforce tactical fundamentals and train for realism can result in devastating losses.

A Ranger with the 3rd Battalion, 75th Ranger Regiment pulls security during movement to contact as part of a live-fire exercise at Fort Johnson, LA, on 1 December 2023. (Photo by MAJ Justin Wright)

A Ranger assigned to the 3rd Battalion, 75th Ranger Regiment, Fort Benning, GA, prepares to launch a first-person view drone on 15 October 2024. (Photo by SGT Paul Won)

The conflict in Ukraine has provided us many lessons on modern warfare to include the integration of technology and increasing imperative for survivability. However, many of these lessons come with stark reminders of the severe losses both sides suffer due to gaps in training and a lack of adherence to tactical fundamentals. As live-fire progressions remain our most effective training ground for combat, they must evolve to incorporate technology and innovation while reinforcing the foundational tactics and Soldier disciplines that are critical for success on the battlefield.

The Fundamentals of Combat

Like many units in the Army, the 75th Ranger Regiment focuses on its "Big 5" fundamentals: marksmanship, small unit tactics, casualty care, mobility, and physical fitness. Since the inception of the modern Ranger Regiment in the 1970s, these fundamentals have been the hallmark of battlefield success and saved countless Ranger lives. To enforce those principles, the 3rd Ranger Battalion designs its live-fire exercises (LFXs) to provide meaningful, repetition-based training grounded in the fundamentals of warfighting while mitigating risk through adherence to doctrine, regulations, and policy.

As combat experience diminishes across our formations, we have deliberately shifted toward a greater reliance on doctrine. This shift includes codifying our tactics, techniques, and procedures (TTPs) into our Ranger training circulars. This renewed emphasis on warfighting fundamentals and doctrine is evident in the way we design and execute our maneuver LFXs, ensuring they remain grounded in proven principles while adapting to an evolving battlefield.

Designing Realistic Live Fires

A well-designed LFX provides multiple options for tactical decision-making, such as flanking from either direction, establishing support-by-fire (SBF) positions at various locations, including intermediate positions, and employing different breaching methods. Selecting the right range and collaborating with range control to create larger or more adaptable maneuver boxes is essential for fostering this tactical flexibility. Without these options, executing units may start planning around range constraints instead of focusing on defeating the enemy. Maintaining an enemy-focused mindset throughout all training is critical to developing adaptable, combat-ready units.

Rangers execute a "no-look" blank or ultimate training munition (UTM) iteration prior to executing live-fire iterations. This allows units to conduct maneuver as close to their tactical plan as possible. The training officer-in-charge (OIC) and NCO-in-charge (NCOIC) then lead the safety walkthrough to ensure all Rangers understand their surface danger zones (SDZs) and range limitations. We account for safety and prevent deviation from range limits through concept backbriefs to the command team and observer/controllers (O/Cs). We also find ways to add complexity for the squad- and platoon-level leadership by adding elements of modern conflict like enemy electronic warfare (EW) and jamming, and the employment of unmanned aerial systems (UAS), counter-UAS, and loitering munitions.

Further methods we use to add realism include camouflaging targets to stress target identification, including sensitive site exploitation material tied to the scenario, and eliminating or minimizing any administration requirements from the training site. Finally, the 75th Ranger Regiment maintains an annual deviation through the U.S. Army Special Operations Command (USASOC) commanding general allowing maneuver up to 15 degrees from shoulder-fired semi-automatic weapons and automatic weapons on tripod or bipod. This added realism is only acceptable due to the frequency, quality, and intensity of the marksmanship training Rangers sustain. Ultimately, SDZs are the same in training as they are in combat. Every Soldier and leader should know

the SDZs of the weapons systems in their elements and be able to apply those to provide the best suppression possible for the maneuvering element.

Measuring Training Effectiveness: Assessing Ourselves

To provide better feedback and improve training outcomes, we take deliberate steps to remove some of the subjectivity from LFXs. Gone are the days of a quick leader huddle following a tough iteration, with a few "sustains" and "improves" that are typically lost on an exhausted audience. For instance, target hit counts can be used to evaluate the effectiveness of marksmanship and suppression, while timing critical portions of the operation can measure coordination and tempo. A SBF position should be judged not by how it sounds but by the tangible effects it produces on the battlefield. By grounding our assessments in measurable outcomes, we can deliver feedback that drives meaningful improvement and sharpen combat readiness.

Across the 75th Ranger Regiment, our guidance is that the traditional model of one-day live/one-night live iteration is plainly not enough. The goal of every exercise is to maximize the amount of training our units can get out of an event by "trimming the fat" around rehabilitation time, being deliberate with how we conduct our after-action reviews (AARs) and closely managing our execution timelines. This allows us to maximize the number of repetitions that Rangers get. We also save iteration time by starting the exercise from a platoon's last covered-and-concealed position, saving tactical movements for other exercises. Importantly, we garner support from our most-experienced NCOs from across the Regiment to serve as O/Cs to invest into coaching and mentoring at every echelon.

So, what separates a good live-fire execution from a great one? Often, it comes down to the ability and discipline of the platoon's newest Rangers. The difference lies in the details: Does the machine-gun team hit their targets on the first burst or the second? Does the Gustaf team achieve the desired effect with precision? Can a squad automatic weapon (SAW) gunner reliably fix malfunctions, both day and night? Are Rangers waiting passively for orders, or do they fully understand their purpose and proactively prepare for the next phase of the operation? Great Ranger platoons don't leave these skills to chance — they build on the fundamentals early and often. By the time they show up for maneuver LFXs, every member of the team is ready to execute with confidence and precision, ensuring the entire platoon operates at the highest standard.

Planning for Success: The Live-Fire Glide Path

Guided by the Eight-Step Training Model, Training Circular (TC) 3-20.0, *Integrated Weapons Training Strategy*, and Department of the Army (DA) Pamphlet (PAM) 350-38, *Standards in Weapons Training*, 3rd Ranger Battalion executes its planning glide path in the following order:

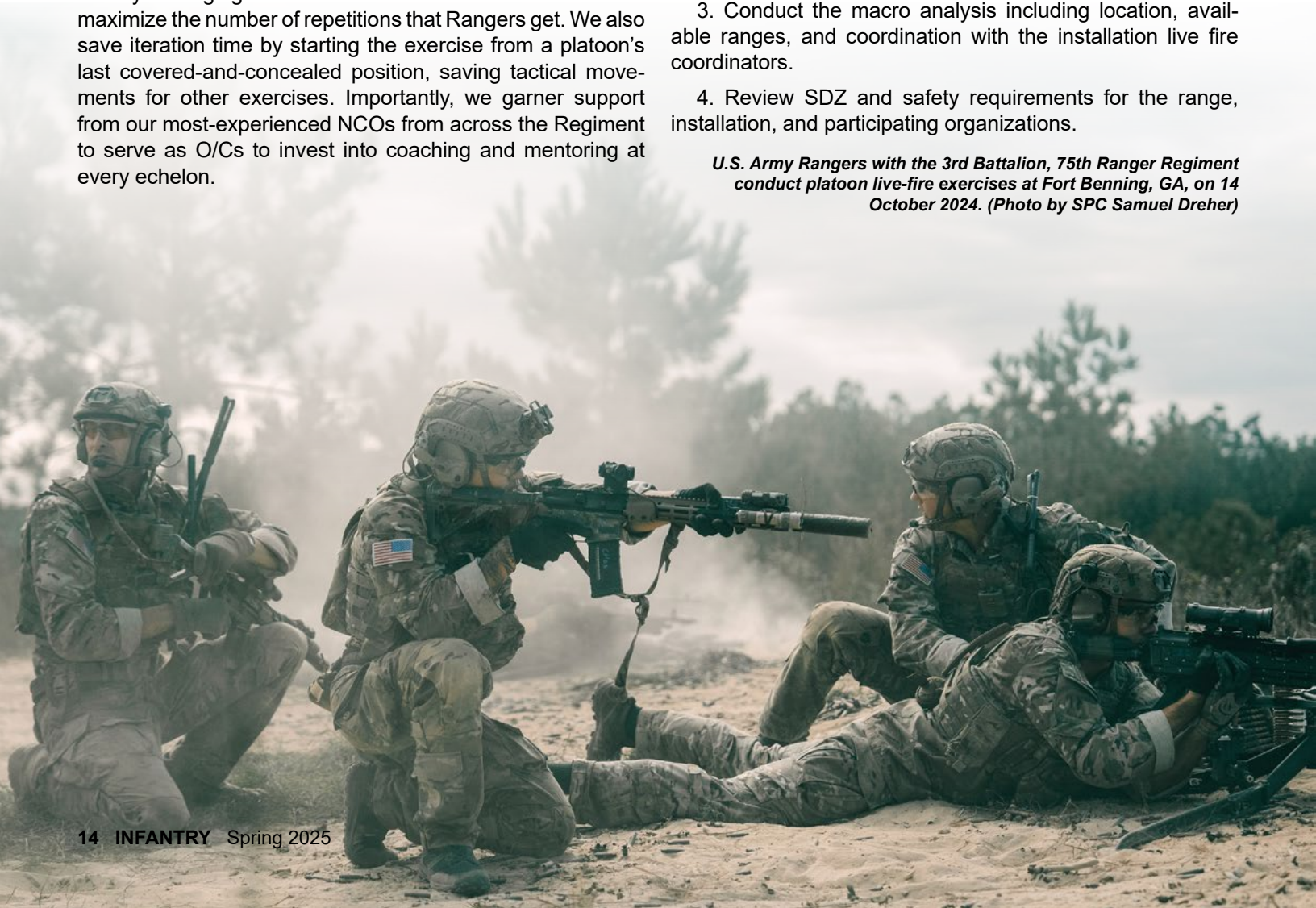
1. Receive command guidance on tasks to train.

2. Review previous AARs and solicit feedback from senior NCOs across the battalion.

3. Conduct the macro analysis including location, available ranges, and coordination with the installation live fire coordinators.

4. Review SDZ and safety requirements for the range, installation, and participating organizations.

U.S. Army Rangers with the 3rd Battalion, 75th Ranger Regiment conduct platoon live-fire exercises at Fort Benning, GA, on 14 October 2024. (Photo by SPC Samuel Dreher)



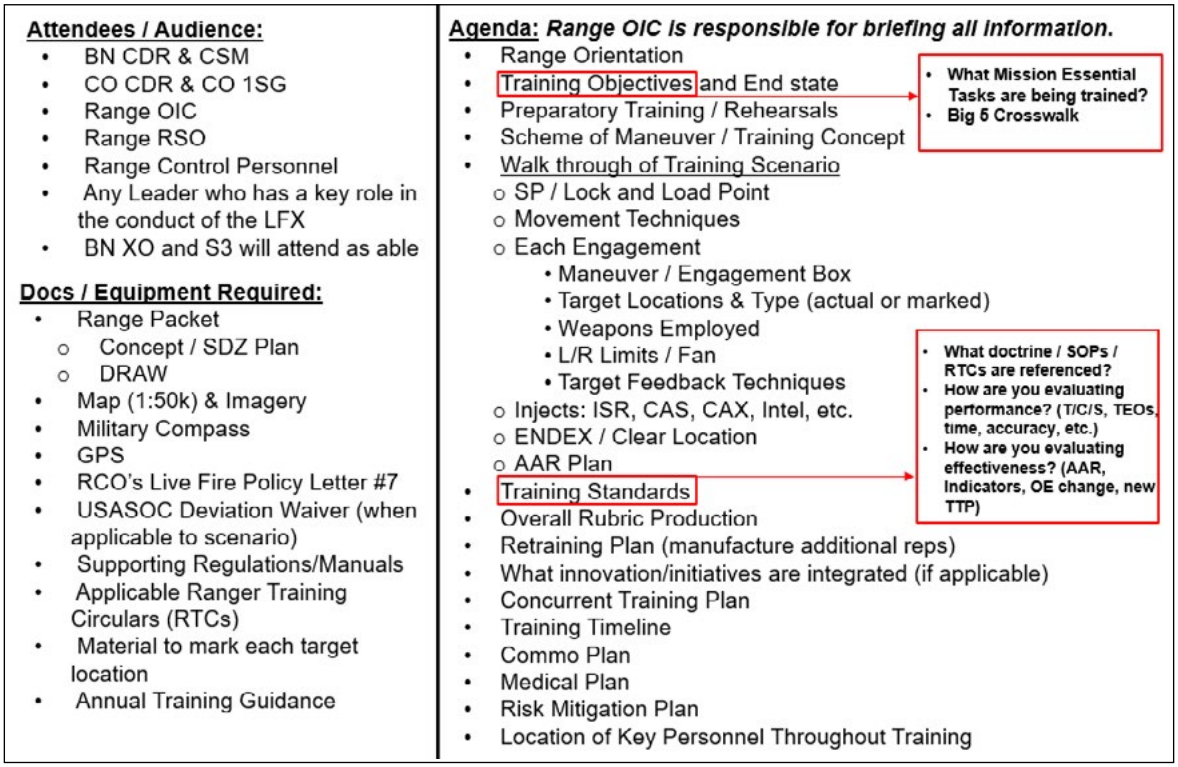


Figure 1 — 3rd Ranger Battalion Range Walk Standard for Live-Fire Exercises

5. Define the resourcing requirement to meet training objectives (weapon systems, non-organic assets, Department of Defense identification codes [DODICs]).

6. Execute site reconnaissance as necessary and continually throughout the process.

7. Determine the detailed ground scheme of maneuver, allowing for multiple flanking directions and positions of supporting elements, and breaching style/locations.

8. Determine the construction requirements and supporting units available.

9. Develop target placement and maneuver boxes.

10. Validate the plan in accordance with Ranger Regiment Commander's Policy Letter 7 (Live-Fire Policy).

The 3rd Ranger Battalion uses and enforces an established live-fire range walk standard operating procedure (SOP) that allows the battalion commander, or his designated representative, to validate each LFX, ensuring the training is realistic, safe, and focused on battalion and regimental priorities (see Figure 1). This is in addition to Commander's Policy Letter 7, which outlines safety requirements for weapon qualifications, range certification, validation, and execution, as well as highlights our annual deviations to DA PAM 385-63, *Range Safety*.

Besides the design of the live fire, we drive risk mitigation and safety through our live-fire training glide path, including how we certify our executing units, planners, and the range itself. Risk management is controlling risk arising from operational factors and making decisions that balance risk cost with mission benefits. We identify risks throughout the design process by conducting a detailed analysis to identify potential hazards then implement control measures to mitigate these risks to acceptable levels. Another way to manage risk inherent to an LFX is through deliberate enforcement of a live-fire progression. Prior to executing a platoon live fire, we validate the training audience through shoot-house live fires, squad live fires, fire support coordination exercises, marksmanship qualifications, and assault breacher courses. No Ranger enters a live fire without having trained and rehearsed a task in a more limited environment.

Case Study: 3rd Ranger Battalion's Platoon Live Fire

The 3rd Ranger Battalion's most recent platoon live fire included an explosive breach of a mined wire obstacle, knocking out a bunker, breaching a chain link fence, and entering and clearing multiple buildings. In addition to organic weapon systems, the platoon synchronized snipers; reconnaissance and first-person view (FPV) drones; fixed-wing intelligence, surveillance, and reconnaissance (ISR); an AC-130; artillery from the 101st Airborne Division (Air Assault); and mortars. These training objectives and required enablers came from reviewing past AARs, the commander's guidance in the annual training guidance, and feedback from our senior NCOs. Building a live-fire range that maximized flexibility for the assault force and synchronization of those assets required significant planning and adherence to our doctrine, regulations, and policies.

Planning for this live fire, in conjunction with our joint forcible entry exercise, began eight months in advance by finding installations and ranges that met our training

objectives. While many had great options to meet those objectives, our most feasible course of action landed us back at Fort Benning, GA. To provide the most latitude for integration of close air support and indirect fires, we chose a piece of land abutted to the northern impact area. While great for non-organic assets, this land required significant engineering and development to create a challenging live fire. For instance, we needed to resource engineers to build a series of wooden buildings, complete target pits, and build a bunker safe for live grenades. This also meant we would need to integrate "hot walls" into our risk mitigation methods. A hot wall is a designated wall within a structure for the placement of targets that keeps direct fires within the range limits while also keeping the targets away from areas that friendly troops may maneuver or place supporting elements. This target placement is validated multiple times by planners, our internal safety team, and leadership across the battalion. The design of the maneuver boxes also allowed the platoons to establish SBF positions in different locations and assault from multiple directions (see Figure 2).

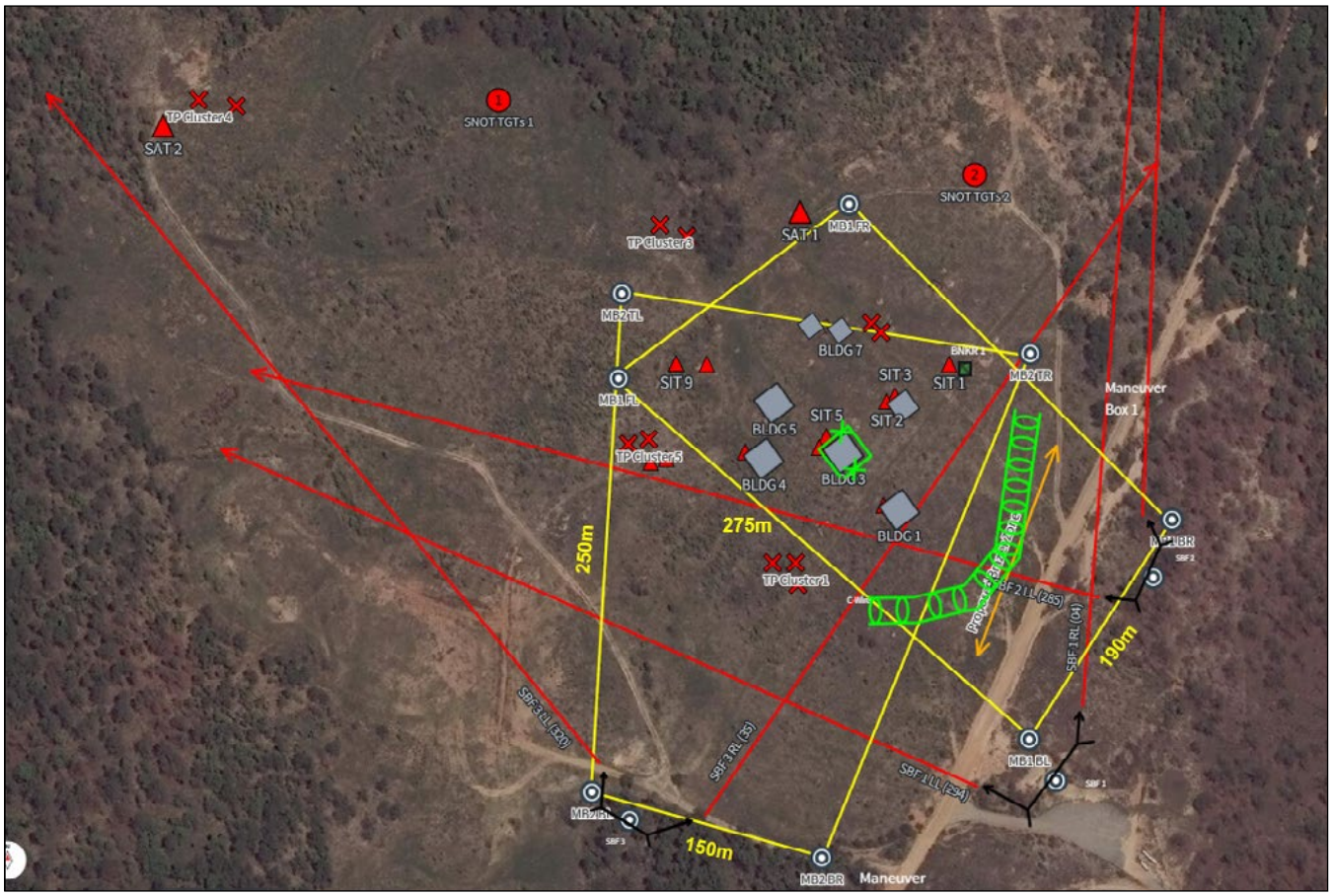
Conclusion: Preparing for Modern Combat

As history shows, the nature of the next conflict is unpredictable. While the environment, enemy capabilities, or even the ways of war may evolve, small units applying the fundamentals of combat will remain the decisive element. By prioritizing rigorous, realistic live-fire training and quality repetition, we ensure our Rangers are ready to face tomorrow's battles with confidence and competence. This approach will ensure that when the nation calls and the spear is thrown, it is small elements of lethal Soldiers, grounded in the fundamentals of combat, who arrive on the front, sharp edge of that spear.

While the environment, enemy capabilities, or even the ways of war may evolve, small units applying the fundamentals of combat will remain the decisive element. By prioritizing rigorous, realistic live-fire training and quality repetition, we ensure our Rangers are ready to face tomorrow's battles with confidence and competence.

CPT Patrick Kneram currently serves as the commander of Headquarters and Headquarters Company, 3rd Battalion, 75th Ranger Regiment. He has served in a variety of staff and command positions across both conventional and special operations units, including serving as the lead planner for multiple live-fire exercises.

Figure 2 — Depiction of Multiple Maneuver Boxes and Support-by-Fire Options for the Assault Force



Mission Partner Kit:

Advancing Multinational Interoperability with NATO Allies

COL DONALD R. NEAL JR.
MAJ AZIZ ATAKUZI

The war in Ukraine has demonstrated how commercial technologies can reshape the battlefield, becoming essential tools in a modern military's arsenals. Technologies such as Starlink satellite terminals have provided decentralized, resilient communication networks, enabling Ukrainian forces to maintain real-time situational awareness under cyber and kinetic attacks. Similarly, off-the-shelf drones like DJI quadcopters have been repurposed for reconnaissance and offensive operations, outpacing the deployment speed of traditional military systems. Ukraine has quickly adopted the use of commercial technologies during conflict, demonstrating the importance of agility and innovation in modern warfare for U.S. and NATO forces.

Informed by these lessons, the 2nd Cavalry Regiment (CR) developed and tested the Mission Partner Kit (MPK) to improve multinational interoperability.[1] Enabled by trained liaison officers (LNOs), the kit provides a cutting-edge commercial off-the-shelf (COTS) command and control (C2) software-centric solution. This capability transforms the ability of conventional U.S. and NATO forces to establish technical interoperability at the tactical level. The capability can be scaled to and adapted by any geographic combatant command. It can be easily scaled by any Army unit because the system relies on secure commercial technologies to bridge critical gaps in information sharing between U.S. and allied forces, enabling unity of effort and creating cohesive multinational units.

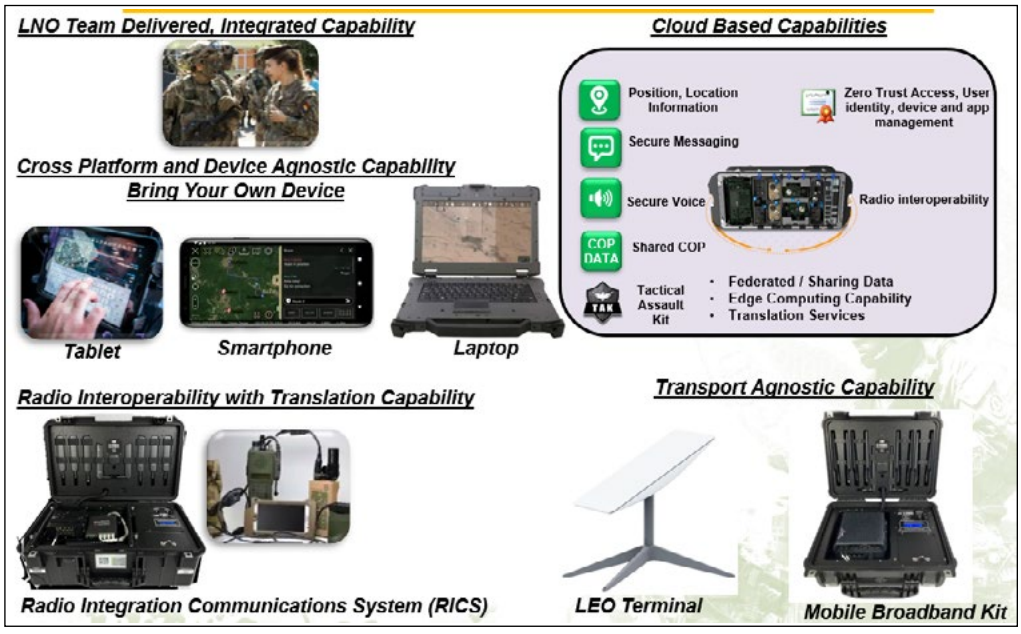
Interoperability Challenges in Multinational Operations

Army Regulation 34-1, *Interoperability*, outlines the principles and guidelines for achieving multinational force interoperability (MFI). It defines MFI as the ability of forces from different nations to train, exercise, and operate effectively together to achieve shared objectives. The regulation emphasizes the importance of standardization, common procedures, and compatible equipment to ensure seamless collaboration between allied forces. Interoperability spans across all warfighting functions and includes three domains — human, procedural and technical.[2] The human factors include language, terminology, and training; procedural factors include doctrine and procedures; and technical factors include hardware and systems.

To accurately assess the level of interoperability between partners, NATO and the U.S. Army have implemented a standardized system from level zero to level three. Level three is the desired end state for multinational operations. The levels are defined as:

- **Level 0:** Not Interoperable. Partners at this level lack the necessary capabilities to operate together. They must maintain independent operations, as their C2 systems are incompatible and could potentially interfere with each other.
- **Level 1:** Deconflicted. Partners at this level can coexist in the same operational area without causing significant interference; however, they do not interact or coordinate their activities. To achieve this level, partners must align their capabilities and procedures to establish common operational norms.
- **Level 2:** Compatible: Partners at this level can interact and cooperate with each other in pursuit of shared objectives. They possess similar or complementary capabilities and processes, enabling them to operate effectively together.

Figure 1 — Mission Partner Kit



A German soldier speaks into a radio attached to a Radio Integration Communications Suite (RICS) during Saber Strike 24 on 18 April 2024. (Photo by SPC Andrew Clark)

• **Level 3:** Integrated: Partners at this level can seamlessly integrate with each other upon arrival in a theater of operations. They have robust network-enabled interoperability, allowing them to participate in the full range of military operations. Partners can routinely establish networks and operate effectively with or as part of U.S. Army formations.

2CR experienced some challenges with achieving fully integrated interoperability in February 2022 when it deployed to NATO's eastern flank following Russia's invasion of Ukraine to reassure allies. It was difficult for 2CR squadrons to digitally integrate with units from Romania, Hungary, and Slovakia because of the distributed nature of multiple units and lack of interoperable systems. The lack of interoperable systems delayed information sharing and joint decision-making — critical requirements in multinational operations.

Challenges ranged from differences in communication networks to issues with data classification and secure information-sharing protocols. For example, it was challenging to integrate tactical partner units into 2CR's common operating picture (COP) because of incompatibility of partner radio networks and the need to share operational graphics and reports. This incompatibility caused delays increasing risk to mission accomplishment.

The Mission Partner Kit: A Game Changer

To address interoperability challenges, 2CR developed the MPK capability, which allows U.S. and NATO tactical units at brigade and below level to quickly establish network-enabled interoperability.[3] It provides tactical formations a scalable, mobile, and platform-agnostic system designed to simplify and improve information-sharing between NATO forces at the sensitive but unclassified level.[4] Built on the foundation of the Army's Nett Warrior system, MPK leverages COTS hardware and software to deliver a fast, secure, and cost-effective solution to improve C2 with multinational partners.[5-6] The kit provides four core services: situational awareness by displaying friendly and partner force's location on COP, secure chat, voice, and collaboration tools. What makes the kit mobile is all the applications are hosted in the government-approved commercial cloud. Partners can easily access applications from any mobile device with an internet connection or download the apps with a quick response (QR) code, because each application is publicly accessible and does not require special installations or downloads.

The security of applications and data is ensured through requiring all users to authenticate with their own credentials, reinforcing zero-trust cybersecurity principles. If partners do not have mobile devices, the U.S. unit can issue a device such as smartphone or a laptop with the application preinstalled for the partner force to use. This approach eliminates system incompatibilities because partners are onboarded into a common network and use the same applications, enabling faster decision-making and coordinated mission execution. This simple approach and design bridge disparate systems and networks, allowing coalition forces to exchange critical information quickly and efficiently using common applications without requesting access to connect to a special network. Most importantly, leveraging software-based encryption protocols eliminates the requirement to have special hardware encryption devices, which reduces the complexity and burden of current hardware-based solutions.

Commanders from different NATO nations can C2 as a unified force using common apps which increases real-time collaboration. This minimizes risks of miscommunication, significantly enhancing the effectiveness of joint operations. Additionally, the software enables real-time sharing of intelligence, surveillance, and reconnaissance (ISR) data, providing a COP for all coalition forces. The MPK is also suitable for a broad range of military operations, from humanitarian missions to high-intensity conflicts. Its portability and scalability to onboard many multinational users at once ensures multinational forces can respond effectively to any emerging threats.

Case Study: 2CR and NATO Joint Exercises

2CR has demonstrated the transformative potential of the MPK during major NATO exercises, including Griffin Shock 23, Saber Junction 23, Saber Strike 24, and Saber Junction 24.[7-10] These exercises underscored how simple commercial solutions can enable seamless communication across multinational forces, integrating battalions from France, Italy, and Spain into a unified operational framework. Having a shared COP with secure voice and chat capabilities enabled multinational commanders to synchronize efforts and accelerate decision-making.

During the Saber Strike 24 exercise in Poland, 2CR used a secure messaging application to establish chat rooms between its headquarters and the German Army battalion tasked with augmenting the regiment. German Army battal-

ion leaders used the application to report crossing checkpoints and issues in real time during a tactical road march. To facilitate this, 2CR issued MPK smartphones with the application to German Army users, enabling secure and instant communication. This allowed 2CR to track the German convoy in real time, enhancing situational awareness during the critical tactical movement from Germany to Poland. This use of secure messaging demonstrates how MPK can easily overcome technical interoperability barriers with widely available commercial applications. Without this application, training exercises or tactical road marches would have faced significant delays and reduced multinational cohesion due to incompatible communication systems.

Lessons for Warfighting and Interoperability

The conflict in Ukraine has demonstrated that the rapid adoption of commercial technologies can quickly increase U.S. Army and NATO warfighting capabilities. However, significant interoperability challenges remain, especially in encouraging the adoption and implementation of commercial software solutions. To address these gaps, the U.S. Army can champion secure architecture that facilitates real-time collaboration with allies. Drawing from Ukraine's experience, the Army can also explore how emerging technologies, such as artificial intelligence (AI) and 5G networks, can be leveraged to enhance situational awareness and decision-making while operating alongside our allies and partners.

Success requires deliberate investment in commercial solutions and a commitment to standardizing interoperability frameworks. By leveraging commercial technologies and fostering a culture of innovation, the Army can transform multinational interoperability and ensure that NATO remains prepared to meet the demands of future conflicts.

The Future of Multinational Interoperability

The Mission Partner Kit is more than a solution to interoperability challenges — it is a game changer for increasing interoperability during multinational operations. By enabling seamless communication, secure data-sharing, and real-time collaboration, MPK ensures that the U.S. Army along with our NATO allies can operate as a unified force, even in the most challenging environments. As the U.S. Army continues to champion innovation and adaptability, the MPK capability represents a path forward for multinational interoperability. Its success highlights the significance of using commercial technologies to ensure NATO allies and partners remain prepared to defend the alliance and respond to the evolving threats of future battlefields.

Notes

[1] Austin Roberston, "Saber Strike: An Exercise in Foundational Partnership," Army News Service, 26 April 2024, https://www.army.mil/article/275706/saber_strike_an_exercise_in_foundational_partnership.

[2] Duane Gamble and Michelle Letcher, "The Three Dimensions of Interoperability for Multinational Training at the JMRC," Army News Service, 14 October 2016, https://www.army.mil/article/173432/the_three_dimensions_of_interoperability_for_multinational_training_at_the_jmrc.

[3] Enterprise Cloud Management Agency Public Affairs, "Griffin Shock 23 Strengthens NATO Readiness through Cloud-Enabled Applications," Army News Service, 1 June 2023, https://www.army.mil/article/267180/griffin_shock_23_strengthens_nato_readiness_through_cloud_enabled_applications.

[4] Gabe Camarillo and Randy George, "Command and Control in a Digital Age: The U.S. Army's Blueprint for the Future Battlefield," AUSA, 24 May 2023, https://www.ausa.org/articles/command-and-control-digital-age.

[5] Kathryn Bailey, "'Stryking' towards Networked Battlefield Communications," Army News Service, 23 February 2023, https://www.army.mil/article/264225/stryking_towards_networked_battlefield_communications.

[6] Sean Carberry, "NATO Allies Get on Same Page During Biggest Exercise," NTSA, 27 June 2024, https://www.ntsa.org/news-and-archives/2024/6/27/nato-allies-get-on-same-page-during-biggest-exercise.

[7] Enterprise Cloud Management Agency Public Affairs, "Griffin Shock."

[8] Shane Killen, "Multinational Forces Unify to Fight at Sabre Junction 23," Army News Service, 20 September 2023, https://www.army.mil/article/270072/multinational_forces_unify_to_fight_at_saber_junction_23#:~:text=Moving%20into%20their%20fighting%20positions,in%20a%20relentless%20training%20environment.

[9] Roberston, "Saber Strike."

[10] Danielle Rayon, "Sabre Junction 24 Strengthens Ties between NATO Allies and Partner Nations," Army News Service, 17 September 2024, https://www.army.mil/article/279611/saber_junction_24_strengthens_ties_between_nato_allies_and_partner_nations.

COL Donald R. Neal Jr. currently serves as the commander of the 2nd Cavalry Regiment.

MAJ Aziz Atakuzi currently serves as the regimental cyber electronic warfare officer for the 2nd Cavalry Regiment.

Soldiers with the 2nd Cavalry Regiment participate in a distinguished visitors event as part of Griffin Shock 23 in Poland on 19 May 2023. (Photo by SSG Agustín Montañez)

Rethinking Large-Scale Combat Operations Training

MAJ JONATHAN L. BUCKLAND

Since its establishment in 1981, the National Training Center (NTC) at Fort Irwin, CA, has consistently served as the premier training ground for the U.S. Army in land and air warfare. Its effectiveness was notably demonstrated during the First Gulf War in 1991 by showcasing its ability to adapt to the evolving needs of commanders in preparing their formations for various operational scenarios. However, the evolution of warfare demands a comprehensive and adaptable approach to training that goes beyond traditional paradigms. For the Army to enhance readiness, leaders should focus on creating training programs that simulate the diverse and complex environments Soldiers will face in the future. A greater emphasis should be placed on the integration of armored and light formations in joint training exercises at all combat training centers (CTCs), such as those at the Joint Readiness Training Center (JRTC) at Fort Johnson, LA; more availability of simulator training; larger formation home-station training; and sea and air deployment readiness exercises (SEADREs/AIRDREs). Additionally, enhancing the planning and execution of logistical operations through sustained military oversight of deployment strategies will enable forces to efficiently build their combat capability. By embracing innovative training methods and exposing troops to diverse operational environments, the Army can better equip its forces for the complex and dynamic nature of future conflict scenarios.

As the Army looks ahead to future large-scale combat operations (LSCO) conducted within restrictive terrain (which forces would encounter in United States Indo-Pacific Command [INDOPACOM] or United States European Command [EUCOM] areas of responsibility), the training requirements necessary to prepare the force for those conflicts, and the subsequent necessity to build combat power within an immature theater, it is imperative to reassess how armor brigades train for combined arms maneuver.

The current approach of sending armored brigade combat teams (ABCTs) to conduct rotations at NTC may not adequately prepare troops for the complexities of LSCO or future warfare, particularly in environments characterized by restrictive terrain and urban settings. The focus on traditional open-desert scenarios, while valuable in certain contexts, may not align with the anticipated challenges of the next conflict. It is essential for military leaders to acknowledge the need for diversified training experiences that encompass an expanded range of operational environments and scenarios.

Soldiers assigned to 1st Battalion, 64th Armor Regiment, 1st Armored Brigade Combat Team, 3rd Infantry Division, support 2nd Brigade Combat Team, 82nd Airborne Division during Joint Readiness Training Center Rotation 23-10. (Photo by SPC Hannah Stewart)

One proposed solution is to incorporate armor teams (three-to-four armor or mechanized platoons with a logistical support package) into every rotation at JRTC, where troops can engage in maneuvers and combat simulations that better reflect the challenges expected in regions like eastern EUCOM. This is not intended to piecemeal out the armor or mechanized formation but reinforce the need for combined arms maneuver. The 1st Armored Brigade Combat Team, 3rd Infantry Division (ID), operating with the 82nd Airborne Division, conducted two JRTC rotations (23-10 in September 2023 and 24-05 in March 2024) with 1st Battalion, 64th Armor Regiment and 3rd Battalion, 69th Armor Regiment, respectively. By integrating armor platoons and mechanized infantry platoons within light infantry formations, light commanders were able to enhance their understanding of how to effectively leverage combined arms capabilities and address logistical considerations in a realistic training setting. The Raider Brigade took advantage of this training opportunity by conducting three different battalion training events during the two deployments to JRTC. During both these rotations, in support of the 82nd's 2nd Brigade Combat Team "Falcon" and 1st Brigade Combat Team "Devil," respectively, 3rd ID airlanded three to four M2 Bradley Infantry Fighting Vehicles (IFVs) on the field landing strip (FLS) of JRTC's Geronimo Drop Zone.

Soldiers from the 3rd Infantry Division and U.S. Air Force airmen work together to secure gear on a C-17A Globemaster III aircraft during an emergency deployment readiness exercise at Hunter Army Airfield, GA, on 11 July 2024. (Photo by PFC Camron Hicks)

Focusing on smaller force packages at the company/troop and battalion/squadron levels allows formations to expand and enhance sustained readiness through the execution of multiple rotations at JRTC or the Joint Multinational Readiness Center (JMRC) in Hohenfels, Germany. Rather than an ABCT conducting a CTC rotation every other year, providing each JRTC/JMRC rotation with an attached armor package will result in more lessons learned and increased training opportunities across more of the armor community. At the same time, light formations should incorporate with specific ABCT NTC rotations, whether at the battalion or company level. The Army would need to ensure that these formations come with the capability to extend the light formation's operational reach to maintain momentum with either air assault or airborne platforms or infantry squad vehicles (ISVs).

To ensure the success of our future missions in both EUCOM and INDOPACOM, it is crucial that units engage in rigorous training within units' deployment planning and training periods by conducting SEADREs and AIRDREs. These exercises are pivotal in preparing our forces for rapid deployment and mission success. SEADREs and AIRDREs provide a crucial opportunity for training. They ensure that ABCT forces are prepared to rapidly deploy combat power through different means and prevent atrophy within the utilizations of aerial ports of embarkation (APOE) and seaports of embarkation (SPOE) operations across a specific combatant command (COCOM). Conducting AIRDREs is also extremely important to ensure that our Air Force partners are familiar with loading/securing/unloading M1/M2/M88s within the C-5 and C-17 airframes. The exercises will also benefit our crews as they work through the intricacies of the process and gain experience in working jointly with the Air Force.

3rd ID established an immediate response package (IRP) as part of its contingency support for the XVIII Airborne Corps. This force is a tailorable package, but at the core it is equipped with five M2 Bradley IFVs with a comprehensive logistics package, which includes a fueler, Load Handling System (LHS), M88 recovery vehicle, and a contact truck. The package, designed for efficient transport, is capable of being accommodated on 8-10 C-17 aircraft. To bring this concept to life, 3rd ID assigned the 5th Squadron, 7th Cavalry Regiment the responsibility of developing and executing the IRP's operational plans. This included conducting two emergency deployment readiness exercises (EDREs). The first exercise involved transporting equipment from Hunter Army Airfield (HAAF) in Savannah, GA, to an Air Force base in Charleston, SC. The second exercise featured multiple C-17 sorties performing airland operations into NTC's Bicycle Lake area for the Raider's 24-09 rotation.

Both exercises successfully demonstrated their value by training armored formations at the company and troop levels on critical deployment tasks, such as loading and unloading vehicles and securing them for air transport. This initiative underscores the 3rd ID's commitment to readiness and operational effectiveness in rapid deployment scenarios.

To effectively project combat power within the INDOPACOM theater, it is essential for our Army formations and joint partners to be thoroughly trained and prepared for

amphibious operations, particularly when navigating critical sea lines of communication (LOC) to sustain multiple units. Logistic planners must develop a more complete understanding of how to manage logistics across the vast expanse of the Pacific Ocean, which will lead to ensuring the efficient movement of significant quantities of supplies, especially Class III B (petroleum, oils, and lubricants), Class V (ammunition), Class VII (major end items), and Class IX (repair parts). Additionally, integrating wet-wing refueling operations is crucial for enhancing operational efficiency. This method allows vehicles to refuel from the internal tanks of the aircraft, enabling the Air Force to refuel while simultaneously transporting Class V ammunitions. This capability reduces the number of aircraft grounded at any given time, ensuring that crucial supplies reach their end users promptly.

To achieve these objectives, Army units should incorporate seaport of embarkation/debarkation (SPOE/D) operations into large-scale training events with emphasis on collaborating with joint and multinational formations. This training approach ensures that Soldiers are well-prepared for deployment operations — transitioning efficiently from "fort to port" and subsequently from port to forward operating sites. By leveraging these capabilities, we can enhance our infrastructure investment, enabling the United States to deploy forces rapidly while strengthening partnerships with regional allies.

If you have participated in a rotation at NTC in recent years, you may be familiar with the enhanced reception, staging, onward movement, and integration (ERSOI) process at Logistics Support Area (LSA) Santa Fe. However, the current implementation of ERSOI does not effectively replicate the process of deploying to an immature theater. Instead, it often distracts the rotational training unit (RTU) from the essential training objectives of the rotation by consuming valuable organizational resources on tasks that ideally should fall under the purview of the service component command and the theater support command (TSC). Opening a theater of operations should not be the responsibility of an ABCT that is focused on building combat power. The purpose of RSOI is to facilitate the integration of forces, not to manage theater-opening requirements.

A viable solution would be for the Army to assign elements of a TSC to assist a brigade's RSOI operations at a CTC. This collaboration would serve dual purposes: It would train the TSC formation while also helping the ABCT to clearly understand its roles and responsibilities in building combat power. By aligning these efforts, we can enhance the overall effectiveness of our training rotations and better prepare our forces for real-world deployments.

RSOI and regeneration (REGEN) wastes organizational calories by making staff members plan within a vacuum. Details known by specific individuals at NTC are not clearly communicated to RTUs, which results in constant change and confusion. NTC should provide RTUs with a pre-planned deployment operations order (DEPORD) for how RSOI/REGEN should be executed. Some examples of what could be included in the DEPORD are the requirements for Yermo train detail, Manix Trail, Multiple Integrated Laser Engagement System (MILES) install, etc. All those requirements rest solely on the RTU, as they should; however, they never change from one rotation to rotation. Why not codify these in a running order provided to the RTU by NTC's Operations Group that allows the unit to make refinements? Further, requiring units to resource every rotation with specific contracts, rather than providing long-term existing contracts through NTC, wastes resources, money, and time for every RTU. It distracts from training. NTC should focus on a more stringent time standard that requires RTUs to rapidly build combat power and conduct movement to their line of departure (LD) as soon as possible rather than encumbering them with administrative tasks that could already have been coordinated through a TSC element.

While NTC offers the space to maneuver an armor brigade, it is important that units have the capacity and capability to conduct brigade-level maneuver at home station. In preparation for Raider Brigade's NTC 24-09 rotation, it executed a brigade-level field training exercise at Fort Stewart, GA, called "Marne Focus." The model for the eight-day exercise consisted of:

Period 1 - Deploying to the field, planning for the battle;

Period 2 - Force on force, planning for the battle;

Period 3 - Force on force, planning for the battle, and finally, deployment to garrison to start after operations maintenance (AOM).

The three maneuver battalions rotated through offense, offense, and defense, with one battle period executed during hours of limited visibility. Marne Focus allowed the brigade to maneuver at the battalion level and exercise command and control (C2) nodes at both the brigade and battalion levels. Those C2 nodes are crucial in coordinating and directing

A Soldier assigned to 1st Battalion, 64th Armor Regiment, 3rd Infantry Division, scans the area for potential enemy contact during Marne Focus at Fort Stewart, GA, on 7 April 2024. (Photo by PFC Trey Woodard)

military operations and the exercise provided an excellent chance to mature those capabilities.

3rd ID is actively advancing the concept of enhancing brigade-level readiness through focused 30- and 45-day field exercises. These exercises encompass a comprehensive range of activities, including small arms marksmanship, gunnery, platoon and company live-fire exercises, and brigade force-on-force training, rather than fragmenting the training throughout the entire fiscal year. The division benefits from the support of the 188th Brigade, which provides observer-coach/trainers (OC/Ts) at Fort Stewart. Units lacking this advantage can enhance their training resources by leveraging leadership from sister brigades with available OC/Ts, thus providing a great opportunity to provide lessons learned and develop to a larger group of leaders.

By developing a framework for conducting large-scale brigade training events at home stations, the Army can rapidly build readiness while minimizing the need for extensive travel. This approach ensures that should the Army need to deploy a significant number of forces quickly, a well-defined training concept will already be in place, as not all units will have had the opportunity to train at NTC prior to deployment.

Another resource that armor formations could utilize, and the larger Army could invest in, is simulation training. Increasing the number of Bradley Conduct of Fire Trainer (COFT), M1 Advanced Gunnery Trainer System (AGTS), and Close Combat Tactical Trainer (CCTT) or like simulators would significantly enhance our training capabilities at home station. This forward-thinking investment would allow for larger maneuver practice over varied terrain, with limited impact on operational readiness rates and cost, and pave the way for more effective and efficient training. However, simulators can only go so far with placing crews in stressful environments that replicate a combat engagement.

In conjunction with simulation training, 3rd ID developed the concept of an M1/M2 stress shoot — comparable to a small arms stress shoot but with combat platforms — that places crews in a complex and unknown environment outside of a normal gunnery table. Crews are required to conduct a physical fitness assessment in full kit to raise their heart rate and then move to and mount their vehicles. Crews have less than two minutes to report Red Con 1 — a term used to indicate the highest level of combat readiness. At that point, they maneuver down a range road where they are presented with both friendly and enemy targets of armor, personnel carriers, trucks, and dismounts. Crews are not briefed before what the engagement pattern would be. This type of home-station training, which requires nothing more than what units already have allocated for their fiscal year allotment of ammunition, can easily be built into any annual training plan. It offers significant advantages over NTC rotations, with less impact on multiple weeks of preparation, deployment, and redeployment time. This approach showcases flexibility and resourcefulness, saving time and resources and providing Soldiers more time to train, recover, and spend quality time at home which further enhances their well-being and readiness. It also ensures that across the Army, home stations can rapidly train their forces and deploy them without the limitations and constraints of training one ABCT each month at NTC.

In conclusion, while NTC has historically served as a valuable training ground for U.S. Army units, adapting to the complexities of modern warfare necessitates a reevaluation of training methodologies and environments. As we pivot towards the realities of future conflicts, particularly those expected within restrictive terrains of INDOPACOM and EUCOM, the Army must acknowledge some of NTC's limitations in preparing forces for these challenges. To enhance readiness, leaders should focus on creating training programs that simulate the diverse and complex environments Soldiers will face in the future. A greater emphasis should be placed on integrating armored and light formations in joint training exercises, such as those at JRTC and through SEADREs and AIRDREs.

Moreover, improving the planning and execution of logistical operations by maintaining military control over deployment strategies will ensure that forces can build combat power efficiently. Leveraging innovative training approaches, such as home-station stress shoots and enhanced simulation tools, can further prepare units to engage effectively in diverse combat environments. The shift from traditional NTC rotations to more versatile and realistic training scenarios will not only improve leaders' and Soldiers' understanding of their capabilities in varied landscapes but also foster an adaptive and resilient force ready to meet future operational demands.

By embracing these changes, the Army can uphold its commitment to readiness and ensure that our forces are well equipped to respond to the complexities of contemporary global threats. The path forward involves not just utilizing existing capabilities but also re-envisioning training strategies to cultivate a force that is agile, proficient, and prepared to meet the demands of tomorrow's battlespaces. In doing so, we honor the legacies of past victories while ensuring that our Army remains capable of winning in the increasingly complex and dynamic environment of modern warfare.

MAJ Jonathan Buckland currently serves as executive officer of 5th Squadron, 7th Cavalry Regiment, 1st Armored Brigade Combat Team (ABCT), 3rd Infantry Division, Fort Stewart, GA. His previous assignments include serving as the operations officer for 3rd Battalion, 69th Armor Regiment, 1/3 ABCT; 3rd Infantry Division future operations (FUOPS) chief, FUOPS planner; observer-coach/trainer (OC/T) with Tarantula Team, Operations Group, National Training Center (NTC), Fort Irwin, CA; commander, Headquarters and Headquarters Company, 2nd Battalion, 325th Airborne Infantry Regiment, 2nd Infantry Brigade Combat Team (IBCT), 82nd Airborne Division, Fort Bragg, NC; commander, Company B, 2nd Battalion, 508th Parachute Infantry Regiment (PIR), 2nd IBCT, 82nd Airborne Infantry Division; assistant operations officer, 2-508th PIR; and assistant operations officer, 3rd Infantry Regiment (The Old Guard), Fort Myers, VA. MAJ Buckland's military schools include the Basic Airborne Course, Ranger Course, Infantry Basic Officer Leader Course, Maneuver Captain's Career Course, Bradley Leader Course, and Jumpmaster Course. He has a bachelor's degree in English from the Virginia Military Institute, a master's degree in international studies from the University of Kansas, and a master's in operational studies from the Army Command and General Staff College (CGSC), Fort Leavenworth, KS.

Soldiers assigned to 2nd Battalion, 502nd Infantry Regiment travel to Garren Creek, NC, to deliver relief supplies on 7 October 2024. (Photo by SSG Cory Reese)

Task Force Falcon:

Rapid Response to Hurricane Helene Relief Aid in Western North Carolina

LTC WALTER C. GRAY II
MAJ PAUL BINGHAM
CPT MATT KENNY

More than 1,000 Soldiers from the 2nd Mobile Brigade Combat Team (MBCT), 101st Airborne Division (Air Assault) recently deployed to western North Carolina in support of Hurricane Helene response efforts. 2nd Battalion, 502nd Infantry Regiment "Strike Force" deployed over 500 Soldiers, forming Task Force (TF) Falcon. TF Falcon conducted a variety of tasks to include rescue and recovery, medical aid, route assessment clearance, traffic control, warehouse management, supply distribution, general transportation, and equipment maintenance. They employed tactics, techniques, and procedures (TTPs) developed over the past year during the unit's transformation from an infantry brigade combat team (IBCT) to an MBCT. During the operation, TF Falcon leveraged lessons learned and best practices developed during multiple repetitions of large-scale, long-range air assault (L2A2) operations at home station and the Joint Rotational Training Center (JRTC). This article provides reflections about TF Falcon's Hurricane Helene response, the capabilities of an MBCT in a civil support mission set, and lessons learned that may be applicable to future L2A2 operations.

Timeline and Mission

The 101st Airborne Division issued a verbal warning order to 2-502 IN on 3 October to be prepared to send up to a battalion task force to support relief efforts following Hurricane Helene. Within 36 hours of notification, Strike Force assembled and organized TF Falcon, and within 15 hours of notification of modes of travel, it deployed more than 500 Soldiers to support humanitarian operations in western North Carolina. 2/101 MBCT attached its Multi-Functional Reconnaissance Company (MFRC) and Havoc Company (Forward Support Company), 526th Light Support Battalion (LSB) to provide capability and endurance.

TF Falcon deployed on 5 October by both ground and air, using 11 CH-47 and five UH-60 helicopters, five ground convoy serials, and six coach buses to insert into the joint operational area (JOA) and occupy the intermediate stag-

Soldiers from 2nd Battalion, 502nd Infantry Regiment begin staging for hurricane response efforts. (Photo courtesy of the 101st Airborne Division Public Affairs Office)

ing base (ISB). Fifty-nine Soldiers travelled by contracted buses that morning to Greenville, TN, to establish ISB Greenville while one CH-47 simultaneously initiated air movement to deliver the TF commander and the assault command post to Helicopter Landing Zone (HLZ) Castle in Marion, NC, in order to link up with the higher headquarters commander of the 20th Engineer Brigade. Two-hundred-eighty-one Soldiers began ground movement with 67 Infantry Squad Vehicles (ISVs) and 31 additional tactical support vehicles at 0830 on 5 October. After this initial movement, TF Falcon delivered 248 Soldiers and 18 ISVs into the JOA. On 6 October, it continued to deliver forces to the JOA and increased its presence to 370 Soldiers, 34 ISVs, and three field litter ambulances (FLAs). TF Falcon also established a separate primary HLZ at Camp Windy Gap in Weaverville, NC, to deliver forces one hour closer to the point of need. The final air movements from the ISB to the JOA concluded on 7 October, resulting in the arrival of all TF Falcon Soldiers and equipment in the JOA in less than 72 hours.

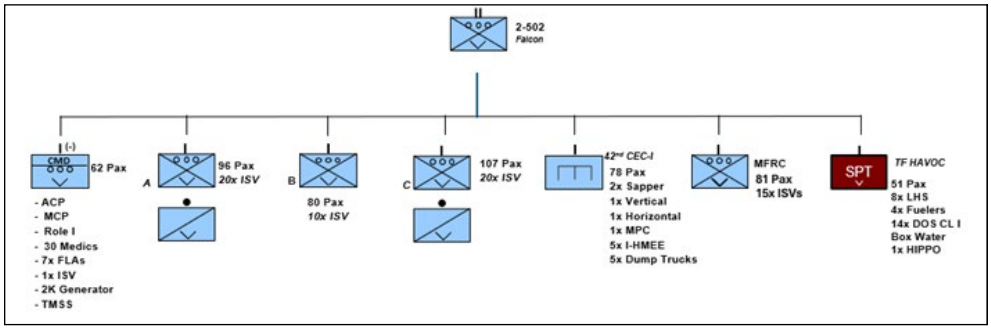


Figure 1 — 2-502nd Task Organization

Mission Assignment Task Order

TF Falcon Hurricane Response

CAO: 12 1100 OCT 24

MATO	Order Number	Start DTG	Company Assigned	NLT DTG	Point of Contact	Task	Location
7.4	**FRAGO 8 to OPORD 25-001**	**06 0700 OCT 24**	**42 CEC-I**	**14 1700 OCT 24**	**LTC William Hathaway**	**Establish truck restriction barriers on NCDOT routes to prevent tractor usage**	**BUNCOMBE COUNTY**
7.4.1	FRAGO 8 to OPORD 25-001	06 0700 OCT 24	42 CEC-I	14 1700 OCT 24	LTC William Hathaway	Set tractor barrier	Cove Creek Rd at US 276
7.4.2	FRAGO 8 to OPORD 25-001	06 0700 OCT 24	42 CEC-I	14 1700 OCT 24	LTC William Hathaway	Set tractor barrier	I-26 Westbound at Exit 3
7.4.3	FRAGO 8 to OPORD 25-001	06 0700 OCT 24	42 CEC-I	14 1700 OCT 24	LTC William Hathaway	Set tractor barrier	NC209 at I-40 and Exit 24
7.4.4	FRAGO 8 to OPORD 25-001	06 0700 OCT 24	42 CEC-I	14 1700 OCT 24	LTC William Hathaway	Set tractor barrier	US 70/25
7.4.5	FRAGO 8 to OPORD 25-001	06 0700 OCT 24	42 CEC-I	14 1700 OCT 24	LTC William Hathaway	Set tractor barrier	US 197 at US 19E
7.9	FRAGO 8 to OPORD 25-001	06 0700 OCT 24	RENEGADE CO	14 1700 OCT 24	Mr. Travis Donaldson	Conduct emergency route clearance, local lifesaving assistance to isolated homes, and general manpower support	**HAYWOOD COUNTY**
7.9.1	FRAGO 9 to OPORD 25-001	06 2100 OCT 24	RENEGADE CO	14 1700 OCT 24	Mr. Travis Donaldson	Wayfinding to households on Temple Rd and Blue Ridge Assembly Rd (primary bridge washed out)	Black Mountain, NC
7.9.2	FRAGO 9 to OPORD 25-001	06 2100 OCT 24	RENEGADE CO	14 1700 OCT 24	Mr. Travis Donaldson	Debris clearance and route widening (beyond quad width to vehicle width) to Summer Haven community	Summer Haven Rd, Swannanoa, NC
7.9.3	FRAGO 9 to OPORD 25-001	06 2100 OCT 24	RENEGADE CO	14 1700 OCT 24	Mr. Travis Donaldson	Side roads and neighborhoods east of Merrimon Ave between Williams St. and Stoney Knob Rd, including Reems Creek Rd east to Paint Fork Rd.	Weaverville, NC

Figure 2 — Task Force Falcon Mission Assignment Task Order

Task Organization

Of the 537 Soldiers assigned to TF Falcon, 345 were organic to 2-502 IN: 96 Soldiers from Attack Company (A Co.), 80 from Renegade Company (B Co.), and 107 from Charger Company (C Co.). Two scout squads from the Strike Force Multi-Purpose Company (MPC) were assigned to both Attack and Charger Companies. 2/101 MBCT delegated operational control of 81 Soldiers from the brigade MFRC to TF Falcon as well as 78 Soldiers from the 42nd Combat Engineer Company-Infantry (CEC-I). TF Falcon maintained internal sustainment support capabilities through H/526 LSB (TF Havoc), with 51 Soldiers attached.

TF Falcon and TF Talon (1st Battalion, 502nd Infantry Regiment, 2/101 MBCT) fell under the higher headquarters of the 20th Engineer Brigade and the XVIII Airborne Corps to create TF Castle. While TF Castle held operational control, both task forces operated in conjunction and within parameters set forth by the state of North Carolina through mission assignment task orders (MATOs). These MATOs directed TF Falcon on areas requiring support and assistance, typically counties or major public road infrastructures. Additionally, these MATOs detailed authorized methods of support by Title 10 forces within the JOA, including route clearance, aid distribution, obstacle removal, traffic control, and general incident assessments. These MATOs served as parameters for TF Falcon leaders to ensure lines of effort in providing aid enabled immediate response to hurricane effects and set conditions for recovery within the JOA.

Air Movement Planning for Civil Support Response

After conducting L2A2 training exercises at home station (April 2024) and to JRTC (January and August 2024), the 101st Airborne Division determined the number days required to effectively plan and execute an L2A2. Based on mission requirements and the immediate activation of Title 10 forces, TF Falcon began air movement 15 hours from notification

Soldiers offload Infantry Squad Vehicles at the start of hurricane relief efforts. (Photo courtesy of the 101st Airborne Division Public Affairs Office)

that the task force would move by air. The division quickly executed the air assault planning process within the allotted time and developed a course of action that included air movements over three days to deliver all passengers and vehicles. HLZ Castle served as the primary HLZ for day one while HLZ Nighthawk at Camp Windy Gap became the primary HLZ for days two and three. The L2A2 training conducted over the past year and the relationships built between the ground force and the Combat Aviation Brigade (CAB) were invaluable to the success of this operation.

Civil Partner Integration

TF Falcon quickly realized that the most efficient way to understand the operational area and environment was to integrate into the local populace. We quickly built relationships with local fire departments and non-governmental organizations (NGOs) to understand the ground truth, aid individuals, and identify points of need. Quickly understanding what the people needed and delivering on those needs opened opportunities for support and as well as built relationships with the local leaders and population.

Although this tactic was critical to gaining situational understanding of the critical need, as time went on, we began to recognize that local leadership and NGOs were often inundated with information. Crisis management teams (CMTs) from around the country were utilized to relieve the burden of local first responders to meet the critical needs on a large scale, and many NGOs worked to meet direct needs of the populace on a smaller scale. Our team eventually became the connective tissue between many organizations that were working very hard within the scope of their problem set but did not effectively work with other organizations. This led to duplicated and wasted effort and resources on numerous occasions.

To prevent this, our companies conducted a daily sync with the county emergency operations centers (EOC) in the morning. Following this sync, one company would go to every distribution center throughout the county and every location their platoons were working at as well as the fire departments/police stations in each town within the assigned county. This served multiple purposes as each day brought new information. First, taking about 20-30 minutes at each site allowed us to have the most up-to-date information for each location throughout the county. We were able to discuss the needs of each region of the county and visibly see the affected areas

A Soldier from the 2nd Mobile Brigade Combat Team, 101st Airborne Division meets with civilians during hurricane relief operations. (Photo courtesy of the 101st Airborne Division Public Affairs Office)

and their progress while making valid assessments. Second, more than just a phone call, we could discuss the information being consolidated at the EOC and confirm with our platoon leadership.

Each night the companies debriefed their platoons and ensured that they were hunting for information while out conducting missions. The platoon leaders and platoon sergeants were by far the most valuable sources of information. They spoke with distribution center leaders, church leadership, and every civilian they came across to assess needs throughout the day. Each day our company leadership brought this information to the EOCs to ensure they understood the updated needs of the county and were not reliant on stale information. We acted as the hands, feet, and eyes of the county EOC and provided timely and accurate reporting to paint the bigger picture for them.

Additionally, our partnership with the National Guard was critical. One company remained overnight near the National Guard regional command team, and each day the company's leaders met with leadership at the central receiving and distribution point (CRDP) to assess the needs of the distribution centers scattered throughout the county. We then brought this information to the National Guard liaison officer at the EOC to ensure that distribution of resources was being properly managed.

Service Support and Sustainment

As TF Falcon massed forces within the JOA, the next problem set was long-term sustainment within the area. Operating off the assumption that logistical support would be minimal on ground, elements from the 526th LSB were consolidated under Havoc Company to provide logistical support for both TF Falcon and TF Talon. The two biggest capabilities that Havoc brought to the operation were wreckers and bulk resupply assets. Despite their necessity in the operation, bulk resupply assets created significant strain on convoys attempting to move through the mountains to reach Logistics Support Area (LSA) Marion.

By rapidly establishing multiple LSAs, TF Falcon could conduct decentralized operations throughout the JOA, giving commanders the freedom to operate from whichever location was closest to the communities specified in their MATOs.

Consequently, Havoc became delayed several times in their ground movement due to their Heavy Expanded Mobility Tactical Truck (HEMTT) struggling to pull 14 days of sustainment through difficult terrain. Due to the rapid nature of the mission deployment, aerial resupply through rotary-wing platforms was limited, and the terrain did not allow for Cargo Delivery System (CDS) drops. In order to alleviate the problems encountered, TF Falcon adapted by limiting HEMTT systems loads on unknown routes to minimize mechanical issues.

Throughout the JOA, ISVs proved essential to maintaining the operational pace required to assist the local communities in their recovery. The simplicity of the ISV platform allowed TF Falcon to mass Soldiers and individual equipment at any given location in the JOA within two hours. Despite the mobility and versatility of the ISV in the mountainous environment, logistical resupply of forward elements was consistently hampered by the capabilities of legacy vehicles. Due to what equipment was on hand, TF Falcon relied heavily on HEMTT platform vehicles to provide logistical support. These vehicles lacked the simplicity and maneuverability of the ISV fleet and thus took significantly longer to employ within the JOA. Consequently, HEMTT convoys took an average of three to four hours to complete missions and required extensive route reconnaissance to ensure

Soldiers assigned to the 2nd Battalion, 502nd Infantry Regiment unload a trailer of supplies at a local community relief center in Brunsville, NC, on 10 October 2024. (Photo by MSG Anthony Hewitt)

adequate road space, structure, and vertical clearance. These limitations inherent to the design and purpose of the HEMTT platform created significant strain in exchange for the ability to relocate bulk sustainment assets within the JOA.

The utilization of land use agreements and life support contracts to rapidly stand-up multiple LSAs within the operational environment were critical to TF Falcon's success in the civil support mission set. Contracting officer representatives (CORs) were essential in this process, as their liaising between task force staff and local businesses facilitated rapid awarding and fulfillment of contracts to support our Soldiers in their mission set. By rapidly establishing multiple LSAs, TF Falcon could conduct decentralized operations throughout the JOA, giving commanders the freedom to operate from whichever location was closest to the communities specified in their MATOs.

Integration of Public Affairs

Embedding a public affairs officer (PAO) from division for the duration of this operation increased positive atmospherics for the battalion, represented by a greater number of views, positive reactions, and increased public awareness in the JOA. The PAO liaised with news agencies and social media outlets, creating opportunities to spread strategic messages on multiple platforms. This included coordinating and executing video interviews with Senator Ted Budd, FOX News, and CBS. Additionally, the PAO advocated for battalion photographs, videos, and stories through division channels to ensure public affairs goals met the commander's intent. At daily commander's update briefs, the PAO provided updates by the numbers to ensure shared understanding of the reach of public messaging.

In future operations, an embedded PAO could serve as liaison for organizations beyond media. For example, morale organizations (USO, Salvation Army, local donors) liaised with individual camp mayor cells rather than a central battalion representative. With the PAO acting as the interface for these and other groups, it would create a single point of contact who regulates the relationships between battalion and the civilian population.

Command and Control (C2) Architecture

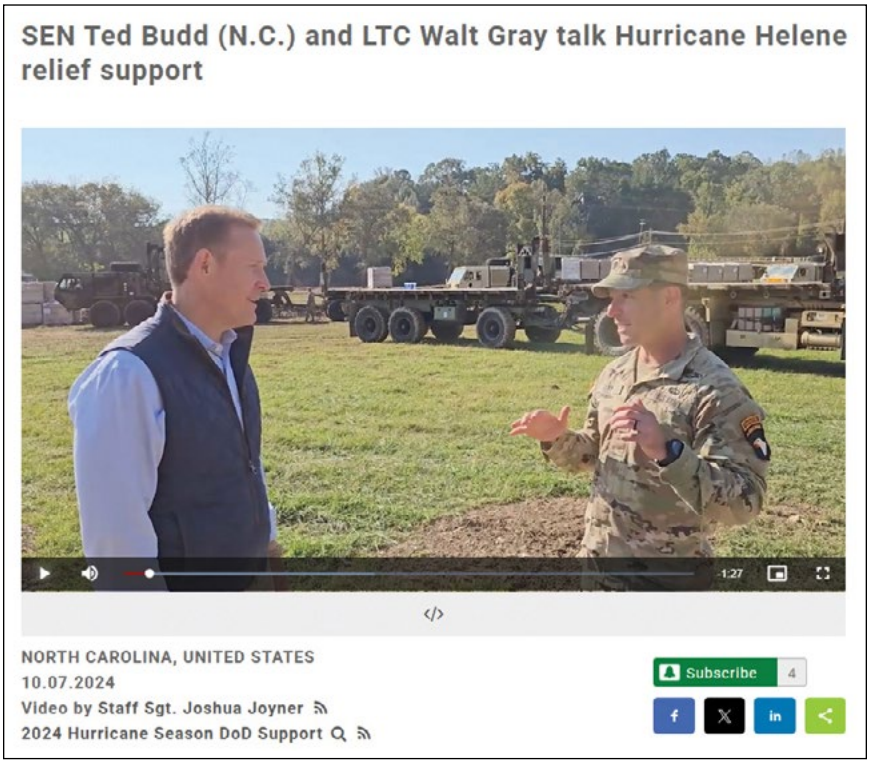
We utilized a split command post to achieve better proximity to the affected areas with the main command post located at LSA Windy Gap and the alternate command post, which was co-located with our higher headquarters, TF Castle, in Marion (50 miles apart). We aligned companies to specific counties to spread the forces throughout the area of operations. Throughout the operation, Bravo Company, completed MATOs in Haywood County (primarily in and around Waynesville, NC) and even established a more forward LSA at the county fairgrounds where Soldiers slept and sustained themselves. Alpha Company, Charlie Company, and MFRC completed MATOs and other operations in Buncombe, Madison, Yancey, and Mitchell counties at various points in the operation but rested and resupplied primarily at LSA Windy Gap.

Our battalion S-1 utilized a by-name personnel status report to accurately track personnel strength in the JOA. Trip tickets and an entrance/exit control point (ECP) to the LSAs provided sufficient operational data to track movement of personnel and the humanitarian aid operations. Using Microsoft Power BI to count, display, and sort all this data, the S-1 promoted a shared understanding of TF Falcon's personnel strength with both the higher headquarters (forward and rear) and within the task force.

TF Falcon used a distinct C2 configuration across our two command posts (CPs). We were required to employ specific equipment, compounded by the challenging mountainous terrain, which resulted in significant elevation variations. Initially, our CPs established a foothold with limited cellular capabilities but quickly transitioned to an in-place solution using Starlink. Our reliance on Starlink for high-speed internet became essential as frequency deconfliction between our systems and civilian systems restricted the available waveform types.

The companies faced a unique set of challenges as they experienced severe elevation changes in the mountainous terrain while utilizing our new radios and capabilities. Although they had access to limited waveforms similar to those of the CPs, the approved source for local radio communication was frequency

Figure 3 — Example Public Affairs Interview



At left, Soldiers in 1st Platoon, Alpha Company, 2nd Battalion, 502nd Infantry Regiment, 2nd Mobile Brigade Combat Team, 101st Airborne Division (Air Assault), remove debris so a local citizen can get to her tractor in western North Carolina on 11 October 2024. Above, Soldiers assigned to 2-502 IN deliver a generator to an isolated citizen during Hurricane Helene relieve efforts in Brunsville, NC, on 10 October 2024. (Photos by MSG Anthony Hewitt)

modulation (FM). However, FM communications were largely ineffective due to the need for line of sight (LOS), which was hindered by the topography. Consequently, the companies relied heavily on cellular service and the Starlink systems of local fire and police departments to maintain communication with the CPs.

To enhance our humanitarian response efforts, a proactive approach to frequency deconfliction and local unit support through spectrum management would be beneficial. The Tactical Scalable Mobile (TSM) network could have mitigated some of the challenges associated with elevation and LOS issues encountered by the companies. Furthermore, in non-tactical scenarios, satellite communications were pivotal to the mission's success. Starlink capabilities are essential both on and off the battlefield, especially in environments lacking local communication infrastructure.

Conclusion

Task Force Falcon deployed 537 Soldiers and 67 ISVs by large-scale, long-range air movement with less than 18-hour notice in support of humanitarian aid, utilizing the same TTPs that enabled success in force-on-force training exercises during JRTC Rotation 24-10. The equipment and capabilities that enable fast, effective, and controlled operations for a mobile brigade combat team in a contested environment can be effectively employed to provide support to civilian authorities as well. TF Falcon's ability to implement the tools and operating procedures tailored to warfighting into a humanitarian aid mission demonstrates the flexibility and dynamic strength of the MBCT.

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Less Death Star, More Tie Fighter:

The Tactical Need for Army Skirmishers

LTC TRAVIS MICHELENA

An eerie fog swirls around your boots as you lead your infantry platoon through the increasingly dark forest. A twig snaps, and the bushes rustle ominously 50 meters to the west. Suddenly, from the shadows emerges either one angry horse-sized duck or 300 angry duck-sized horses.

Given a choice, which would you rather fight? I wager you would much rather focus all of your attention on the one goliath duck than have to deal with a deluge of tiny horses. This may be just a silly thought exercise, but the concept has merit. Although the weight of one horse is equal to around 300 ducks, the effect on the battlefield is much different.[1] Even with superior intellect and technology, it is much more difficult to focus energy on numerous small, less lethal targets than it is to direct your efforts on the one larger but perhaps deadlier target. Yet this is the scenario the Army has boxed itself into with the continued focused development of large, heavy, and highly technical machines of war as *the* solution to combat.

To use a popular science fiction franchise as another example, a long time ago in a galaxy far away, the Galactic Empire concluded that the best way to win its long-running war was to build a super weapon so technologically advanced and massively devastating that Rebel forces would be forced into a final submission.[2] As franchise installments revealed, the massive time and resources required to build and operate the behemoth known as the "Death Star" was wasted not once but twice as the inferior Rebel forces exploited key vulnerabilities to destroy the weapon system with a swarm of relatively cheap fighters. The American way of war is on a similar path, but on the wrong side. We love technology. Our combat systems are built to defeat any attack, conquer any terrain, and destroy any enemy. But as history has demonstrated, even the most powerful of forces can be defeated, or at least perpetually disrupted, when attacked unconventionally.

Rangers assigned to the 75th Ranger Regiment assault an objective during a 2023 training exercise. (Photo by SGT Paul Won)

Armies worldwide are only getting more lethal, more accurate, and able to strike from increasingly further distances. The battlefield has changed. Years of training, billions of dollars, and months of deployment activities can be lost as a barrage of hypersonic missiles crest the horizon, each zeroing in on armored vehicles individually tagged and targeted by space and drone observation.[3] One entire combined arms battalion could be gone in a blink. While the Army has committed to increasing our ability to conduct counterfires and missile defense, and improve the lethality and distance of our weapon systems, that may be only half the solution. The plan of simply "out-executing" an opponent with like equipment is not actually simple at all. Army tactics must change to counter the advantages currently held by our adversaries at the same time we raise our ability to match and exceed them.

Losses are an unfortunate byproduct of war. It is not acceptable (in the U.S. military, at least) to simply throw people and equipment into the meat grinder in a battle of attrition, but it is equally dangerous to be of the mindset that losses can be fully negated with sufficiently hardened vehicles. Enemy long-range fires are at such a volume, range, and mobility that they can afford to attack targets early and often, and for better or worse, the U.S. Army fights through its vaunted main battle tanks. Most battle planning orbits around the use and maneuver of heavy armor, supported by air and artillery, to take and hold ground. We're watching the stalemate live in Ukraine, where neither side can take and hold ground despite significant ground and air barrages. The Army should consider going lighter, cheaper, and more numerous to defeat opponent advantages *before* committing heavy armor. The goal would be to finish the fight with the tanks rather than start it.

If the U.S. military is planning on fighting a peer threat, we need to consider what gives a peer threat the most trouble. Namely, what gives us the most trouble. Too often, we reference Operation Desert Storm as a great victory against a similarly equipped military, but it is the Yom Kippur War in 1973 that may give us the most insight. The Israeli Army, which is similarly equipped to U.S. forces, was initially defeated in part because of the overwhelming number of individual anti-tank weapons leveled against their western forces. Coupled with surprise and other compounding factors, the better-equipped and trained Israeli forces were rocked on their heels. More recently, the U.S. military conducted the exercise Millennial Challenge 2002, where it faced an unnamed virtual Middle Eastern enemy force led by retired Marine Gen Paul Van Riper.[4] The results were unnerving at best:

> *Van Riper decided that as soon as a U.S. Navy carrier battle group steamed into the Gulf, he would "preempt the preemptors" and strike first. Once U.S. forces were within range, Van Riper's forces unleashed a barrage of missiles from ground-based launchers, commercial ships, and planes flying low and without radio communications to reduce their radar signature. Simultaneously, swarms of speedboats loaded with explosives launched kamikaze attacks. The carrier battle group's Aegis radar system — which tracks and attempts to intercept incoming missiles — was quickly overwhelmed, and 19 U.S. ships were sunk, including the carrier, several cruisers, and five amphibious ships. "The whole thing was over in five, maybe ten minutes," Van Riper said.*[5]

Gen Van Riper wreaked havoc on the technologically superior U.S. forces in short order, and at a much-reduced cost, than if he had attacked with like forces (i.e., Navy vs. Navy). The lessons we learned were the wrong ones. We doubled down on protection and lethality instead of adapting the swarm tactics as a viable winning strategy.

Swarming skirmishers are not a new trend and have been a feasible tactic since formal militaries were created… and likely earlier. Throughout history, inferiorly equipped enemies have adapted by giving advanced forces both more *and* less to engage. They deploy small, agile, and inexpensive combat forces in greater numbers with seemingly chaotic movements, as opposed to large high value targets with structured objectives. Napoleon struggled against guerrilla tactics in Spain and also employed his own skirmishers to disrupt coalition formations before committing his own formations. Soviet tanks and helicopters struggled to defeat scattered locals equipped with anti-air and anti-tank weapons in Afghanistan and are continually harassed by small drone warfare in Ukraine.[6] The U.S. has personally experienced fighting these tactics in Korea, Vietnam, Iraq, and Afghanistan, not to mention the struggles with fighting Native Americans early in our own country. Yet despite the continual examples presented by history, the U.S. Army persists in the thought that our "Death Stars" will dominate future conflicts. We move further and further away from skirmishers as a viable addition to our fighting formations. With the advent of brigade combat teams, the lethality, mobility, and deep-strike capability of the Vietnam-era long-range reconnaissance detachments (LRSDs) is slowly being converted to armored reconnaissance units, designed to engage and defeat adversary reconnaissance armor with like vehicles. The ability to actively harass and disrupt without being decisively engaged has dissipated at a time when it is needed the most.

Field Manual 3-0, *Operations*, implores commanders to give the enemy "multiple dilemmas" in an effort to affect their observe, orient, decide, act (OODA) loop. Small teams — ghosting from tree to shadow in the wood line, attacking and disappearing continuously — cause trepidation and disrupt movement like almost no other force. The Imperial Tie Fighters swarmed like killer bees, never presenting a singular target and utilizing a "death by a thousand cuts" strategy. Vietcong forces mastered this fear during the Vietnam War as well as our sniper teams do today. Modern skirmishers would utilize certain traits to be the most effective:

1. Small Teams: A group of two to four Soldiers is more effective for "hit and run" attacks than the traditional cavalry and infantry formations. Operating semi-independently, and in large numbers (of teams), these groups would swarm enemy forces from multiple angles, striking and withdrawing as another team attacks from a new direction. Their goal is to create chaos and confusion, with the bonus possibility of destroying key enemy equipment and personnel.

2. High Lethality and Mobility: Smaller, lighter, faster. For the cost of one Bradley Fighting Vehicle, the Army could have around 25 Polaris MRZR all-terrain vehicles. That trade-off gives a commander 25 chaos teams, which, when equipped with individual sniper rifles, grenade launchers, and anti-air and anti-tank weapons, can attack targets of opportunity at will before quickly fading into the shadows. Given individual dirt bikes or quad bikes, especially if electric and quiet, the

Paratroopers in the 1st Brigade Combat Team, 82nd Airborne Division conduct operations during Swift Response in Torun, Poland, on 8 June 2016. (Photo by SGT Juan F. Jimenez)

individual skirmishing soldier, and team overall, is even more mobile and frustrating.

3. Stigmergy: Essentially, swarming attacks are executed without continual direction and coordination during the attack.[7] In an ambush, Team A engages suddenly and violently, then withdraws just as quickly. Team B engages from a different direction just as the enemy responds to the initial attack, then quickly withdraws. As enemy attention shifts, Team A, or even a third or fourth team engage again, continually interrupting the OODA loop with new problems, all without having defined planning between teams.

> *Stigmergy-based rules allow units to deduce when to attack, retreat, and how much distance to maintain with other detachments based on the surrounding environment. Relatively simple sets of rules, properly vetted and trained, can allow junior leaders to rapidly self-organize with little to no electronic communication signature to complete a mission.*[8]

It can be argued that Stryker brigade combat team (SBCT) reconnaissance squadrons, as well as Ranger battalions and even infantry companies, all retain a skirmisher mentality. This is certainly true, and the intent would be to enhance these capabilities with equipment and training rather than allow them to be slowly transformed to heavily armored, high-signature formations. The two most likely candidates for the development of chaos teams are the cavalry squadrons and infantry companies. Their missions and training sets are already closely associated with the objectives of the skirmisher, but with the added ability to bridge the gap between a reconnaissance (information) focus and the infantry (kill and hold) focus.

The arguments against such formations are largely based on risk. There is obvious concern for the survivability of the teams, which is in direct conflict with the current trend of increasing the armor of reconnaissance elements. Their key to survival, however, is the same as what makes them lethal. Chaos teams are small and fast, with a minimal vehicle signature and battlefield footprint. Much like hearing the buzz of a mosquito, it is difficult to pin down where it's coming from, and even harder to actually swat it. This becomes exponentially more difficult as the number of mosquitoes increases. As mentioned, the teams utilize opportunistic hit-and-run attacks to avoid direct and extended engagements with enemy forces. Violent action is followed by rapid disengagement during the initial confusion, leaving the enemy dealing with the sudden chaos. There is the threat of being discovered and destroyed, which is a constant concern for all reconnaissance elements (as well as a necessary evil). Once again, the small footprint of the teams is conducive to quickly and easily going to ground as needed. Training focus on survival skills and camouflage will further enhance their ability to fade into the forest. The enemy gets a vote; however, and it is likely to find a few teams through luck or detection. The large number of teams and fluidity of their mission minimize the impacts to combat effectiveness of the skirmisher element. In contrast, the loss of armored vehicles in traditional reconnaissance formations can open gaps that are not easily closed. Whereas swatting that one mosquito is satisfying, it does little to stop the onslaught of the rest of the swarm. By nature, the chaos teams are certainly high risk, but the effects they provide could prove to be a much higher reward.

The Army currently lacks the ability to actively disrupt enemy operations on a persistent basis. We lament adversary capabilities for anti-tank and anti-air at the lowest level, forcing excessive caution before our adversary has even used it against us, but have not addressed our tactics to counter them. U.S. Army reconnaissance and infantry elements have clearly defined missions and doctrine but lack the flexibility to flow in and through the enemy with open objectives. Much like the swarms of Tie Fighters surging against approaching Rebel fighters, the benefits of the chaos teams are clear. They have minimal logistics support requirements, the ability to cause massive disruption, and can absorb the loss of teams without becoming combat ineffective.

Before the message boards fill with die-hard fans, I fully acknowledge that tanks are probably more Imperial Star Destroyer than Death Star. The point remains that the historical Army concept of *relying* on this heavy armor is susceptible to catastrophic failure with a few well-placed shots (and perhaps a bit of the Force). To defeat an adversary with the depth and breadth of artillery and anti-access/area denial that our adversaries have demonstrated, the Army needs to employ less Death Stars and invest in quite a few more Tie Fighters.

Notes

[1] The average duck is roughly 4 pounds, while the average horse is roughly 1,200 pounds.

[2] George Lucas, *Star Wars*, Lucasfilm, 1977, https://www.imdb.com/title/tt0080684/.

[3] Amanda Macias, "Russia's New Hypersonic Missile, which can be Launched from Warplanes, Will Likely Be Ready for Combat by 2020," CNBC, 13 July 2018, https://www.cnbc.com/2018/07/13/russia-new-hypersonic-missile-likely-ready-for-war-by-2020.html.

[4] Micah Zenko, "Millennium Challenge: The Real Story of a Corrupted Military Exercise and its Legacy," *War on the Rocks*, 5 November 2015, https://warontherocks.com/2015/11/millennium-challenge-the-real-story-of-a-corrupted-military-exercise-and-its-legacy/.

[5] Ibid.

[6] "The Soviet Invasion of Afghanistan and the U.S. Response, 1978–1980," U.S. Department of State, n.d., https://history.state.gov/milestones/1977-1980/soviet-invasion-afghanistan.

[7] A form of self-organization without formal planning, direct control, or communication; examples: ants, bees, flocks of birds, and schools of fish.

[8] Justin Lynch and Lauren Fish, "Soldier Swarm: New Ground Combat Tactics for the Era of Multi-Domain Battle," Modern War Institute, 5 April 2018, https://mwi.westpoint.edu/soldier-swarm-new-ground-combat-tactics-era-multi-domain-battle/.

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Trailblazers of Tomorrow:

The Evolving Legacy of Pathfinder Operations

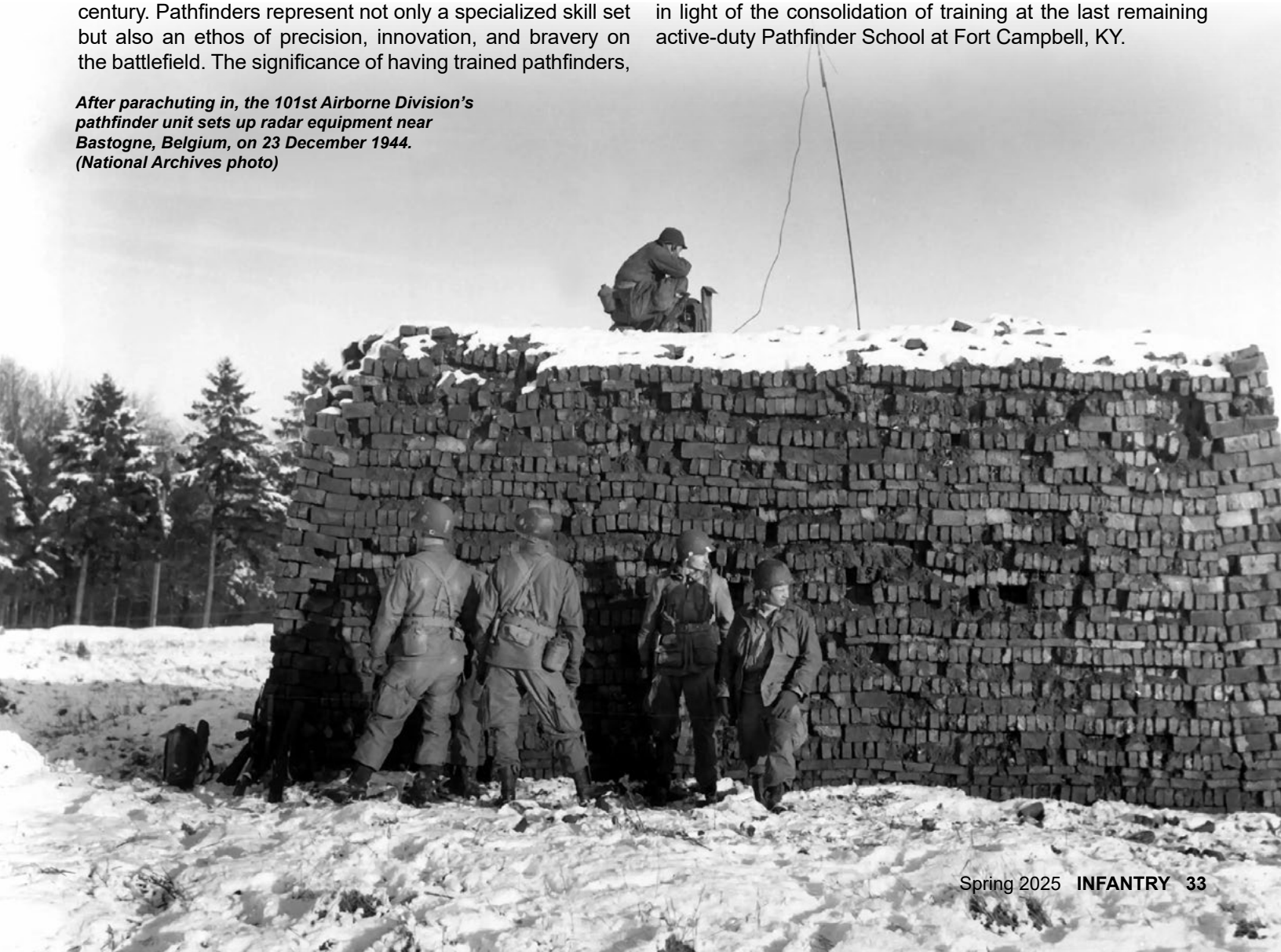
LTC CHAVESO COOK
LTC MICHAEL HAMILTON
MAJ JESSICA COLSIA

"The night before a jump is like the night before the battle. You wait. You wonder. You get ready. And you know, when you go in, the Pathfinders have already been there. They've made it possible for you to find your way."

— GEN Matthew B. Ridgway

GEN Matthew B. Ridgway, commander of the 82nd Airborne Division during World War II, recognized the importance of pathfinder operations, leading to the prominent legacy that now occupies a storied place in the annals of military history. Pathfinders — those elite Soldiers who clear the way for larger forces — were instrumental in shaping the outcomes of major conflicts throughout the 20th century. Pathfinders represent not only a specialized skill set but also an ethos of precision, innovation, and bravery on the battlefield. The significance of having trained pathfinders, both in a historical context and for future military applications, is undeniable. As the U.S. Army looks to the future battlefield, the role of pathfinders and pathfinder units will continue to evolve, yet their foundational skills and significance on the battlefield will remain critical in an era where rapid mobility and precision are vital to success.

This article delves into the history of pathfinder operations, highlighting their key contributions to famous military campaigns and operations. It also explores how these operations are adapting for modern and future battlefields, considering new technologies and threats. Finally, it considers the future of pathfinder training and operations, particularly in light of the consolidation of training at the last remaining active-duty Pathfinder School at Fort Campbell, KY.



After parachuting in, the 101st Airborne Division's pathfinder unit sets up radar equipment near Bastogne, Belgium, on 23 December 1944. (National Archives photo)

The Origin Story: A History of Pathfinder Operations and Famous Pathfinder Units and Operations

Pathfinder operations date back to World War II, when the Allied forces identified a need for small, highly trained units that could establish landing zones and drop zones in enemy territory. These operations required a unique combination of technical proficiency, physical endurance, and battlefield audacity. The Soldiers who became pathfinders were trained to operate behind enemy lines and use their unique skills to guide paratroopers and aircraft to precise locations in hostile and often austere environments.

UH-1D helicopters airlift members of the 2nd Battalion, 14th Infantry Regiment to a new staging area during the 25th Infantry Division's Operation Wahiawa northeast of Cu Chi, Vietnam, on 16 May 1966. (National Archives photo)

The first U.S. pathfinder units of the 82nd Airborne Division were created to address the hard lessons of the 1943 airborne invasion of Sicily. The parachute assaults in support of Operation Husky were plagued by friendly fire, high winds, and navigational challenges. These problems served as the impetus for the U.S. Army's first pathfinder capability. Consequently, 82nd Airborne Division pathfinders were trained and employed in Salerno during Operation Avalanche to reconnoiter and mark drop zones, establish navigational aids, and provide positive control to friendly aircraft.

Among the most famous is the 101st Airborne Division's Pathfinder Company. This unit played a crucial role in numerous operations, including the D-Day invasion and Operation Market Garden in World War II, as well as in Vietnam. The bravery and effectiveness of these pathfinders earned them a legendary status within the airborne community.

Another notable unit during Operation Market Garden is the British 22nd Independent Parachute Company, which served as the pathfinder unit for the British 1st Airborne Division during World War II. This unit led the way during one of the largest airborne operations in history. Although the operation ultimately failed due to unforeseen challenges, the pathfinders' role in guiding and coordinating the landings was essential to its initial success.

In the Pacific Theater, pathfinders also played a critical, versatile role during operations in the Philippines. Their ability to move stealthily through enemy lines on foot and also land by boat extended the battlefield and enabled the rapid concentration of combat power. The success of these early operations demonstrated the importance of precision and coordination in modern warfare. In his AUSA Institute of Land Warfare Paper, John M. Carland remarked that pathfinders became an indispensable part of airborne and airmobile operations throughout the war given their ability to assess the situation and direct larger forces.[1]

Following World War II, pathfinders were again called upon during the Korean War. Operating in rough, mountainous terrain, they used their skills to coordinate helicopter evacuations, supply drops, and troop movements. The war demonstrated the importance of heliborne or airmobile operations, and pathfinders became key players in this new form of warfare. Their ability to quickly identify and secure landing zones allowed for greater mobility and flexibility on the battlefield.

In Vietnam, pathfinder operations took on an even greater significance.[2] Helicopters became a central feature of the U.S. military's strategy, and pathfinders were critical in supporting air cavalry operations, troop insertions, and resupply missions. The terrain in Vietnam — dense jungles and rugged mountains — posed significant challenges, but the pathfinders adapted, developing new techniques and tools to ensure the success of their missions. Pathfinders were vital in establishing fire bases and other forward positions, ensuring that troops and supplies could be moved quickly and safely across the battlefield.

In more recent history, the U.S. Army's 75th Ranger Regiment has incorporated pathfinder operations as a core mission set. While the regiment is primarily known for its direct action and special reconnaissance capabilities, its use of pathfinders during operations in Afghanistan and Iraq demonstrated the continuing relevance of these skills. Pathfinders have been essential in establishing forward operating bases, landing zones, and drop zones in hostile environments, ensuring the safe and timely insertion of troops and supplies.

Key Changes: The Evolution of Pathfinder Operations

Whereas the traditional role of pathfinders remains rooted in their ability to set up and operate drop zones, pickup

zones, and helicopter landing sites for airborne operations, air resupply operations, or other air operations in support of the ground unit commander, their mission set has evolved significantly over the past few decades. Advances in technology, such as the Global Positioning System (GPS), drones, and advanced communication systems, have changed the nature of pathfinder operations, making them more precise and efficient.

Today, pathfinders are not just responsible for marking landing zones and drop zones; they are also involved in reconnaissance, intelligence gathering, target acquisition, and infiltration. As discussed in a recent *Infantry* article, of the multiple forms of maneuver, infiltrations hold a particular advantage in today's conflict as they are designed to move forces deeper into enemy-controlled areas which will be contested and denied more often.[3] Therefore, the modern pathfinder must be proficient in a wide range of skills, from navigating in difficult terrain to operating advanced communication and sensor systems.

One of the most significant developments in recent years has been the integration of unmanned aerial vehicles (UAVs) into pathfinder operations. UAVs provide pathfinders with real-time intelligence and reconnaissance capabilities, allowing them to assess the battlefield and make informed decisions about where to establish landing zones and drop zones. This technology has been particularly useful in counterinsurgency operations in Afghanistan and Iraq, where pathfinders have had to operate in complex and ever-changing environments.

A U.S. Army Alaska Soldier coordinates with aviation assets during a Pathfinder Course in 2019. (Photo by Alejandro Peña)

At the same time, pathfinders must still rely on their traditional skills of navigation, communication, and coordination. In another recent *Infantry* article, SGM Bradley Watts suggests that airborne operations will remain relevant in large-scale combat operations, which begets a need for pathfinders.[4] Despite the advances in technology, the need for human judgment and decision-making on the battlefield remains critical. Pathfinders must continue to be able to adapt to changing conditions and make split-second decisions that can have a significant impact on the success of a mission.

The Future of Pathfinder Training: The Sole Pathfinder School at Fort Campbell

Over the last few years, the Army has terminated the Pathfinder Course at all but one of its active-duty locations — Fort Campbell. Some may argue that the consolidation of pathfinder training at the Sabalauski Air Assault School (TSAAS) is one of the most significant challenges facing the future of pathfinder operations due to throughput of trainees and continuous access to aviation assets. More than likely, one must be stationed at Fort Campbell to become pathfinder qualified going forward. While this consolidation may result in a smaller number of trained pathfinders and raises important questions about the future of pathfinder operations, it also presents an opportunity to modernize and enhance the course curriculum.

As the battlefield evolves, so must the training that pathfinders receive in order to remain relevant. TSAAS, the Army's active-duty center of excellence for pathfinder and air assault operations, chooses to rise to the challenge rather than become paralyzed by the consolidation, incorporating the latest technologies and tactics into its training programs. For example, in June 2024, TSAAS extended the Pathfinder Course from 15 to 18 days to incorporate additional blocks of instruction on modern radio communications and set up and operation of forward arming and refueling points (FARPs). Future evolutions could include unmanned system (air and ground) integration, protection warfighting function capabilities such as counter-UAS, tactical signals intelligence (SIGINT) and electronic warfare (EW) systems, air-ground common operating picture capabilities, reduced electromagnetic spectrum (EMS) signature communications, and modern meteorological and geospatial intelligence (GEOINT) reconnaissance capabilities.

By providing pathfinders with training that reflects the complexities of future warfare, the Army can ensure that these Soldiers remain an indispensable asset on the modern battlefield. A consideration that TSAAS may want to investigate would be partnering with civilian agencies involved in disaster relief or the Futures and Concepts Center at Army

Futures Command. These and other relationships could offer forthcoming pathfinders valuable experience, further broadening their skill set.

At the same time, it is essential that the Army continues to emphasize the importance of traditional pathfinder skills. Whereas technology has certainly made some aspects of the pathfinder's job easier, the core skills of navigation, communication, and coordination are timeless and arguably will continue to be a lost art.[5] The lessening of pathfinder training opportunities should not lead to the dilution of these essential skills; rather, it should serve as an opportunity to refine and enhance them.

Pathfinder 2.0: Future Uses of Pathfinders on the Battlefields of Tomorrow

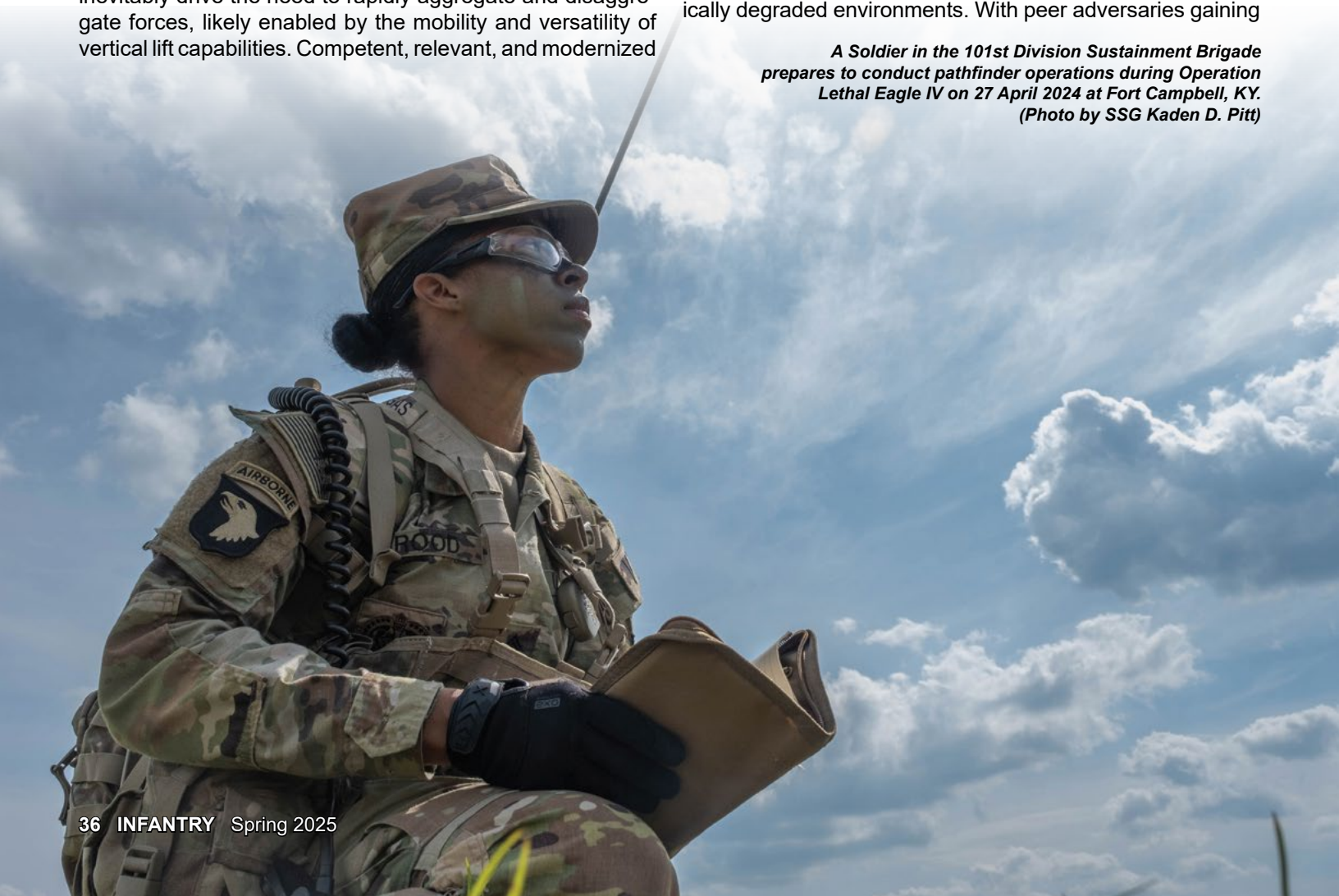
Expanding upon the future of pathfinder training, as the nature of warfare continues to evolve, so too should the role and use of pathfinders. The modern battlefield is increasingly characterized by rapid mobility, precision strikes, and decentralized operations. Pathfinders, with their unique skill set, are well-positioned to play a key role on this new warfare stage.

With the ever-increasing transparency of the modern battlefield through the proliferation of UAVs, SIGINT, EMS sensing, and space-based intelligence capabilities, the need to revive maneuver in modern warfare is critical. This will inevitably drive the need to rapidly aggregate and disaggregate forces, likely enabled by the mobility and versatility of vertical lift capabilities. Competent, relevant, and modernized pathfinder capabilities will be critical to modern maneuver.

One of the most significant areas where pathfinder operations will remain crucial is in support of multidomain operations (MDO). The U.S. military's growing focus on the integration of land, sea, air, space, and cyber domains requires an unprecedented level of coordination, and pathfinders are uniquely suited to facilitate this coordination. In MDO, pathfinders can establish landing zones for various types of aircraft, including manned and unmanned systems, using new age and long-reaching satellite communications. They could also guide logistical resupply missions that span across domains or enable the link or connection of a remote physical node that may make possible or enhance a cyber effect.

For instance, future conflicts may involve autonomous or remotely piloted systems that rely on accurate ground coordination for deployment or retrieval. Pathfinders, using advanced UAVs and communications (comms) technology, will be able to coordinate across vast distances and in austere environments, ensuring that these UAVs and comms can effectively support larger combat or support elements. Moreover, they can also facilitate joint operations, enabling rapid movement and synchronization to overwhelm adversaries through integrated and timely actions.

A critical insight into the future relevance of pathfinder operations must include the potential to operate in technologically degraded environments. With peer adversaries gaining



A Soldier in the 101st Division Sustainment Brigade prepares to conduct pathfinder operations during Operation Lethal Eagle IV on 27 April 2024 at Fort Campbell, KY. (Photo by SSG Kaden D. Pitt)

ground in counterspace, cyber, and EMS capabilities to deny our technological advantages and disrupt our operations, the joint force must train on, become proficient at, and maintain the ability to operate and fight under degraded conditions in denied environments.[6] The Army's future pathfinder employment concept must carefully envision these requirements across all warfighting functions and shape the direction of future pathfinder doctrine and training to meet these challenges.

An often overlooked yet critical application of pathfinder operations in the future battlefield could be in the role of humanitarian and disaster relief. As natural disasters become more frequent and severe, militaries will increasingly be called upon to respond quickly and efficiently. Pathfinders' ability to assess terrain, secure landing zones, and coordinate movements of personnel and supplies can make them invaluable in such missions. For example, consider the scenario of a large-scale natural disaster in a remote or hostile region. Pathfinders could deploy ahead of larger military or humanitarian units to survey the area, establish critical points for supply distribution, and guide rescue or medical teams to where they are most needed. Their ability to operate autonomously in chaotic environments would allow them to facilitate the rapid and coordinated response required in these missions, ultimately saving lives and reducing suffering.

Pathfinders' expertise in navigation and terrain analysis can also support UAV, MDO, and humanitarian operations in urban settings, where debris, damage, or denied territory has rendered traditional routes unusable or inaccessible. Their skills in identifying alternate routes and establishing landing zones in unconventional locations will be critical to enabling aerial resupply and medical evacuations in these areas. As these missions grow more complex, the continued development of pathfinders' technological and logistical capabilities will be essential.

Final Thoughts: From WWII's Frontlines to Future Battlefields, Pathfinders Will Continue to Lead the Way

Being first in and last out has not and will not change. Pathfinder operations have a rich history, dating back to World War II, when small teams of elite Soldiers cleared the way for larger forces in some of the most significant military campaigns of the 20th century. Their role has evolved over the years, but the core principles of precision, adaptability, and bravery remain at the heart of what it means to be a pathfinder.

As seen during the Kursk incursion, conflicts today require leadership in uncertainty and embracing innovation.[7] As the nature of warfare continues to change, with new technologies and tactics emerging, pathfinders will continue to play a critical role on the battlefield of tomorrow. Whether supporting multidomain operations or providing essential aid in humanitarian missions, pathfinders will remain essential to the success of military operations. The consolidation of active-duty pathfinder training at Fort Campbell represents both a challenge and an opportunity, and it is up to the Army to ensure that the legacy of the pathfinder continues.

One of the most significant areas where pathfinder operations will remain crucial is in support of multidomain operations (MDO)... In MDO, pathfinders can establish landing zones for various types of aircraft, including manned and unmanned systems, using new age and long-reaching satellite communications.

First in, last out!!

Notes

[1] John Carland, "How We Got There: Air Assault and the Emergence of the 1st Cavalry Division (Airmobile), 1950–1965," AUSA Land Warfare Paper No. 42, May 2003, https://www.ausa.org/sites/default/files/LWP-42-Air-Assault-and-the-Emergence-of-the-1st-Cavalry-Division-Airmobile-1950-1965.pdf.

[2] National Pathfinder Association, History Page, 2017, https://www.nationalpathfinderassociation.org/history.

[3] LTC Aaron Childers and MAJ Michael Stewart, "Relearning Infiltrations: The Light Infantry Advantage," *Infantry*, Fall 2024, https://www.benning.army.mil/infantry/magazine/issues/2024/Fall/PDF/INFMag-Fall24.pdf.

[4] SGM Bradley S. Watts, "Airborne Is Relevant," *Infantry*, Fall 2024, https://www.benning.army.mil/infantry/magazine/issues/2024/Fall/PDF/INFMag-Fall24.pdf.

[5] John Vickery, "The Lost Art of Dismounted Land Navigation," *Infantry*, October-December 2015, https://www.benning.army.mil/infantry/magazine/issues/2015/OCT-DEC/pdf/4)%20Vickery%20-%20Land%20Nav_txt.pdf.

[6] Lisa Frye, "Support from Space: Vision Homes in on Ground Forces, Multidomain Operations," *ARMY* Magazine, December 2024.

[7] Chaveso Cook, "Kursk Incursion Supplies Lessons for Young Leaders," *ARMY* Magazine, December 2024.

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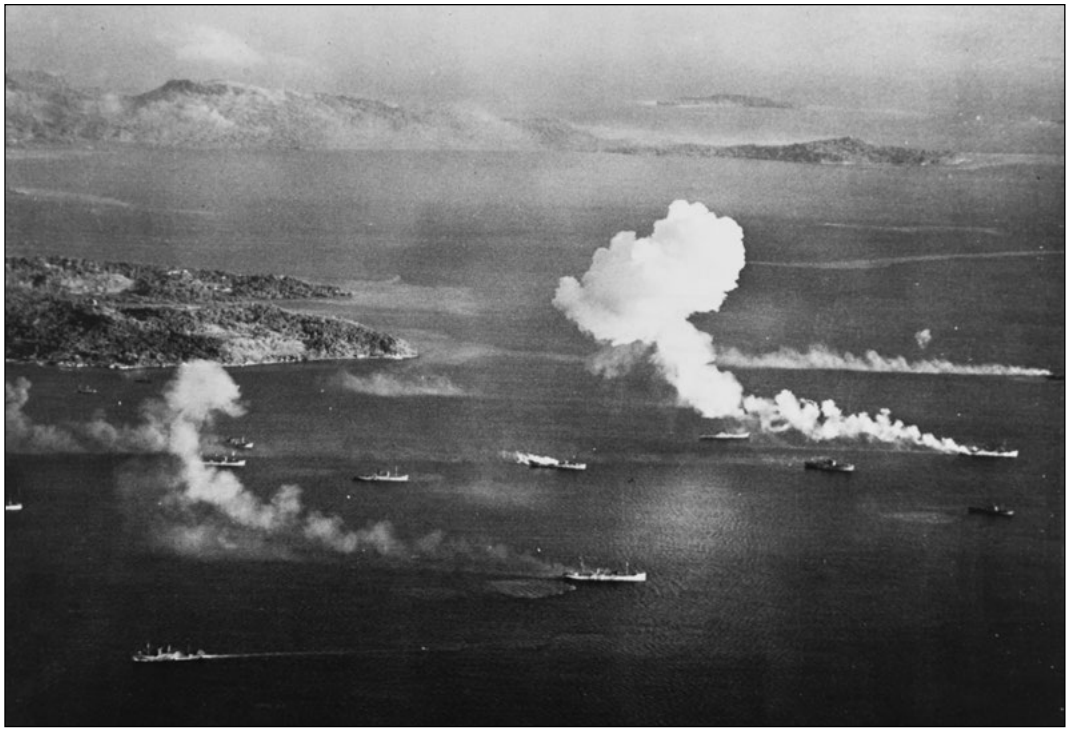
Tactical Reconnaissance Strike in Ukraine: A Mandate for the U.S. Army

LTC GARRETT M. SEARLE

At first light on the morning of 17 February 1944, five aircraft carriers from the U.S. Navy's Task Force 58 turned into the wind and began launching F6F fighters. The formation of 72 Hellcats, rising into the cool, clear dawn, banked west to put the rising sun at their back and set a course for Truk Atoll, an important anchorage for the Japanese Navy in the Western Pacific. The planes were the first wave of a significant raid on the base that would consist of more than 500 carrier-based aircraft. The Hellcats made quick work of the Japanese fighter defense, much of which never got off the ground. They were followed by a continuous flow of dive bombers and torpedo bombers, all with an assigned target on the airbases or lagoon anchorages. By late morning, much of the Japanese fleet based there was reduced to floundering wrecks, but several destroyers and cruisers made a run for the north passage and the open ocean beyond. Dive bombers gathered overhead to finish off the badly crippled ships but were halted by the voice of the carrier boss, Admiral Marc Mitscher, on the radio: "Stay clear," he said, "do not sink that ship." Perplexed by the order, the aviators soon saw its origin: Admiral Raymond Spruance's flagship, the battleship *New Jersey*, arriving along with a surface task group of other battleships and cruisers. Apparently, they were there to warm up their big guns on a couple of helpless Japanese ships, which they quickly sunk. On its way down, one of the Japanese destroyers managed to get off several torpedoes that nearly hit the *New Jersey*. A dive-bomber pilot circling overhead mocked the effort, calling it a "great victory" for the battleships.[1]

Eighty years later, on the outskirts of Chasiv Yar, Ukraine, a Russian armored column emerged from the tree line into a muddy field pockmarked with artillery craters. A T-80 main battle tank with a mine roller led the formation, and a series of other tanks and armored personnel carriers (APCs) followed in file, wary of the mines dotting the field. Russian artillery impacted around suspected Ukrainian positions forward of their maneuver, but supply issues meant no smoke rounds were available to obscure the assault. The Russian forces were entering an engagement area out of visual contact from Ukrainian tanks and infantry fighting vehicles, dug in and camouflaged two kilometers to the west. However, the Ukrainian brigade commander had a clear view of the attack from his command post behind the lines, thanks to a fleet of unmanned aerial systems (UAS) overhead. The commander began to direct his defense, relying heavily on his armed reconnaissance company and forward anti-tank guided missile (ATGM) teams. His tablet showed the tank with breaching equipment as a high-payoff target, and he directed an ATGM strike against it. Damaged and knocked off course by the missile, the tank hit a mine and was disabled, partially obscured by its own smoke. Two first-person view (FPV) UAS, with rocket-propelled grenade rounds strapped to their bellies, hung momentarily in the air above the target, their experienced pilots knowing that a little patience could pay off. As the smoke cleared slightly, one of them found his mark, hitting the T-80 at the base of the turret above the



Japanese ships burn after an air attack in Truk Lagoon, as seen from a USS Intrepid (CV-11) aircraft on 17 February 1944, the first day of raids. (National Archives photo)

engine. A massive explosion followed as the tank's ammunition cooked off. The rest of the Russian formation was quickly devolving: Another tank and two BMPs were disabled by FPV drones, their personnel dismounting for nearby cover. As Ukrainian artillery went to work on the disabled tracks, the remaining vehicles turned back for the wood line, lucky to make the turn without hitting a mine. Five kilometers away in a damp, mud-walled bunker, the two FPV pilots lifted their goggles and lit cigarettes to celebrate the day's success. Somewhere nearby in a Ukrainian tank, its gun tube cold, the gunner watched through his optics as smoke rose above the distant tree line. He turned to his platoon leader and asked, "Do you think they'll let us get up there to knock off a few more APCs?" "No way," said the platoon leader, "we move from this spot now and we'll be burning right there with 'em."[2]

The second of these two stories is fictional, drawn together from videos and other reporting from the front lines in Ukraine. Despite the license employed to create a compelling narrative, the parallels between the two are strong and unavoidable in the available evidence. The war in Ukraine has made clear that the appearance of armed and guided small UAS on the modern battlefield will have a revolutionary impact on the conduct of ground combat. The impact will be similar to that caused by the introduction of reconnaissance and attack aviation to warfare at sea. After years of slow development in Iraq, Syria, and Nagorno-Karabakh, what we are seeing in Ukraine is a miniaturization of the reconnaissance-strike complex, moving this form of aerial maneuver and precision fires into the hands of ground force commanders at the tactical level of war. By comparing this trend with the advent of naval aviation and its impact on naval surface warfare, we can gain a more complete understanding of how the new capabilities will change the future of conflict on land and draw conclusions about the way ahead for adopting and employing the tactical reconnaissance-strike complex for U.S. ground forces.

Naval Aviation and the Reconnaissance-Strike Complex

As aircraft emerged as a military tool with great potential in the early 20th century, there was broad disagreement about their utility and role in warfare at sea. Simultaneously, there was nearly universal consensus about the dominant role of big gun battleships. However, as the major global powers embarked on an arms race to build the biggest, fastest, and most heavily armed and armored battleships, aviation technology and its military utility improved at an exponential pace. World War I proved disappointing for battleship enthusiasts but saw increasing utility for aircraft in combat on land and, to a lesser extent, at sea as scouts and spotters for the line-of-battle ships.

Naval aviation developed rapidly during the period after World War I, with the major naval powers building and experimenting with increasingly capable aircraft (in both range and payload) and the ships needed to carry them into combat.[3] In the U.S. Navy, this resulted in significant internal debate on

After years of slow development in Iraq, Syria, and Nagorno-Karabakh, what we are seeing in Ukraine is a miniaturization of the reconnaissance-strike complex, moving this form of aerial maneuver and precision fires into the hands of ground force commanders at the tactical level of war.

the tactics that would dominate the next war and specifically a war against Japan in the Western Pacific. In a prescient statement, a member of the U.S. Navy's General Board asserted in 1935 "that in any war with Japan, the struggle between carrier air forces — not the engagement between the battle lines — would decide command of the sea."[4]

Despite such moments of clarity, the debate was not settled prior to the start of the war. Both sides were constrained by treaty obligations and adopted a hedging strategy, building a relatively small number of aircraft carriers to support their traditional battle line fleets.[5] The Japanese attack on Pearl Harbor and the subsequent carrier actions at the Coral Sea and Midway cemented the revolutionary status of naval aviation and the fast carrier task force. In fact, the Battle of the Coral Sea was the first decisive naval engagement in history in which the two fleets never made visual contact.[6] By the time of the raid on Truk in early 1944, described at the beginning of this article, the U.S. Pacific Fleet had completely reorganized around the fast carrier task force as its principal offensive and defensive weapon.

Simultaneously, the Imperial Japanese Navy (IJN) and its carrier air forces were in a state of rapid decline. Manpower and material constraints left them short of adequately trained pilots and relying on technically inferior aircraft.[7] They desperately needed to increase the efficiency of their attacks to have any chance of stopping the American advance towards the home islands. The IJN found that efficiency in the fatalistic and quasi-religious form of suicide weapons, known as kamikaze (usually translated as divine wind). The capability of kamikaze fighters greatly increased precision by pairing destructive power with an intelligence in the final attack, able to vector that destructive force and place it accurately to maximize damage to an enemy vessel. After witnessing a kamikaze attack on his flagship, the *USS New Mexico*, Admiral Spruance, the U.S. Fifth Fleet commander, commented, "The suicide plane is a very effective weapon, which we must not underestimate. I do not believe anyone who has not been around within its area of operations can realize its potentialities against ships. It is the opposite extreme of a lot of our Army heavy bombers who bomb safely and ineffectively from the upper atmosphere."[8]

The introduction of these weapons proved too little and too late to have a sizable impact on the momentum of the Allied

push against Japan, but it did signal the coming precision warfare revolution that would occur later in the 20th century. The kamikazes were a kind of crude missile (Andrew Krepinevich, a defense policy analyst, called them "human-guided cruise missiles"), and eventually missiles would all but replace bombs and direct fire weapons in the long-range engagements now characteristic of naval warfare.[9]

These naval air forces represented the very beginning of the "reconnaissance-strike complex," extending and coordinating the sensing and striking power of a military force. A reconnaissance-strike complex has three primary components: a reconnaissance element, a precision-strike element, and a coordinating element or "battle network."[10] For the U.S. Navy, those components were all visible in their nascent forms by the end of WWII, with the aerial and submarine reconnaissance and strike capability paired with coordination by wireless telegraphy. This crude battle network meant that effective combat command at sea could move from battleship bridges to aircraft carrier combat information centers.[11] A similar change is now happening for combat command at the tactical level of land warfare. Since their inception during WWII, reconnaissance-strike complexes have been employed with stunning effect on land, most notably in the U.S. Army's rapid destruction of the Iraqi Army in 1991. Now, the proliferation of small UAS and precision attack options is driving the miniaturization of the reconnaissance-strike complex, enabling tactical commanders to rapidly gather and analyze intelligence, conduct precision strikes, and adapt their maneuver in real time. This next generation of the precision warfare revolution is on full display on the front lines in eastern Ukraine.

Ukrainian Soldiers from the 25th Sicheslavska Brigade prepare an improvised first-person view (FPV) strike drone. (Photo courtesy of the Ministry of Defense of Ukraine, armyinform.com.ua)

Tactical Reconnaissance Strike in Ukraine

There has been widespread reporting on the proliferation of drones of all sizes on the battlefield in Ukraine. However, the increasing utility of these weapons in large-scale combat operations was demonstrated prior to the 2022 Russian invasion of Ukraine, most notably in the 2020 conflict between Azerbaijan and Armenia over the Nagorno-Karabakh region. Azerbaijan's lopsided victory was credited in large part to their successful use of a range of UAS variants, from modified WWII-era biplanes designed to deceive Armenian air defenses to sophisticated modern loitering munitions (LMs). In his book *7 Seconds to Die*, John Antal describes the thorough destruction of Armenian ground systems by these weapons, claiming that "Azerbaijani top-attack UAS strikes destroyed as many as 185 Armenian tanks, 89 armored fighting vehicles, 182 artillery guns, 73 multiple rocket launchers, 45 air defense systems, and 450 other vehicles."[12] That's roughly two armored divisions of combat power destroyed in a conflict that only lasted 44 days.

After the Russian invasion of Ukraine in February 2022, it seemed that Ukraine had taken note of the lessons from Nagorno-Karabakh. Its forces employed armed and unarmed drones to great effect while repelling the initial onslaught against their capital, Kiev. Drones, along with top-attack ATGMs, gave the Ukrainians an edge in the defense against the much larger and more conventionally well-equipped Russian military. Videos of strikes from Turkish-built Bayraktar TB2 drones proliferated in western media reporting on the conflict. Similar in size and armament to a U.S. MQ-1 (Predator or Grey Eagle), the employment pattern of the TB2s tracked with how this class of UAS had been employed elsewhere as unmanned armed intelligence, surveillance, and reconnaissance (ISR). However, the large size of these platforms meant that they were susceptible to conventional air defense, and Ukraine's fleet of TB2s was quickly degraded.[13]

In the second summer of the war, after the front lines had roughly stabilized in eastern and southern Ukraine, videos began to emerge of FPV drone strikes against Russian vehicles.[14] At first, these strikes used modified racing drones employed by volunteers or Ukrainian special operations forces. By 2024, both sides of the conflict had dramatically increased production of one-way attack (OWA) UAS, with Russia benefiting from a larger industrial base and partnerships with China and Iran to field more sophisticated LM and deep-strike capabilities. Both countries have leveraged and been impacted by these new capabilities. In the case of Ukraine, the value is evidenced by a massive surge in domestic drone production, increasing from seven drone manufacturers to 80 in just one year.[15]

The authors of a recent study on UAS strike capability published by the Royal United Services Institute (RUSI), a British think tank, conducted extensive research in Ukraine and identified five functions of UAS-based "mass precision strike" complexes there. These functions are close ISR, close precision strike, deep ISR, deep strike, and enabling deep joint fires.[16] The only one of these functions that is really novel to this conflict is the close-strike capability. Armed small UAS and LMs give commanders at the tactical level of war a compact kill chain, with sensor and shooter wrapped into a neat, low-cost package. Both sides in the conflict are seeing the lethality advantage these tools provide, particularly when paired with existing indirect fire weapons and other precision effects. As a result, Ukraine is reorganizing within its armed forces for more effective employment and support of these tools. Reporting indicates that motorized brigades in the Ukrainian armed forces (UAF) now have a UAS company that deploys reconnaissance and FPV strike drone platoons in support of its operations. These FPV strike units work in dispersed teams of one or two pilots with a small support element for arming and launching the drones. Further to the rear of the line, the company has a headquarters with maintenance, repair, and supply facilities tucked into urban terrain or heavy cover.[17]

Despite the growth of military organizations that specialize in close reconnaissance-strike operations, Ukrainian bureaucracy has been cited as a hindrance to doctrine formation and procurement.[18] Crowdsourcing and non-governmental organizations (NGOs), often supported by the government of Ukraine, have played a key role in bridging the gap for funding of drone procurement and training operators and maintainers. The "Army of Drones" campaign raised more than $108 million in support of UAS procurement and training.[19] Another NGO-funded training program claims to employ 150 instructors and have a throughput of 5,000 people a month. The Ukrainian Ministry of Digital Transformation supports a number of these non-governmental training schools, claiming to have trained 10,000 personnel.[20] These public-private partnerships predate the current war and grew out of necessity in support of the conflict in the Donbas that began in 2014.[21]

A Ukrainian soldier holds an FPV loitering munition with RPG-7. (Photo courtesy of the Ministry of Defense of Ukraine, armyinform.com.ua)

For Ukraine, commercial satellite internet connectivity and homegrown software for encrypted battlefield coordination facilitates integration of the tactical reconnaissance-strike capability. Smartphone and tablet-based applications with names like Delta, GIS Arta, and Kropyva increase situational awareness for UAF commanders and enable rapid precision targeting.[22] GIS Arta has been described as the "Uber for artillery," facilitating direct sensor-to-shooter connectivity and shortening the kill chain for Ukrainian ground forces.[23] We know more about this integration on the Ukrainian side because of better access, but we have to assume the Russian armed forces are also using modern networks to integrate tactical reconnaissance-strike functions across echelons.

At the moment, consensus is forming around the paralyzing effect of the proliferation of small ISR and strike UAS.[24] This new form of mass is greatly complicating the concentration of forces in the offense, appearing to favor the defense. Writing in *Foreign Policy,* Franz-Stefan Gady concludes, "If the enemy can see everything on and behind the front lines, including units and even individual troops moving in the rear, the classic ground attack made up of massed armored formations is dead."[25] His conclusion is premature, given the technology described did not come into widespread use in Ukraine until after the lines had stabilized and become entrenched, a condition that generally favors the defense. Also, there are no absolutes in ground combat, and it is impossible to "see everything," even with the most sophisticated tools. However, the proliferation of this technology certainly means that any large ground assault will first need to deal with the adversary's tactical reconnaissance-strike capability before it can effectively concentrate its forces for an attack. This fight will occur outside of direct fire range and rely on a well-integrated and protected UAS-based tactical reconnaissance-strike complex.

Implications for the U.S. Army

The war in Ukraine has resulted in skepticism about the future of the main battle tank in light of its vulnerability to top-attack ATGMs, armed UAS, loitering munitions, and other threats. My intent with this article is not to wade into the argument about the future of the tank. Others have made convincing arguments on both sides in *Military Review* and elsewhere.[26] My goal is to emphasize that current and future main battle tanks must be paired with the means to maneuver and employ the new tactical reconnaissance-strike complex.

Proponents of the continued relevance of the tank point to what Guderian called "striking power" as essential to victory in war — consisting of the capability to close with and destroy critical enemy systems with direct fire weapons.[27] The armed UAS capability on the battlefield today blurs the line between direct and indirect fire, but it behaves like the direct fire weapons in Guderian's formula. Tactical commanders now have their own miniaturized "human-guided cruise missile" (to use Krepinevich's description of the Japanese kamikaze) and can apply precision fires against high-payoff targets within and beyond the range of their direct fire weapons. This new form of tactical precision is a critical component of modern

mobile-striking power (a new component of the combined arms fight) and essential for dominance in land warfare.

A comparison to the balance between battleships and carriers in the Pacific Theater is relevant on this point. In a *Naval War College Review* article, Thomas C. Hone's analysis is instructive and worth quoting at length: "Though the long-awaited clash of battle lines never occurred, the fast battleships were an essential element of the Navy's plan for decisive battle and therefore collectively an essential part of the campaign. Put another way, what took place during the war was not a simple substitution of carriers for battleships but the creation of a modern, combined-arms fleet, one that included submarines and land-based aviation. That was the innovation."[28]

The U.S. Army is now faced with a mandate and an opportunity: to build a new tactical operating concept that integrates ground-based reconnaissance and attack UAS as a component of combined arms maneuver. According to Krepinevich, "dramatic shifts in the character of military competitions… find the most successful military organizations developing and refining operational concepts that are very different from those that dominate the existing warfare regime."[29] This will require new doctrine, organizational structures, training strategies, materiel solutions, and the personnel and expertise needed to make it a reality. We can benefit directly from observations of the current conflict, but without participating directly, we must rely on exercises and experimentation to refine these solutions. Developing and implementing an initial organizational structure and manpower requirement is a good place to start.

Organization in the Operating and Generating Force

From an organizational standpoint, the echelon at which this combination occurs will vary based on scale and function, similar to the scaling of indirect fire from the company up to the corps level. The authors of the RUSI study on UAS strike capability concluded that grouping precision strike and reconnaissance capabilities into a specialized unit would be more effective than distribution across a larger tactical formation. They propose a "UAV battalion, equipped to deliver close and deep strike, deep ISR and enabling action" as the most logical organizational structure.[30] In my view, the U.S. Army is large enough to require further specialization based on echelon, grouping close ISR and strike functions at the brigade level and deep ISR, strike, and joint fires enabling functions at the division and corps.

For close reconnaissance and strike, the Army should immediately begin the process of transforming its remaining cavalry squadrons in the heavy and Stryker brigade combat teams into armed reconnaissance squadrons that can employ OWA munitions and other UAS in support of brigade fires and ground maneuver. Beginning with at least a troop (or company), the conversion could occur over time and respond to the results of experimentation to modulate the size and composition of the force. These formations offer

A U.S. Army Origin autonomous weapons system uses a tethered unmanned aircraft system to help Soldiers perform reconnaissance of an area during Project Convergence 22 experimentation on 26 October 2022 at Fort Irwin, CA. (Photo by SPC Jaaron Tolley)

existing tracked and wheeled platforms that can be modified for use as mobile ground stations to transport, launch, control, and repair the unit's UAS systems and associated munitions. General purpose or mission command variants of the Army's new Armored Multi-Purpose Vehicle (AMPV), as well as modified Strykers, could serve this purpose almost immediately.

For the majority of the Army's light infantry formations and many of its Stryker BCTs, the recent restructuring decision eliminated the cavalry squadrons, removing those units as a potential base for tactical recon-strike transformation. Part of that manpower is moving to M10 Booker units, the Army's new protected firepower solution for light infantry divisions. On its face that appears to be a technologically regressive approach, based on a decades-long effort to replace the direct fire capability of the Sheridan tank. Still early in the acquisition and deployment of this capability, the Army should consider experimentation to see if a formation built around a short-range strike UAS platform could more effectively support light infantry maneuver. The new Infantry Squad Vehicle (ISV) has proven to be highly modular and could be employed immediately as a mobility platform and ground station for OWA UAS.

Organizations at the division and corps level will have principal responsibility for the deep reconnaissance, deep

strike, and joint fires enabling functions. This aligns well with the Army's current operational concept of multidomain operations, which seeks to converge effects from multiple domains at the decisive point.[31] UAS squadrons designed for deep reconnaissance, strike, and enabling functions — with both OWA and traditional ISR UAS — would fit well into existing fires or multidomain formations at the division and corps level (division artillery and the field artillery brigade or multidomain task force, respectively). Others see the combat aviation brigade and the Army's future vertical lift aircraft as the nexus for these UAS-based deep reconnaissance and strike functions, representing a potential employment concept that should be explored.[32] Targeting systems and processes at the division and corps level are well-developed to support the employment of long-range OWA munitions since they are similar to existing Army and joint armed UAS and deep fires capabilities. As a result, this article will not dwell on these functions and the changes required to maximize their employment.

Within the generating force, I agree with others who have argued for the formation of an Army branch dedicated to UAS-based reconnaissance-strike capabilities.[33] As a critical component of modern combined arms maneuver, the ideal umbrella organization for this new branch would be the Maneuver Center of Excellence at Fort Benning, GA, the current home for the Infantry and Armor branches. The new branch could also find a home at the Fires Center of Excellence at Fort Sill, OK, which would create advantages for building a comprehensive tactical recon-strike complex that includes precision fires and the short-range air defense necessary to protect formations from the adversary's capability. A third option could be to incorporate the capability into the Army Aviation Branch, but I think that is likely to subordinate it to the interests of the manned rotary-wing aviation community.

Historical examples of military innovation support the need for senior leader sponsorship and intellectual advocacy, talent management and incentives, and a degree of organizational autonomy — all of which would be enhanced or facilitated by a branch proponent.[34] In the naval aviation example, there is no doubt that high-level advocacy and talent development proved critical to the readiness of the capability at the outset of WWII. The founding father of the Navy's Bureau of Aeronautics, Rear Admiral William Moffett, was a former battleship captain and certainly could have endorsed the common view within his community: the airplane as a scout for the battleship fleet. Instead, he took a more holistic approach and supported the idea that naval aviation could become an independent striking force. This had significant implications for the promotion of aviators and the construction of fast carriers that could be used for this purpose.[35]

Personnel

An official proponent branch within the Army bureaucracy will facilitate the necessary step of assigning and training personnel in support of this new capability. Japanese air power in the Pacific nearly evaporated by 1944 — not because they ran out of planes, but because they ran out of trained pilots. They could no longer create mass to have an impact on the U.S. Navy and instead shifted to precision — through the adoption of kamikaze tactics.[36] If we know that the operation of reconnaissance and strike UAS will be a critical component of modern ground combat, then why aren't we moving faster to train a cadre of operators/pilots? The Soldiers entering the military today come from a generation of gaming natives, so we shouldn't let the slow pace of materiel acquisition prevent us from selecting and training this critical resource.

Another area requiring immediate human capital investment is electromagnetic warfare (EW) expertise. Observers of the war in Ukraine have commented on the increasingly important role of EW, with one stating that "even more than physical factors… the fight over the electromagnetic spectrum will be decisive in raising or reducing battlefield transparency for one side, with all its consequences for the future character of warfare in Ukraine and elsewhere."[37] The Army has historically been underinvested in this expertise. When it was called for in Iraq to deal with radio-controlled improvised explosive devices (IEDs), we had to deploy Navy EW officers to program our counter-IED jammers. The Army has come a long way since then, but a tactical reconnaissance-strike squadron will need significant EW

A robotics and autonomous systems platoon sergeant from Alpha Company, 1st Battalion, 29th Infantry Regiment, 316th Cavalry Brigade, carries the Ghost-X Unmanned Aircraft System during Project Convergence - Capstone 4 on 11 March 2024. (Photo by SGT Charlie Duke)

expertise to guarantee UAS control in a highly contested spectrum.

The HIVE unmanned aircraft system prepares to take flight during an experiment as part of Project Convergence – Capstone 4. (Photo by SGT Gianna Chiavarone)

Experimentation and Training

This article will not address the doctrinal implications of the tactical reconnaissance-strike complex, other than to say we will need new doctrine for combined arms maneuver that incorporates the capability, and the best way to develop that doctrine is through experimentation. The Navy's successful integration of naval aviation is credited in large part to a series of fleet problems conducted in the 1920s and '30s. Beginning in 1923, these fleet problems involved large-scale force-on-force maneuver. In the beginning, aircraft carriers were replicated by other ships and not represented in kind until 1925 when the Navy's first carrier, the *Langley*, participated in Fleet Problem V. The questions of carrier design, aircraft employment, and fleet composition were all addressed (and argued about) through these fleet problems, particularly in the 1930s once purpose-built carriers and larger air wings were available for experimentation.[38] Despite this deliberation, none of those questions were fully resolved prior to 7 December 1941, when the Japanese surprise attack on Pearl Harbor settled the issue, both by demonstrating the striking power of carrier aircraft and crippling the U.S. Pacific Fleet's battleship force. The U.S. Army should take note of the value of this experimentation and begin a program of force-on-force maneuver problems featuring ground units employing UAS reconnaissance-strike capability.

Fortunately, the U.S. Army possesses two of the most well-developed combat training and experimentation centers in the world. The Army's combat training centers (CTCs) in Louisiana and California are tailor-made for experimenting with the incorporation of UAS strike at the division and brigade combat team levels. Units training at the CTCs are already encountering and dealing with adversary UAS controlled by the opposing force (OPFOR). The OPFOR drones effectively replicate the close ISR function and, to a lesser extent, some close-strike capability. Experimentation could begin immediately by attaching FPV UAS strike teams to rotational training units at the CTCs and allowing commanders to deploy them in the offense and defense against the OPFOR. Of course, addressing safety concerns will be paramount in the force-on-force training that occurs at the CTCs. Specified target vehicles, target pits, nets, and other measures could be employed to safely replicate the lethal effects of FPV strike capability. Only through this kind of experimentation will we learn how the new tactical reconnaissance-strike complex can be employed in tandem with the other components of combined arms maneuver to reinvigorate mobility on the modern battlefield.

Conclusion

Earlier I described the M10 Booker armored fighting vehicle as a technologically regressive addition to modern light infantry formations. That might be a little harsh and certainly undermines the utility of the platform in environments like the Pacific theater and elsewhere.[39] "Mobile Protected Firepower" is the name of the U.S. Army program that became the M10 Booker, but it represents in general terms the three things that all tanks and armored vehicles represent — a kind of euphemism for the principles of heavy maneuver. Simply put, all tanks provide commanders with a protected and mobile direct fire weapon. The three components (mobility, protection, and firepower) will always be relevant, but their presentation and combination have and will change over time.[40]

As new technology emerges, however, we need to continually assess if we have the right combination of mobility, protection, and firepower employed to produce a tactical advantage over our adversary. The war in Ukraine is showing us that we do not, and rapid action is needed to address the shortfalls. It is hard to overstate the urgency of the situation for the U.S. military. From the perspective of tactical units in the U.S. Army, it feels like we are moving in the opposite direction, with comparatively ancient on-hand UAS being phased out and few viable replacements on the horizon for even the most basic of the tactical recon-strike functions listed earlier. Units throughout the Army are engaged in innovative efforts to grow this capability organically, but they are not sufficiently resourced to build and employ strike UAS at scale. The Department of Defense's Replicator program is a move in the right direction: trying to jumpstart the acquisition of attritable unmanned systems.[41] But the Army must act quickly to prepare for the effective employment of these new tools.

In 1937, Admiral Richard Turner wrote that the emergence of carrier-based aircraft meant "nothing behind the enemy front is entirely secure from observation and attack," and therefore "we should, as with other means of action, be sure

to employ a concentration of enough airplanes to produce the desired effect."[42] The same condition now exists for land forces, and we have the same mandate to ensure we can concentrate the capability in support of ground maneuver. Just as the introduction of carrier-launched aircraft irrevocably changed naval warfare, the emergence of armed small UAS will be a significant disrupter for ground force maneuver. We must move fast to develop and test a new tactical reconnaissance-strike complex to both leverage the capability to our advantage and defend against its effects. The technology exists today — all we need are the resources and resolve to make it a reality in our force.

Notes

[1] Ian Toll, *The Conquering Tide: War in the Pacific Islands* (NY: Norton, 2013), 404-412.

[2] Source material includes: "How Drone Warfare Has Transformed the Battle Between Ukraine and Russia," PBS NewsHour, 13 December 2023, video, 7:51, https://www.youtube.com/watch?v=uuQwjbCAFIE; "Darwin's War: Inside the Secret Bunker of Ukraine's Ace FPV Drone Pilot," Scripps News, 19 May 2024, video, 21:46, https://www.youtube.com/watch?v=WipqeFgzdTc; and Yaroslav Trofimov, "Tech Deployed in Ukraine Fight is Reshaping Modern Warfare," *The Wall Street Journal*, 29 September 2023.

[3] Andrew F. Krepinevich Jr., *The Origins of Victory: How Disruptive Military Innovation Determines the Fates of Great Powers* (New Haven, CT: Yale University Press, 2023), 335.

[4] Ibid., 322.

[5] Ibid., 332.

[6] Ian Toll, *Pacific Crucible; War at Sea in the Pacific, 1941-1942* (NY: Norton, 2012), 374.

[7] Ian Toll, *Twilight of the Gods: War in the Western Pacific, 1944-1945* (NY: Norton, 2020), 198.

[8] Letter of Admiral Raymond Spruance to Carl Morse, dated 13 May 1945, quoted in Toll, *Twilight of the Gods*, 619. Full letter available from the U.S. Navy at https://www.history.navy.mil/browse-by-topic/wars-conflicts-and-operations/world-war-ii/1945/battle-of-okinawa/spruance-letter.html.

[9] Andrew F. Krepinevich Jr., "Maritime Warfare in a Mature Precision-Strike Regime," Center for Strategic and Budgetary Assessments, 2014, 37; https://csbaonline.org/uploads/documents/MMPSR-Web.pdf.

[10] Krepinevich, *Origins of Victory*, 9.

[11] Toll, *Conquering Tide*, 480-482.

[12] John F. Antal, *7 Seconds to Die: A Military Analysis of the Second Nagorno-Karabakh War and the Future of Warfighting* (Havertown, PA: Casemate, 2022), 136.

[13] Ellie Cook, "Why Ukraine's Once-Feared Bayraktar Drones Are Becoming Obsolete," *Newsweek*, 2 November 2023, https://www.newsweek.com/ukraine-bayraktar-tb2-russia-1839972.

[14] Trofimov, "Tech Deployed in Ukraine."

[15] Kristen D. Thompson, "How the Drone War in Ukraine Is Transforming Conflict," Council on Foreign Relations, 16 January 2024, https://www.cfr.org/article/how-drone-war-ukraine-transforming-conflict.

[16] Justin Bronk and Jack Watling, "Mass Precision Strike: Designing UAV Complexes for Land Forces," Royal United Services Institute, 11 April 2024, 22-24, https://www.rusi.org/explore-our-research/publications/occasional-papers/mass-precision-strike-designing-uav-complexes-land-forces.

[17] Mari Saito, "Life on Ukraine's Front Line: 'Worse than Hell' as Russia Advances," Reuters, 29 May 2024, https://www.reuters.com/investigates/special-report/ukraine-war-frontline/; Trofimov, "Tech Deployed in Ukraine;" and "Darwin's War," Scripps News.

[18] Katerina Sergatskova, "What Wedding Drones over Ukraine Can Tell Us about the War," Focus Ukraine (blog), 2 October 2023, https://ukraine.wilsoncenter.org/blog-post/what-wedding-drones-over-ukraine-can-tell-us-about-war.

[19] Runar Spansvoll, "The Weaponisation of Social Media, Crowdfunding and Drones: A People's War in the Digital Age," *The RUSI Journal* 169 (2024): 46-60, doi:10.1080/03071847.2024.2350478.

[20] Sergatskova, "Wedding Drones over Ukraine."

[21] Harry Halem, "Ukraine's Lessons for Future Combat: Unmanned Aerial Systems and Deep Strike," *Parameters* 53, no. 4 (2023), doi:10.55540/0031-1723.3252.

[22] Grace Jones, Janet Egan, and Eric Rosenbach, "Advancing in Adversity: Ukraine's Battlefield Technologies and Lessons for the U.S.," Policy Brief, Belfer Center for Science and International Affairs, Harvard Kennedy School, 31 July 2023, https://www.belfercenter.org/publication/advancing-adversity-ukraines-battlefield-technologies-and-lessons-us.

[23] David Zikusoka, "How Ukraine's 'Uber for Artillery' is Leading the Software War Against Russia," Future Frontlines (blog), 25 May 25 2023, https://www.newamerica.org/future-frontlines/blogs/how-ukraines-uber-for-artillery-is-leading-the-software-war-against-russia/; The term "Uber for Artillery" is credited to Mark Bruno of the Moloch Blog, https://themoloch.com/conflict/uber-for-artillery-what-is-ukraines-gis-arta-system/.

[24] Franz-Stefan Gady, "How an Army of Drones Changed the Battlefield in Ukraine," *Foreign Policy*, 6 December 2023, https://foreignpolicy.com/2023/12/06/ukraine-russia-war-drones-stalemate-frontline-counteroffensive-strategy/.

[25] Ibid.

[26] For two examples, see David Johnson, "The Tank is Dead: Long Live the Javelin, the Switchblade, the …?," *War on the Rocks*, 18 April 2022, https://warontherocks.com/2022/04/the-tank-is-dead-long-live-the-javelin-the-switchblade-the/; and MG Curtis A. Buzzard, BG Thomas M. Feltey, LTC John M. Nimmons, MAJ Austin T. Schwartz, and Dr. Robert S. Cameron, "The Tank is Dead… Long Live the Tank," *Military Review* 103, no. 6 (2023), https://www.armyupress.army.mil/journals/military-review/online-exclusive/2023-ole/the-tank-is-dead/.

[27] Antal, *7 Seconds to Die*, 87.

[28] Thomas C. Hone, "Replacing Battleships with Aircraft Carriers in the Pacific in World War II," *Naval War College Review* 66, no. 1 (2013): 56-76.

[29] Krepinevich, *Origins of Victory*, 406.

[30] Bronk and Watling, "Mass Precision Strike," 1.

[31] Field Manual 3-0, *Operations*, October 2022.

[32] MG David J. Francis, "Modernizing Our Unmanned Aircraft Systems," *Army Aviation*, n.d., https://armyaviationmagazine.com/modernizing-our-unmanned-aircraft-systems/.

[33] Robert Solano, "Why the Army Needs a Drone Branch," *Breaking Defense*, 22 February 2024, https://breakingdefense.com/2024/02/why-the-army-needs-a-drone-branch-embracing-lessons-from-ukraine/.

[34] James Q. Wilson, *Bureaucracy: What Government Agencies Do and Why They Do It* (NY: Basic Books, 1989) 221.

[35] Ibid., 226.

[36] Toll, *Pacific Crucible*, 479; and Toll, *Twilight of the Gods*, 198.

[37] Gady, "Army of Drones."

[38] Krepinevich, *Origins of Victory*, 307-325; and Geoffrey Till, "Adopting the Aircraft Carrier: The British, American, and Japanese Case Studies," in *Military Innovation in the Interwar Period,* ed. Williamson Murray and Allen R. Millet (Cambridge: Cambridge University Press, 1996), 221.

[39] Michael Peck, "The U.S. Army Needs Tanks to Win a War in the Pacific, But It Knows the Abrams Isn't the Right Tank for the Job," *Business Insider*, 7 November 2023, https://www.businessinsider.com/army-knows-abrams-tanks-arent-suited-for-russia-china-war-2023-11.

[40] In the modern inventory, for example, there are multiple variations of these components: mobility from legs, wheels, tracks, rotors, and jets; protection with armor, countermeasures, concealment, and speed; and firepower from rifles, guns, cannons, tube artillery, guided missiles, and rockets. The resulting combinations create a diverse range of capability: from an infantryman with a Javelin missile to an A-10 Thunderbolt close air support aircraft.

[41] "The Replicator Drone Initiative and the Department of Defense," *Wall Street Journal Opinion*, 11 July 2024, video, 10:29, https://www.youtube.com/watch?v=E-iYlmiDp5U.

[42] Hone, "Replacing Battleships with Aircraft Carriers."

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Russian River Crossing Failure During the Battle of the Siverskyi Donets

MAJ KYLE KINDY

> *"Only a fool learns from his own mistakes. The wise man learns from the mistakes of others."*
>
> **— Otto von Bismarck**

On 8 May 2022, the Russian army attempted to cross the Siverskyi Donets River in the Donetsk region of eastern Ukraine. The crossing operation failed, and an entire Russian battalion tactical group (BTG) was lost. Russia's failed river crossing is an example of why the principles of the offense and the training and employment of combined arms remain paramount to successful obstacle negotiation.

Background

Russia began the special military operation in Ukraine in late February 2022. When an initial drive towards Kiev from Belarus was thwarted, the Russian operational planners adopted a more conservative approach by massing combat power and shortening logistical lines of communication along select axis of advance on Ukraine's eastern border. By May 2022 Russian forces advanced through the Luhansk region to the cities of Severodonetsk and Lysychansk. Meeting significant resistance in Severodonetsk, the Russians attempted an encirclement hoping to either dislodge the Ukrainians or isolate them in a siege.[1] By dislodging the Ukrainians, Severodonetsk would be given up, but the Ukrainian forces would be preserved. A siege would have trapped the Ukrainians forces in the city to be dealt with later while the offensive continued westward uninterrupted.

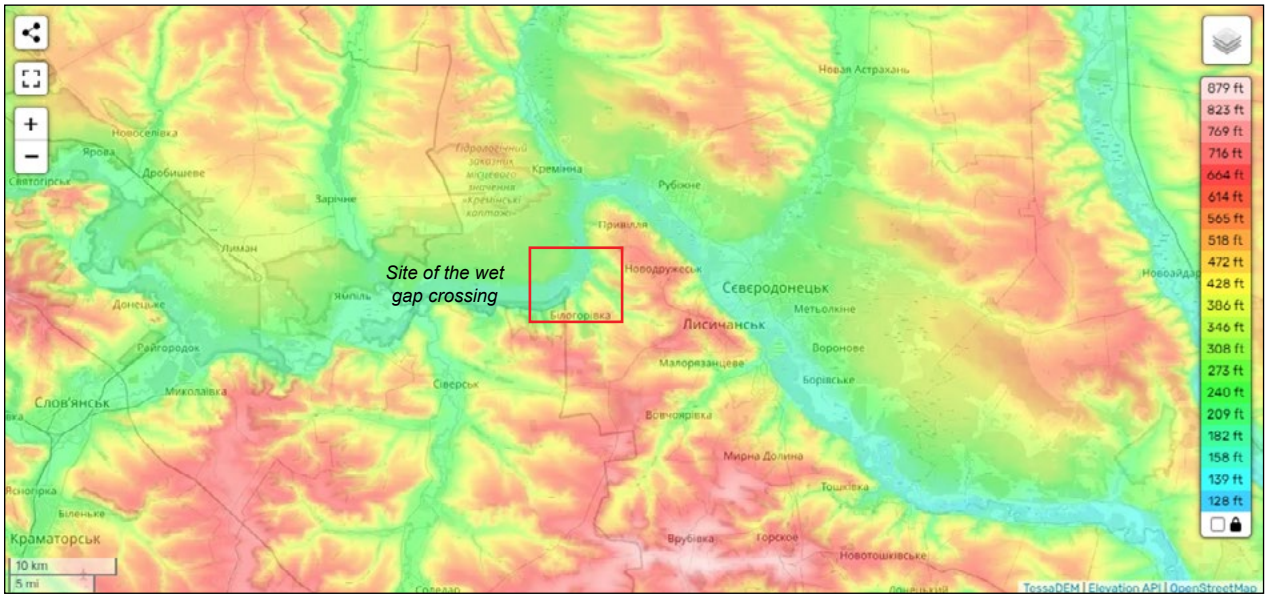
Terrain

Severodonetsk and Lysychansk are key cities in the Donetsk region. This region of Ukraine is a heavy industrial area and a world leader in metallurgical production, and the city of Severodonetsk is home to the Azot chemical plant.[2] The industrial nature of these cites provide hardened structures that increase survivability against Russian air and artillery fires. A major highway runs through Severodonetsk which connects Luhansk, Kramatorsk, Donetsk, and Kharkiv.[3] This makes control of Severodonetsk critical for controlling access to the Donetsk region. Ukrainian forces were holding these cites to prevent Russian forces from gaining access to an avenue of approach into the larger Donetsk region.

The vegetation near Severodonetsk is mostly small forests of pine and oak covering steppe with hills that reach to approximately 650 feet in height. At the time of the attempted crossing, Ukrainian defenders on the southwest side of the Donets River held an advantage in terms of elevation over the Russian advance across the Donets River.

The Siverskyi Donets River is the largest river in the region; it averages 8-feet deep and ranges from 115-230 feet wide, a significant natural barrier. In 2022, the Donets River was a limit of advance for the Russian forces operating in north-

Figure 1 — Donetsk Region of Ukraine (Graphic courtesy of Topographic-map.com, 2024)



east Ukraine. By this point in the conflict, most span bridges across the Donets River were destroyed. Surviving bridges typically connect directly to population centers, increasing the risk to security and elements crossing the exposed bridge while defenders are obscured and protected in buildings. The Russian military decided to conduct a river or wet gap crossing, which is an extremely dangerous offensive operation where military units cross rivers by moving through them (fording) in amphibious vehicles or building bridges to cross the river. Most Russian vehicles including their main battle tanks are capable of fording rivers, and the decision to conduct a wet gap crossing gave them the initiative and ability to select favorable terrain, river width, and depth. The Ukrainians were aware of this, and they were also familiar with Russian doctrine and crossing-site criteria (ideally located at bends or "U's"). Understanding that the Russian commanders were under pressure to report tactical gains along this front, they made a deliberate effort to identify potential wet gap crossing locations in the vicinity of Severodonetsk and Lysychansk.

Figure 2 — Photo of the Crossing Site and Destroyed Pontoon Bridges and Vehicles (Photos courtesy of the Ministry of Defense of Ukraine)

Preparations

A first-hand account made in *Newsweek* by a Ukrainian engineer and explosive ordnance disposal officer named Максим (Maxim) claims, "he was among the experts sent to do engineering reconnaissance on May 7 and 8 on the Siverskyi Donets River ahead of a possible crossing by Russian troops. Russian forces had gathered on the other side of the river from the settlement of Bilohorivka, according to the tweet from Maxim. So, he headed to the area surrounding the settlement and the nearby village of Hryhorivka to assess where Russian troops could possibly attempt to mount a pontoon bridge and cross the river. Maxim said he assessed that Russian troops would have needed at least 8 parts to complete a floating bridge capable of crossing the over 260 feet wide river, and that it would take them at least two hours of work to do so."[4]

On 8 May, the Russian 74th Motorized Rifle Brigade of the 41st Combined Arms Army began the wet gap crossing operation preparations. The site selected by the Russians, identified in Figure 1 by a red box, was a relatively low spot compared to Ukrainian-held territory on the opposite bank. Vegetation in the region was in full foliage in May, but the overhead cover at the crossing was intermittent and did not mask much of the crossing area or far side assembly area from aerial observation. The firsthand account by Maxim indicates there was fog during the initial build of the pontoon bridge.[5] Weather data recorded no rain in the week preceding the crossing and partly cloudy conditions on the days of the operations with average temperatures.[6] Ukrainian artillerymen of the 17th Tank Brigade, 80th Separate Assault Brigade, and the Ukrainian Air Force were observing the

Figure 3 — Close-up Photo of the Destroyed Vehicles

Russian forces but avoided occupying the riverbanks to protect their forces from direct fire and foster the Russian sense of security at the crossing site.

Execution

On 8 May, the Russian army started forest fires and obscuration operations to conceal the crossing and began moving forces over the pontoon bridge. The Ukrainians did not engage immediately, according to Maxim. "'Artillery was ready,' he said. 'In 20 minutes after [our] recon unit confirmed Russian bridge being mounted, heavy artillery

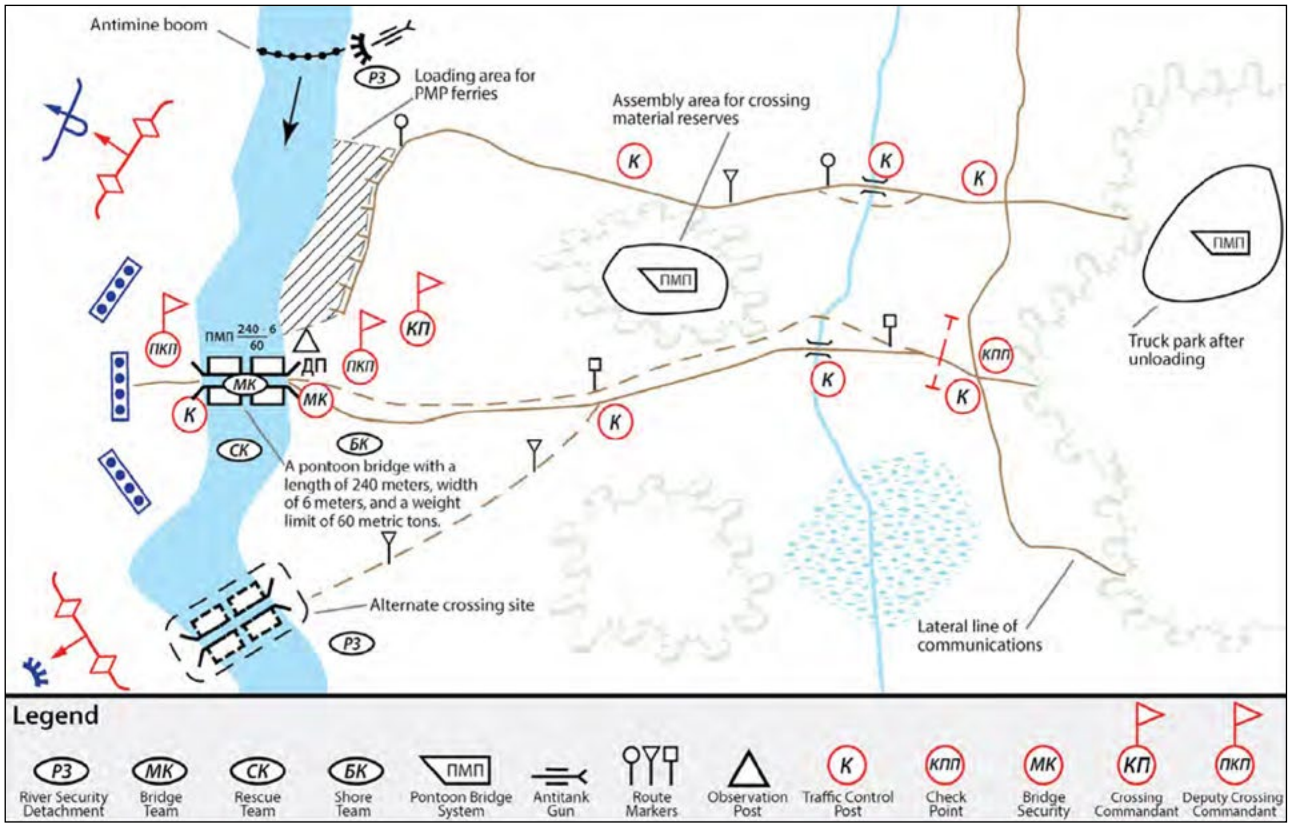


Figure 4 — Deliberate Bridge Crossing[8]

engaged against Russian forces, and then aviation chipped in as well… After one day of combat… the bridge was down,' Maxim added. 'Some Russian forces were stuck on Ukrainian side of the river with no way back. They tried to run away on broken bridge. Then they tried to arrange a new bridge. Aviation started heavy bombing of the area and it destroyed all the remains of Russians there and other bridge they tried to make.'"[7] Estimates of Russian losses during the crossing operation vary. Between 50-70 T-72Bs, T-80s, BMPs, and engineering assets were destroyed; loss of life figures ranged from 300 to 1,000 soldiers killed in action from 8-10 May. Ukrainian losses were assumed to be negligible; none were reported.

Assessment

This defeat was another highlight in a surprisingly underwhelming demonstration of operational and tactical prowess by the former Cold War superpower. Russia is considered a peer of the United States in the great power competition and one that has not been encumbered by decades of counterinsurgency warfare eroding its mindset for high intensity large-scale combat operations. Why did the events unfold as they did in May 2022? How should this terrain be negotiated in military operations? What aspects of offensive operations did the Russians fail to achieve for this operation?

Wet gap crossings have always been a major challenge for operational planners, particularly in Europe. The Russian military has a doctrine or procedure for negotiating natural obstacles of this nature. In his article "Russian Deliberate River Crossings: Choreographing a Water Ballet," Dr. Lester W. Grau explains that the Russians categorize crossings as hasty or deliberate.[9] Hasty crossings are executed from the march formation in an uncontested or lightly defended crossing site. This form of crossing takes advantage of the amphibious capabilities of Russian infantry fighting vehicles such as the BMP and BTR family, with these vehicles fording the river to establish security on the far side bank. The use of air assault forces to secure the far side is also recommended with a hasty crossing, allowing the lead battalion to maintain its momentum during the crossing and continue movement away from the crossing site. Water less than 5 meters deep can also be forded by Russian tanks if the bottom and riverbank compositions are viable. As combat forces push further from the river crossing site, they create a pocket of security for higher echelon enablers to cross in. Follow-on forces in the brigade can then cross at a slower pace via ferry or bridging in relative security.

A deliberate crossing is conducted when resistance is expected, and the enemy has time to prepare a defense. In a deliberate crossing, Russian forces deploy into attack formation from the march, and artillery assets are brought forward to provide direct and indirect fire support. Once the enemy forces on the opposite side of the river have been depleted, the lead battalion will ford the river, or a follow-on battalion will maintain its movement forward by passing through the attacking lead battalion to ford the river and establish a beachhead on the far side riverbank. (See Figure 4).

In *The Russian Way of War: Force Structure, Tactics, and Modernization of the Russian Ground Forces*, Dr. Grau and Charles Bartles detail some actions Russian doctrine recommends the attacking force should take prior to and during wet gap operations, some of which have already been discussed. Relevant to the crossing of May 2022, Russian doctrine recommends the following:

- Cross on a wide front at a quick tempo;
- Air defense assets should cover the crossing and preparation areas;
- A deliberate attack involves far more artillery and aviation preparation; and
- Smoke, air defense, and counterbattery efforts are particularly critical.[10]

Dr. Grau also includes coordination planning factors in his later work: "Coordinating a deliberate crossing requires:

- Choreography of artillery preparation and supporting fire.
- Aviation strikes.
- Air assaults (to seize the far bank).
- An attack, from the march, that puts the first-echelon infantry fighting vehicles and/or personnel carriers online shortly before reaching the near bank so that they can cross simultaneously.
- A separate tank crossing conducted by snorkeling or crossing on a pontoon bridge or on ferries.
- A camouflage and deception effort.
- A bridging effort.
- The development and continuation of the advance on the far shore."[11]

By recalling the firsthand account of Maxim and examining the imagery of the crossing site taken immediately following the battle, some assumptions and deductions about the details of the battle are evident. The Russians selected a textbook location for their river crossing (bend in the river with gentle sloping terrain on both sides) and from the reports received by the Ukrainian defenders followed their doctrine of staging and equipment preparations prior to crossing. Ironically, this adherence to procedure also allowed the Ukrainian engineers to confirm the intended crossing site and prepare a defense. It can also be assumed both Russian and Ukrainian reconnaissance elements accurately assessed the composition of the river bottom and banks as unsuitable for tank fording, thus the immediate employment of the pontoon bridges versus fording. Russian commanders then departed from their doctrine; the required coordination that was previously mentioned begins a list of things the Russians did not do.

Deception and camouflage steps were not done properly. There was no mention of activity in multiple sites along the river to force the Ukrainians to divide their assets or cause uncertainty of exact Russian crossing intentions. Artillery was not moved forward to provide indirect suppression of Ukrainian artillery, direct fires on the opposite bank and ridge line, or to counter Ukrainian fires during the crossing. Aviation strikes were not carried out to reduce defensive capability immediately before the crossing was conducted. The use of obscuration fires seems to have taken place and is likely the cause of the forest fires and large areas of charred ground seen in pictures taken after the battle. But, with only one bridging site at a textbook location, preplanned fires and unguided munitions remain effective. The Russian lead elements maintained their momentum when the order to cross the 260-foot bridge was given but not on a broad front, and they halted in the low land on the opposite side of the river, presumably to consolidate and build combat power before moving to the high ground.

Figure 5 — Aerial View of the Pontoon Bridge During the Battle (Photo courtesy of Luhansk Regional Military Association/Blacksky)

The Ukrainians showed tactical patience and allowed 20 minutes for vehicles to build up on their side of the river before opening fire with artillery and calling in aviation airstrikes. No counterbattery fire from the Russians was reported, which exposed another failure: Air defense units had not moved into a position to defend the bridge or the units on the far side of the river after crossing. With both exposed to massed artillery and air strikes, it was only a matter of time before the bridge was destroyed and forces were isolated on the far side. No mention was made of any close air support or artillery support given to the forces stranded on the Ukrainian side of the river. A photo taken during the battle shows an intact pontoon bridge, and the depth of the Russian penetration can be identified by the smoke of

burning vehicle hulls all the way up to the ridgelines (see Figure 5).

Crossing a natural barrier like a river is an inherently risky military operation. In this case the Ukrainians made excellent use of their elevated positions to conceal their forces from direct fires and extend the range of their indirect fires. The Ukrainians' crossing site analysis allowed them to concentrate their defenses at specific points. The Russians contributed more to their own defeat than the enemy did in many ways. The lack of combined arms and use of air defense enablers to protect the vulnerable bridge resulted in the unnecessary exposure of forces. Allowing the Ukrainian defenders to concentrate artillery with no threat of counter fires and allowing the Ukrainian aviation to operate uncontested doomed the operation to failure, and a battalion of men and equipment was lost. It is possible that this operation would have succeeded if the Russians had suppressed Ukrainian artillery, protected their forces with anti-air defense systems, and allocated aviation support.

In relation to the principles of the offense in American doctrine, the Russians failed to achieve surprise and maintain their tempo on the far side of the crossing site and made no attempt to concentrate effects to set conditions for the operation. They were overly audacious to conduct an unsupported wet gap crossing against a determined, capable, and prepared Ukrainian military. Consequently, the risk accepted by the Russian commanders on the ground was negligent.

Conclusion

The materials and construction methods to traverse rivers have certainly improved over time, but the constrictive nature of the crossing has remained constant. Doctrine and techniques mitigate the risk, but it is dependent on commanders to ensure the tools at their disposal are properly used. The enemy also has a vote, and near-peer adversaries possess tools and techniques to combat wet gap crossing forces. It is unclear if the Russian forces were attempting to take advantage of an element of surprise or if they were experiencing a lack of resources. Perhaps this was a case of higher-level pressure demanding progress combined with a rushed plan executed at the cost of human lives. Or, the Russian forces may have just been overconfident in their abilities. What is clear though is that the Ukrainian use of geography and shaping forced the Russian military to unsuccessfully conduct one of the most hazardous operations any military force can attempt. The Ukrainians' analysis of the river and understanding of their opponents' capabilities allowed them to identify crossing sites and build a defensive plan that favored their strengths and exploited the Russians at a vulnerable moment in the crossing, ultimately, leading to the loss of a BTG.

As U.S. leaders and warfighters make the shift towards large-scale combat operations, it is vital to practice the doctrine and discipline that synchronize the incredible capabilities we have as a joint force. Additionally, we have a unique opportunity to observe our competitors in action to learn from their mistakes and vulnerabilities. The Russian failure on the Donets River is a modern-day testament to the persistent hazard of wet gap crossings and the validity of doctrine founded in lessons learned.

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Notes

[1] 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.

[2] Encyclopedia Britannica, "Donbas," https://www.britannica.com/place/Donbas; Roman Goncharenko, "The Strategic Value of Sievierodonetsk," *Deutsche Welle*, 6 September 2022, https://amp.dw.com/en/why-ukraines-sievierodonetsk-is-so-important/a-62001664.

[3] Federation Council of the Federal Assembly of the Russian Federation, Donetsk People's Republic, http://www.council.gov.ru/en/structure/regions/X2/.

[4] Guilia Carbonaro, "Ukrainian Soldier Reveals How He Secretly Blew Up Russian Bridge," *Newsweek*, 12 May 2022, https://www.newsweek.com/ukrainian-soldier-reveals-how-he-secretly-blew-russian-bridge-1706083.

[5] Ibid.

[6] Time and Date, Past Weather in Donetsk, Ukraine, May 2022, https://www.timeanddate.com/weather/ukraine/donetsk/historic?month=5&year=2022.

[7] Charlie Parker, "Russian Battalion Wiped Out Trying to Cross River of Death," *The Times*, 12 May 2022, https://www.thetimes.com/world/russia-ukraine-war/article/russian-battalion-devastated-as-it-crosses-river-989vvnj9v.

[8] Dr. Lester W. Grau, "Russian Deliberate River Crossings: Choreographing a Water Ballet," *Engineer*, September-December 2019.

[9] Ibid.

[10] Dr. Lester W. Grau and Charles Bartles, *The Russian Way of War: Force Structure, Tactics, and Modernization of the Russian Ground Forces* (Fort Leavenworth, KS: Foreign Military Studies Office, 2016), https://www.armyupress.army.mil/Portals/7/Hot%20Spots/Documents/Russia/2017-07-The-Russian-Way-of-War-Grau-Bartles.pdf.

[11] Grau, "Russian Deliberate River Crossings."

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The Battle for Bakhmut: When Is a Battlefield Loss a Strategic Victory?

BRYAN POWERS

Following Russia's failed attempt to seize Kyiv and decapitate the Ukrainian leadership in February 2022, the Russian Ministry of Defense was forced to withdraw elements of its Central and Eastern Military District forces through Belarus and back into Belgorod oblast in mid-to-late March. Rapidly reorganizing its forces and command and control (C2), these forces were reinserted and joined with elements of the Western and Southern Military Districts in April 2022 inside of Ukraine's Donbas region, intent on capturing the entirety of the Luhansk and Donetsk oblasts.[1]

This reorganization allowed Russian forces to slowly grind away at Ukrainian defensive lines and ultimately allowed Russia to seize several strategic urban centers, including Izyum, Severodonetsk, and Lysychansk, before finally linking up its forces for the push to encircle the city of Bakhmut in May 2022.[2] However, the significant losses suffered by Russian forces in both personnel, armored vehicles, and ammunition expenditure slowed Russia's offensive actions and ability to capitalize on its momentum to seize Bakhmut. It would take Russian forces another two and half months to gather the forces needed to fully assault the city.

Ultimately, the battle for control of Bakhmut lasted more than nine months (from August 2022 until May 2023) and was one of the largest and most important battles of the second Russo-Ukrainian War. In many ways, this battle was reminiscent of the Ukrainian armed forces' (UAF's) heroic defense during the battle of Donetsk Airport in May 2014, which would forever label its defenders the "cyborgs." However, the battle of Bakhmut brought forth a long-lasting dilemma in wartime stratagem: When if ever is a battlefield loss acceptable for the overall wartime strategy?

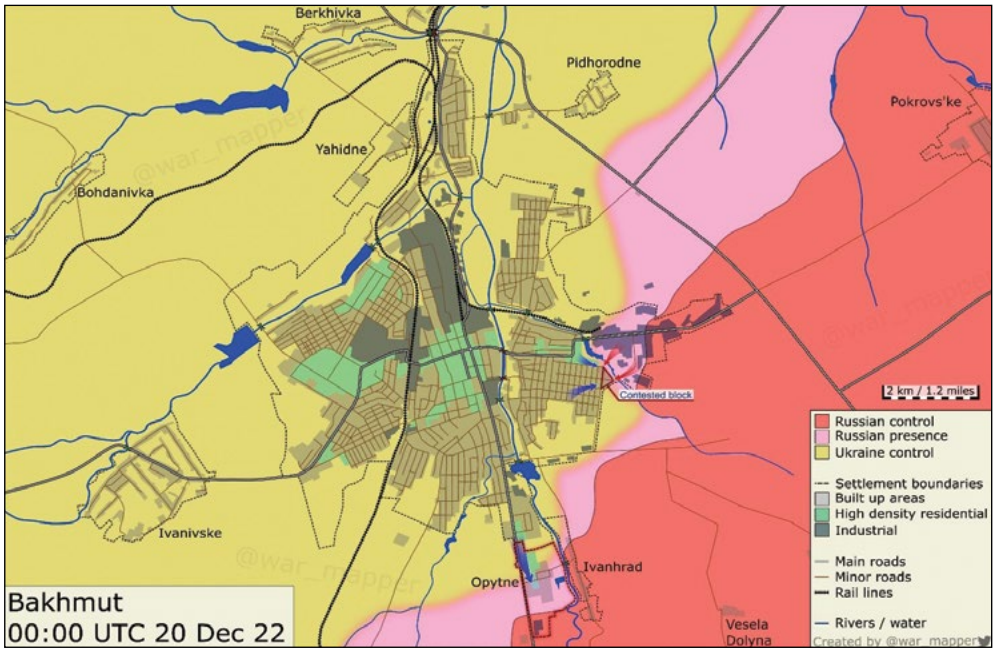
During the battle, Ukrainian forces were commanded by then-Colonel General Okeksandr Syrskyi, who now serves as UAF's overall commander in chief following the removal of General Valerii Zaluzhnyi. Syrskyi has been hailed a hero for leading the defense of Kyiv during the initial Russian invasion in February 2022 and later the highly successful Kharkiv counteroffensive in the summer of the same year.[3] However, he has also been labeled the "butcher of Bakhmut" for the staunch and determined defense of the city of Bakhmut and his apparent refusal to concede the city to attacking Russian forces. This strategy led to significant casualties amongst the UAF and the Russian attackers alike.

The Ukrainian forces comprised elements of the 24th, 57th, and 58th Mechanized Brigades; the 4th Tank Brigade; the 46th and 77th Airmobile Brigades; the 128th Mountain Brigade; several separate National Guard battalions; and the 3rd Separate Assault Brigade.[4]

The Russian forces were composed primarily of Russia's private military company (PMC) Wagner, elements of Russia's 31st Guard Air Assault Brigade, or airborne forces (better known as the VDV), elements of the 132nd Separate Motorized Rifle Brigade (Donetsk Peoples Republic [DNR]), 72nd Motorized Rifle Brigade, and Russia's 3rd Army Corps.

In early August 2022, most of the fighting took place primarily on the eastern and southern outskirts of the city which had become a mixture of frenzied close quarters trench warfare and unfathomable artillery duels. Some Ukrainian officials claimed that Russian forces were firing up to 50,000 artillery shells a day compared to Ukraine's 6,000 or less.[6]

Figure 1 — Overlay Map of Bakhmut, Ukraine, 20 December 2022
The forward line of troops as Russian forces continued their attempts to encircle the city and break through Ukrainian defensive lines (Map overlay courtesy of @war_mapper)[5]



While Russian forces were able to make isolated tactical breakthroughs of Ukrainian lines in early August, the determined defense by the UAF saw the Russian forces lose their momentum and forced to rely on waves of infantry assaults lacking effective armor support.

These assault forces were eventually arranged into assault detachments (*Штурмовые отряды*) and were more commonly referred to as Shtorm assault detachments, depending on their personnel composition.[7] Shtorm-Z units were composed primarily of Russian prisoners recruited by Wagner PMC to fight in Ukraine to receive presidential pardons for their service. However, in its implementation many of these prisoners and assault detachments would not live to receive pardons as they were being annihilated in "meat wave" attacks. These human-wave attacks did however demonstrate the resolve of Russia's military and political leadership to seize the city at any cost.[8]

By the end of August, while Russian forces continued to run headlong into Ukrainian mine fields and endless small arms engagements in Bakhmut, the UAF launched its counteroffensive, which focused primarily on the country's southern regions of Kherson and Mykolaiv where it attempted to push the Russians back over the Dnipro and Inhulets rivers into southern Kherson and Zaporizhzhia. Ukraine's southern counteroffensive proved slow going as Russian elements of the 247th Guards Air Assault Regiment and 810th Separate Naval Infantry Brigade led a determined delaying action in which the majority of the Russian forces were able to evacuate their heavy equipment and move to the left bank of the Dnipro River at the expense of heavy losses within the 247th and 810th.

While Russia's focus was simultaneously focused on the outcome of Bakhmut and attempting to stem the tide of Ukrainian offensive actions in Kherson, Ukraine launched a surprise attack in Kharkiv oblast, forcing the Russians into a rapid retreat. The success of this counteroffensive was likely as much a surprise to the UAF as it was to the Russian ground forces as Ukrainian lightly armored and mobile forces were able to rout weak Russian defenses and effectively disrupt tactical and operational Russian C2.

Vaguely reminiscent of the U.S. Army and Marine Corps thunder-run tactics in Operation Iraqi Freedom, the decentralized but initiative-supported nature of the UAF assault saw Ukraine liberate as much territory in just a few days as Russian ground forces had taken months of sustained combat operations to occupy.[9] Russian Major General Igor Konashenko would later state that the Russian troops in the areas of Izyum and Balakliia had regrouped to the Donetsk region in order to "increase efforts in the Donetsk direction."[10]

The Ukrainian Kharkiv counteroffensive culminated in early October 2022, having pushed the Russian ground forces back over the Oskil River in eastern Ukraine and in some cases in northeastern Kharkiv back over the Russia-Ukraine border. Using the river as a natural barrier, the UAF was forced to slow its advance so as not to overly extend its logistical and C2 lines. A month later, Russian General Sergey Surovikin ordered the withdrawal of Russian forces from the right bank of the Dnipro River, effectively ending Russian presence in Kherson city.

As a result of Russia's inability to strategize an effective defense in Kherson... the UAF was able to gain the momentum and capitalize on Russia's overly centralized and impotent C2 structure.

As a result of Russia's inability to strategize an effective defense in Kherson, while simultaneously throwing waves of prisoners and volunteer Wagner contractors into the meat-grinder of Bakhmut, the UAF was able to gain the momentum and capitalize on Russia's overly centralized and impotent C2 structure. While Moscow attempted to micromanage battlefield developments, Russian commanders on the ground left openings in their defense in Kharkiv and were forced to relocate forces to both Kherson and Bakhmut.

As a result, Bakhmut became not only a struggle between Ukrainian and Russian forces but also an ideological battle between PMC Wagner's owner Yevgeny Prigozhin, the Russian Minister of Defence (MOD), and Russian ground commanders such as the commanding general of Russian ground forces (Surovikin), commanding general of VDV forces (General Mikhail Yuryevich Teplinsky), and commander of the 58th Combined Arms Army (General Ivan Ivanovich Popov).[11-13]

While Bakhmut would ultimately fall to Prigozhin's Wagner forces in May 2023, it had become the focal point for the entire conflict. Prigozhin would go onto claim that Wagner and Russian ground forces had suffered 20,000 killed in action, whereas the UAF had lost more than 50,000 with the same number of wounded personnel.[14-15] The disgruntled PMC owner's belief that the Russian MOD and Chief of the General Staff Valery Vasilyevich Gerasimov had intentionally delayed ammunition deliveries in order to reduce Wagner's offensive ability would have disastrous results.[16-17]

Whatever celebrations the MOD had planned on having because of their victory in Bakhmut were short lived as only a month later Prigozhin and Wagner PMC, along with a small smattering of followers in nearby Russian ground forces, launched an ill-fated rebellion. The rebellion began first by taking over the Southern Military District headquarters in Rostov-on-Don before moving on to Moscow. For reasons likely to remain unknown, Prigozhin ended Wagner's march just short of Moscow and recalled his forces, entering into negotiations with Putin's regime and the MOD.

Today, Wagner is a shell of its former self, being stripped apart and replaced by the Russian MOD. Prigozhin and several of his followers were killed when his plane exploded under mysterious circumstances.[18] The nine hard months of sustained combat operations in Bakhmut were costly for

both Ukraine and Russia, and while Russia can claim to have achieved a tactical victory in securing the city, Ukraine ultimately won the strategic battle. The battle enabled Ukraine to liberate large swaths of territory in Kharkiv and Kherson, soaking up Russian reserves in both the VDV and the Wagner group. Prigozhin's pride was in no small part to blame for this costly effect, wanting to outshine Russian commanders and the MOD who had lost both Kherson and Kharkiv.

Bakhmut was also an eye-opening battle for both the UAF and the Russian ground forces as it reduced the ability of artillery and mechanized forces to effect more than punishing strikes. The battle for the city was in effect one of the largest rifle engagements of modern warfare with both sides fighting for mere meters a day at grenade range between fighting positions.[19] Called the bloodiest infantry battle since World War II, the battle of Bakhmut demonstrated that a determined infantry force effectively utilizing commercial off-the-shelf unmanned aerial systems, drone-dropped munitions, automatic grenade launchers, and a known urban environment was able to reap devastating consequences on the assault enemy force. The battle for Bakhmut would ultimately set the stage for the entire conflict and the tactics, techniques, and procedures of future infantry engagements between the UAF and the Russian ground forces.

Refusing to change tactics, the Russians ground their forces against Ukrainian defenders, looking to squeeze one final victory out of the winter battles of 2022-2023. This in turn allowed Ukraine time and space to train and equip reserve brigades while strategizing its plan for the 2023 summer counteroffensive.[20] The views and opinions on how Ukraine defended Bakhmut differ greatly, but the fact remains that Russia has struggled for more than 19 months since the battle first started to make any significant advance past the city or along the entirety of the Donbas, with the exception of the capture of Avdiivka in February 2024.

While western analysts may try to pick apart the battle and the strategy employed by the Ukrainian political and military leaders, the final determination of whether the cost was worth the effort lies entirely with the Ukrainian people. What Russia lost in Bakhmut, it has been unable to regain — significant battlefield momentum. Today Bakhmut lies in ruins, a monument, or rather a tomb, of failed Russian ambitions, and as President Zelensky has stated, Bakhmut now lives "only in our hearts."[21]

Notes

[1] Frederick W. Kagan, George Barros, and Karolina Hird, "Russian Offensive Campaign Assessment," 3 April 2022, Institute for the Study of War (ISW), https://www.understandingwar.org/backgrounder/russian-offensive-campaign-assessment-april-3.

[2] Kateryna Stepanenko, "The Kremlin's Pyrrhic Victory in Bakhmut: A Retrospective on the Battle for Bakhmut," ISW and American Enterprise Institute's Critical Threats Project, 24 May 2023.

[3] Mick Ryan, "A Tale of Three Generals — How the Ukrainian Military Turned the Tide," *Engelsberg Ideas*, 14 October 2022, https://engelsbergideas.com/essays/a-tale-of-two-generals-how-the-ukrainian-military-turned-the-tide/.

[4] David Axe, "Bakhmut Is 'Soaked in Blood' as Eight of Ukraine's Best Brigades Battle 40,000 Former Russian Prisoners," *Forbes*, 22 December 2022; https://www.forbes.com/sites/davidaxe/2022/12/22/bakhmut-is-soaked-in-blood-as-eight-of-ukraines-best-brigades-battle-40000-former-russian-prisoners/?sh=7c611f886f23.

[5] "Zelensky in Bakhmut, Girkin Mocks Putin, Russia Moves Tanks in Belarus to Ukrainian Border. What Happened on the Front Line on December 20?" *The Insider*, 21 December 2022, https://theins.ru/en/news/258029m.

[6] Marc Santora, "The Battle of Bakhmut, in Photos," *The New York Times*, 23 May 2023, https://www.nytimes.com/2023/05/23/world/europe/bakhmut-photos-ukraine.html.

[7] Jack Watling and Nick Reynolds, "Meatgrinder: Russian Tactics in the Second Year of Its Invasion of Ukraine," Royal United Services Institute (RUSI) for Defense and Security Studies, 19 May 2023.

[8] Polina Nikolskaya and Maria Tsvetkova, "'They're Just Meat': Russia Deploys Punishment Battalions in Echo of Stalin," Reuters, 3 October 2023, https://www.reuters.com/world/europe/theyre-just-meat-russia-deploys-punishment-battalions-echo-stalin-2023-10-03/.

[9] Henry Foy, Sam Joiner, Sam Learner, and Caroline Nevitt, "The 90km Journey that Changed the Course of the War in Ukraine," *Financial Times*, 28 September 2022, https://ig.ft.com/ukraine-counteroffensive/.

[10] Sergei Kuznetsov, "Russian Forces in Full Retreat from Kharkiv as Ukraine Seeks to Turn Tide of War," *Politico*, 10 September 2022, https://www.politico.eu/article/russian-forces-in-full-retreat-as-ukraine-seeks-to-turn-tide-of-war/.

[11] Kartapolov commented on the removal of Major General Popov after a report on problems in the army in an article in the *Kommersant Daily*, 13 July 2023, https://www.kommersant.ru/doc/6098125.

[12] Ellie Cook, "Russia Reinstates Key Commander Amid 'Intense Tensions' Over Ukraine: U.K.," *Newsweek*, 16 April 2023, https://www.newsweek.com/russia-reinstate-mikhail-teplinsky-tensions-ukraine-1794610.

[13] Gilbert W. Merkx, "Russia's War in Ukraine: Two Decisive Factors," *Journal of Advanced Military Studies* 14/2 (2023), https://muse.jhu.edu/pub/419/article/909028.

[14] "Prigozhin: 20 Thousand Soldiers of the Wagner PMC Died in the Battles for Bakhmut," *Kommersant Daily*, 24 May 2023, https://www.kommersant.ru/doc/6001275.

[15] Nicholas Camut, "Over 20,000 Wagner Troops Killed, 40,000 Wounded in Ukraine: Prigozhin-Linked Channel," *Politico*, 20 July 2023, https://www.politico.eu/article/russia-ukraine-war-over-20000-wagner-troops-were-killed-prigozhin/.

[16] Jake Cordell, ed. Gareth Jones, "Russia's Prigozhin Renews Appeal for More Ammunition to Seize City of Bakhmut," Reuters, 1 May 2023, https://www.reuters.com/world/europe/russias-prigozhin-renews-appeal-more-ammunition-seize-city-bakhmut-2023-05-01/.

[17] Andrew Osborn, "Russian Mercenary Chief Says He's Been Told to Stay in Bakhmut or Be Branded Traitor," Reuters, 9 May 2023, https://www.reuters.com/world/europe/head-russias-wagner-group-says-still-no-sign-promised-ammunition-2023-05-09/.

[18] Shamsher S. Bhangal, "The Wagner Rebellion and the Stability of the Russian State," The Wilson Center, 21 September 2023, https://www.wilsoncenter.org/blog-post/wagner-rebellion-and-stability-russian-state#:~:text=Shamsher%20S.%20Bhangal%C2%A0on%C2%A0September%2021%2C%202023.

[19] RadioFreeEurope journalists, "The Battle for Bakhmut: The Bloodiest Infantry Brawl Since World War II," RadioFreeEurope, 6 April 2023, https://www.rferl.org/a/ukraine-russia-battle-bakhmut-ruins-/32351803.html.

[20] Mariano Zafra and Jon McClure, "Four Factors that Stalled Ukraine's Counteroffensive," Reuters, 21 December 2023, https://www.reuters.com/graphics/ukraine-crisis/maps/klvygwawavg/#uncovering-the-extensive-destruction-of-bakhmut-in-a-new-detailed-analysis.

[21] Susie Blann and Zeke Miller, "Zelenskyy Says 'Bakhmut is Only in Our Hearts' after Russia Claims Control of Ukrainian City," Associated Press, 21 May 2023, https://apnews.com/article/bakhmut-russia-ukraine-wagner-prigozhin-da2fc05b818b3dcc39decd40b17d2d8b.

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Introduction to the Doctrinal Mortar Community

SSG BRADY SMITH
SSG RUBEN GARCES
SFC ADAM WEAVER

The 11C community plays a vital role in the U.S. Army's indirect fire capabilities, and as such, it is essential to stay informed about the latest developments and updates in doctrine, training, and equipment. The Department of Training, Tactics, and Doctrine (DOTTD) at Fort Benning, GA, serves as the central hub for the 11C community, providing substantial resources and expertise to support the U.S. Army Infantry and Armor schools. This article aims to provide an overview of the five key teams within DOTTD that support the mortar community, highlight recent updates to doctrine, and introduce new initiatives aimed at enhancing the qualification and training of mortar crews.

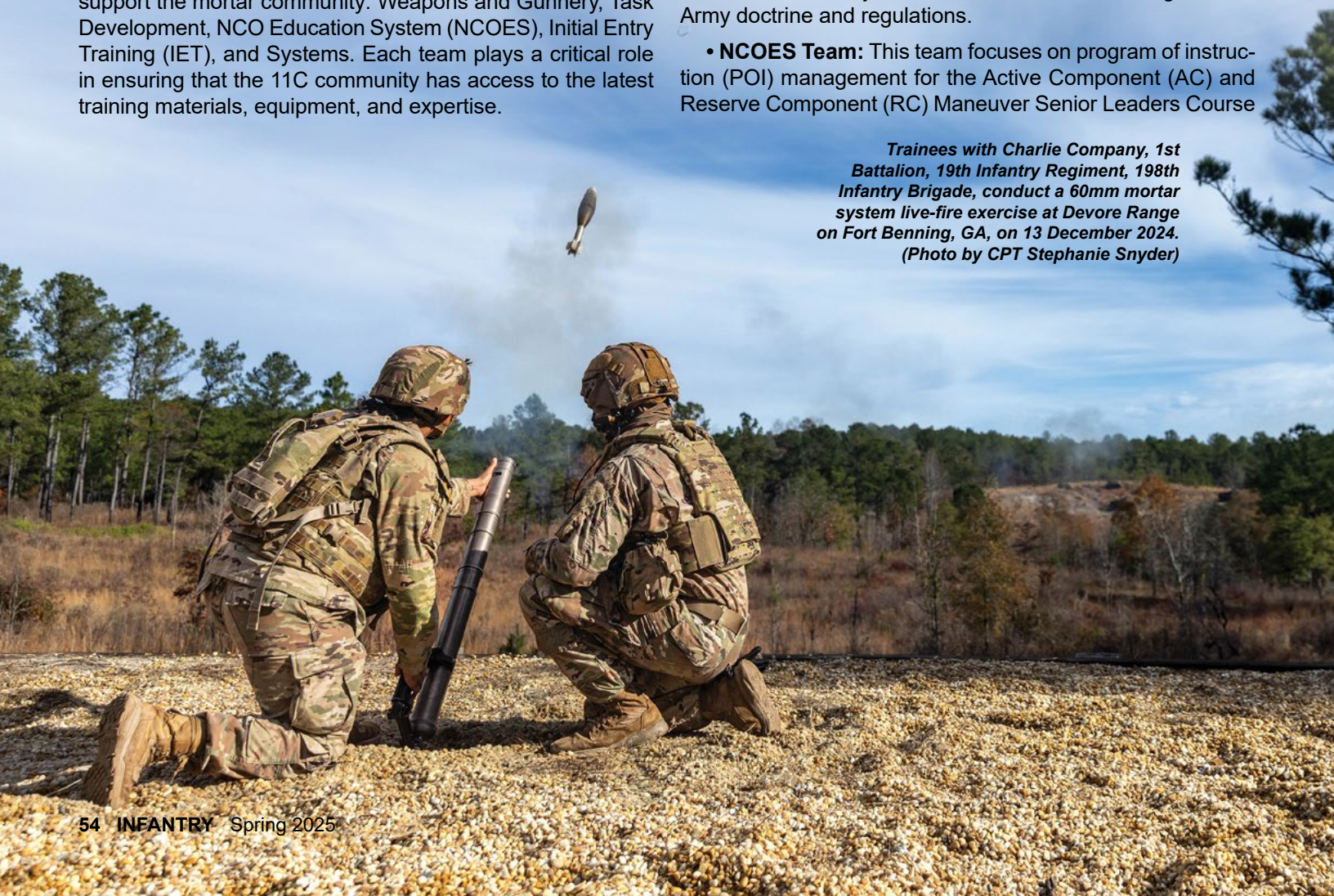
Teams that Support the Mortar Community

DOTTD is comprised of five teams that work together to support the mortar community: Weapons and Gunnery, Task Development, NCO Education System (NCOES), Initial Entry Training (IET), and Systems. Each team plays a critical role in ensuring that the 11C community has access to the latest training materials, equipment, and expertise.

• **Weapons and Gunnery Team:** This team is responsible for developing and maintaining instructional materials for Infantry School training courses, including Training Circular (TC) 3-22.90, *Mortars*, and TC 3-22.91, *Mortar Fire Direction Procedures*. Team members also serve as the proponent for the Mortars Microsoft Teams page and MilSuite Mortar Square page, which provide a direct line of communication for 11C talent managers, career counselors, and the broader mortar community.

• **Task Development Team:** Task developers (TDs) are subject matter experts who travel to verify technical manuals (TMs) for new equipment and weapon systems. They develop new tasks or modify existing ones to ensure they are relevant, measurable, and achievable. TDs also validate tasks to ensure they are accurate, relevant, and aligned with Army doctrine and regulations.

• **NCOES Team:** This team focuses on program of instruction (POI) management for the Active Component (AC) and Reserve Component (RC) Maneuver Senior Leaders Course



Trainees with Charlie Company, 1st Battalion, 19th Infantry Regiment, 198th Infantry Brigade, conduct a 60mm mortar system live-fire exercise at Devore Range on Fort Benning, GA, on 13 December 2024. (Photo by CPT Stephanie Snyder)

(M-SLC) and Advanced Leaders Course (ALC). They utilize the ADDIE (analysis, design, development, implementation, and evaluation) model to develop and revise lesson plans, ensuring that training materials are current and compliant with U.S. Army Training and Doctrine Command (TRADOC) regulations.

• **IET Team:** The IET Team specifically focuses on One Station Unit Training (OSUT) and the Basic Officer Leaders Course (BOLC). Team members review, revise, and create lesson plans for current doctrine and resource requirements, ensuring that training materials are TRADOC compliant.

• **Systems Team:** This team primarily focuses on the integration of mortar equipment, creating system training plans as well as reviewing and assisting with the revision of training requirements and TMs to ensure accuracy.

Updates to Doctrine and Training

Recent updates to doctrine and training include the introduction of the "math method" in TC 3-22.91, which provides a verification technique for mortar fire direction procedures by calculating range and azimuth to the target. The publication also introduces Graphical Training Aid (GTA) 07-01-029, Training Plotting Board, which can be used to assist in training and increase knowledge prior to attendance at the Infantry Mortar Leaders Course (IMLC) and used as a resource to test Table 1-B in TC 3-20.33, *Training Qualification and Mortars*. Additionally, the GTA is available for order through most installation Training Aids, Devices, Simulators, and Simulations (TADSS) offices (see Figure 1).

TC 3-20.33 is grounded in Army Doctrine Publication (ADP) 7-0, *Training*, and is constructed from TC 3-20.0, *Integrated Training Weapons Strategy (IWTS)*. The information introduced in this publication will assist and streamline the qualification of mortars by introducing mortar platoon-specific Department of the Army (DA) forms. Battalion commanders now have a new means by which to assess their intent/mission-essential task list (METL) with their leaders and external evaluators (EXEVALs). The DA forms being introduced in this publication are:

• DA Form 7880, *Mortar Crew Section Fire Mission Scoresheet*

• DA Form 7881, *Mortar Crew Platoon Fire Mission Scoresheet*

• DA Form 7882, *Mortar Crew Platoon Roll-up*

• DA Form 7883, *Mortar Crew Section Roll-up*

These forms are intended to replace historically used memorandums for record, thereby minimizing the packet size used for tracking and at combat training centers (CTCs) to create an easier understanding for leaders and commanders. This publication will also introduce the mortar "clasp" which is authorized for wear and includes the criteria for earning it. This can be added to each individual's Soldier Talent Profile (STP). This publication will also introduce the fire direction center scoring as grading criteria for leaders and EXEVALs during the qualification of mortars; it will also give leaders an idea of how to grade their Soldiers prior to Table 1-B and attendance at IMLC.

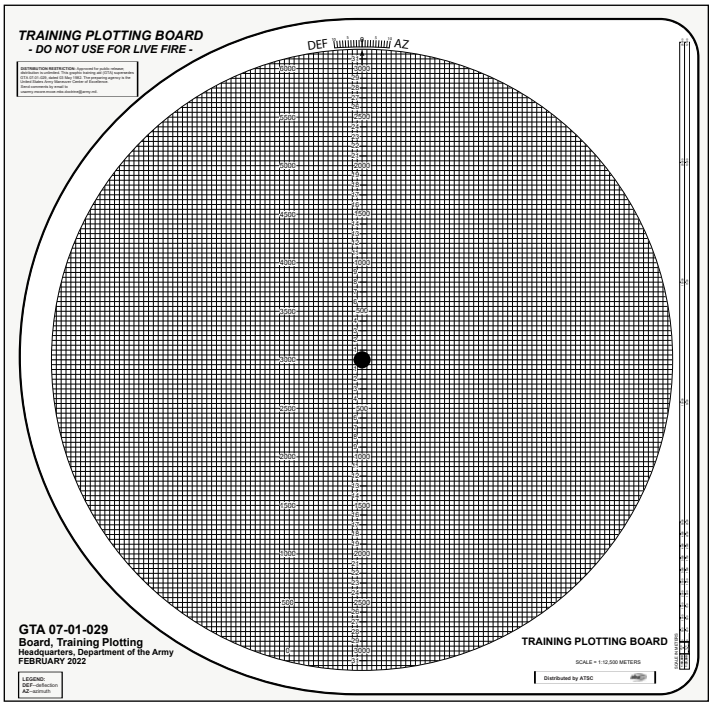


Figure 1 — Graphical Training Aid 07-01-029

Future Prerequisites for IMLC

IMLC will soon require a prerequisite for attendance, which will be administered through a CAC-enabled MilUniversity website. The prerequisite test will be controlled through the same source, providing a knowledge base for students as they arrive at IMLC. This course is projected to be taught similarly to IMLC (with actions on the plotting board on full screen) and will provide the schoolhouse with better-prepared Soldiers, increasing graduation rates and overall knowledge across the indirect fire community.

Conclusion

The 11C community, advisors, leaders, and commanders must stay informed about the latest updates and developments in doctrine, training, and equipment. The DOTTD teams play a critical role in supporting the mortar community, and it is essential to leverage these resources to ensure that mortar crews are properly trained and equipped to perform their duties. By staying informed and engaged, the 11C community can continue to provide effective and efficient indirect fire support to the U.S. Army.

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Managing the Chaos at the Brigade Combat Team

MAJ JOHN DAVID TYDINGCO

In today's operating tempo (OPTEMPO), stacks of requirements are often bestowed on a brigade combat team (BCT). This article intends to explain a way of tackling these myriads of requirements. To set the stage, imagine a BCT that is deployed to Europe and is slated to execute modernization, a U.S. Army Forces Command (FORSCOM) ground readiness evaluation assessment and training (GREAT) inspection, division red cycle, and a National Training Center (NTC) train-up, all occurring in the next fiscal year (FY). Where do you start and what systems should you put in place to manage the chaos? To do this, a BCT needs six things: a plan to plan (P2P), brigade red-amber-green (RAG) cycle, an enabling battle rhythm, command training guidance (CTG), fighting products, and project officer management.

First, a P2P is essential to ensuring a BCT stays on glide path and gets ahead of friction for future events. For this article, a P2P is a timeline of all the planning meetings and briefings that are required (see Figure 1). The plan to plan must be managed by the S-3. The planner inputs the data, but the S-3 needs to dictate the events that are put on the P2P. A great technique is to define when an operation order (OPORD) needs to be published to subordinate units and then work the planning timeline backwards. The P2P gives freedom to the brigade because it prioritizes the staff's efforts on generating and sustaining options, receiving decisions from the commander, and operationalizing those decisions for subordinate units. A recommendation is to utilize the military decision-making process (MDMP). The process is known by all the staff, and it trains them to be sharper on all the intricacies of MDMP. Additionally, a BCT needs to define the planning horizons for the brigade. One technique is for a BCT to publish orders no later than 16 weeks from execution and battalions publish nine weeks out. These recommended horizons give company commanders the time needed to execute the eight-step training model (T+6 company OPORD published, range recon, etc.). Overall, the P2P is the system that helps the staff iterate with the commander on all future events and receive decisions on mitigating future risks.

Second, one of the best ways to prioritize efforts and give predictability to a unit is with a brigade RAG cycle. This cycle starts at the beginning of the FY. Most of the time, installations and divisions have a higher-level RAG that encompasses all the required installation tasks as well as other requirements (i.e., community events, retirement ceremonies, etc.). So, how do units create and set up a RAG cycle that takes on their higher headquarters' (HQ) enormous requirements, balances modernization efforts, and enables an NTC train-up? First, I will define the levels of the RAG:

1) Green battalion should never be tasked or have any restrictions on training;

2) Amber-2 battalion is on call and has no restrictions on training;

3) Amber-1 battalion is limited to individual training with the caveat of training being cancelled and is third in priority for tasking (i.e., operational support battalion, etc.);

4) Red-2 battalion is second in priority for tasking; and

5) Red-1 battalion is assigned all the predictable installation taskings and is the first in priority to be tasked.

Next, based off outputs from the P2P for training, begin

Figure 1 — Example Brigade Combat Team Plan to Plan

Action/ Event	Action/ Event Date	Project Officer	Tasked Units	IPR1/MA	WARNO 1	MA Brief	WARNO 2	IPR2/COA DE	COA Brief	WARNO 3	IPR3/ COA Analysis	COA Approval	OPORD/ FRAGO Published	Rehearsals (NLT T + 1)	Remarks/ Comments/ Notes
TENTEX	12-Feb-24		All	22-Jan-24	23-Jan-24	24-Jan-24	25-Jan-24	25-Jan-24	26-Jan-24	30-Jan-24	29-Jan-24	31-Jan-24	1-Feb-24		
Ball FY24	5-Feb-24			22-Jan-24	23-Jan-24	24-Jan-24	25-Jan-24	25-Jan-24	26-Jan-24	30-Jan-24	29-Jan-24	31-Jan-24	1-Feb-24		
NTC 25-02 Outload	26 Oct-24	CPT Joe	All	12-Feb-24	13-Feb-24	14-Feb-24	15-Feb-24	20-Feb-24	21-Feb-24	22-Feb-24	22-Feb-24	23-Feb-24	26-Feb-24		
4-9 CAV Regen	1-May-24	CPT John	All	10-Jul-23	n/a	complete	n/a	23-Jan-24	24-Jan-24	25-Jan-24	6-Feb-24	7-Feb-24	8-Feb-24		
EDRE	17-Jan-24	CPT Joe	All	1-Feb-24	1-Feb-24	9-Feb-24	13-Feb-24	12-Feb-24	14-Feb-24	15-Feb-24	20-Feb-24	21-Feb-24	22-Feb-24		
3rd Quarter QTB	26-Feb-24			22-Jan-24	23-Jan-24	24-Jan-24	25-Jan-24	6-Feb-24	7-Feb-24	8-Feb-24	12-Feb-24	14-Feb-24	23-Feb-24	23-Feb-24	
Summer 2024 Leader Transition	1-Jun-24	1LT Joe	All	17-Jan-24	23-Jan-24	31-Jan-24	30-Jan-24	7-Feb-24	8-Feb-24	13-Feb-24	14-Feb-24	15-Feb-24	20-Feb-24		

(Acronyms: COA - coarse of action; EDRE - emergency deployment readiness exercise; FRAGO - fragmentary order; IPR - in-progress review; MA - mission analysis; QTB - quarterly training brief; TENTEX - tent exercise; WARNO - warning order)

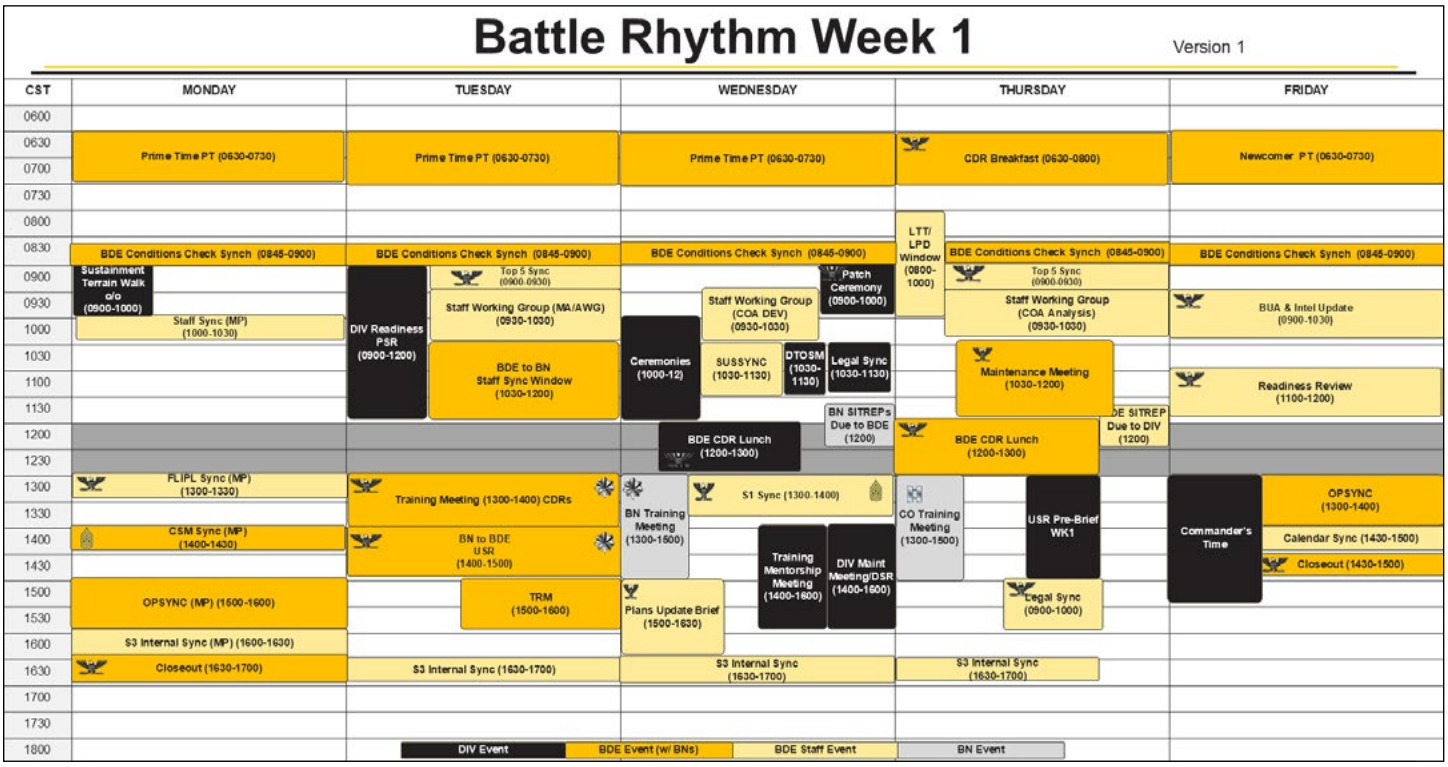
	Q1			Q2			Q3			Q4		
	23-Oct	23Nov	23-Dec	24-Jan	24-Feb	24-Mar	24-Apr	24-May	24-Jun	24-Jul	24-Aug	24-Sep
DIV RAG												
4-9 CAV	A	A	A (CRB)	A	A	A	A2	A2	A	A	A	A
1-5 CAV	A	A	A	A1 (CRB)	A2	G	G	R2	G	R	G	G
D-5TH	A	A	A2	A2	G	A2	R2	G	R	G	G	G
1-8 CAV	A	A	R1	G	A1 (CRB)	R2	G	A1	G	G	R	G
1-9 CAV	A	A	R2	G	R1	A1 (CRB)	G	G	G	G	G	R
3-16 FA	A	A	A1	R2	A	R1	A1 (CRB)	G	G	G	G	A
8 BEB	A	A	A	R1	R2	A	G	R1	A	G	G	G
15 BSB	A	A	A	A	G	A	G	G	A	G	G	A
DIV CAV							R1					

Figure 2 — Example BCT Red-Amber-Green Cycle

prioritizing what battalions need to be green by month. After figuring out which battalions need to be green, begin prioritizing the battalions by month to determine which are reds and which are ambers. Lastly, create a training conference that gets all the battalions to provide bottom-up refinement and concurrence of the RAG cycle. Keep in mind that the RAG will not make any battalion happy, but it will spread the burden of taskings equally across the brigade and provide predictability that protects battalion training. Based off the scenario of this article, the RAG cycle is one of the best systems to manage modernization, NTC train-up, and a division red cycle. The brigade RAG cycle is a great way to reduce the load of the current fight on the brigade and helps the BCT staff focus efforts on the future fight.

Third, a BCT needs to have an enabling battle rhythm to maintain tempo and ensure compliance on all orders. The BCT battle rhythm is usually managed by the BCT executive officer (XO), but its creation should be staffed and created based off future events to support BCT operations. The normal training meetings, command and staff meetings, etc., are all the foundations of the battle rhythm, but a staff needs to identify the specific meetings that will synchronize the BCT based off the environment. The current environment will always dictate the addition of certain meetings. A best practice is to conduct a daily 0845 synchronization meeting with battalion representatives. This daily synch, although met with a lot of annoyance, ensured that a BCT was consistently synchronized in all efforts. The vast amount of change that occurs daily can be massive. This synchronization meeting, which is 15 minutes maximum in

Figure 3 — Example BCT Battle Rhythm



length, will ensure modernization tasks are not dropped and that battalions know what the priorities are for the brigade. The other lesson learned that can help with the example case is to ensure designated time for P2P events. At least three days dedicated to P2P staff events and one day for commander briefs and decisions ensures that the BCT is looking deep into future operations.

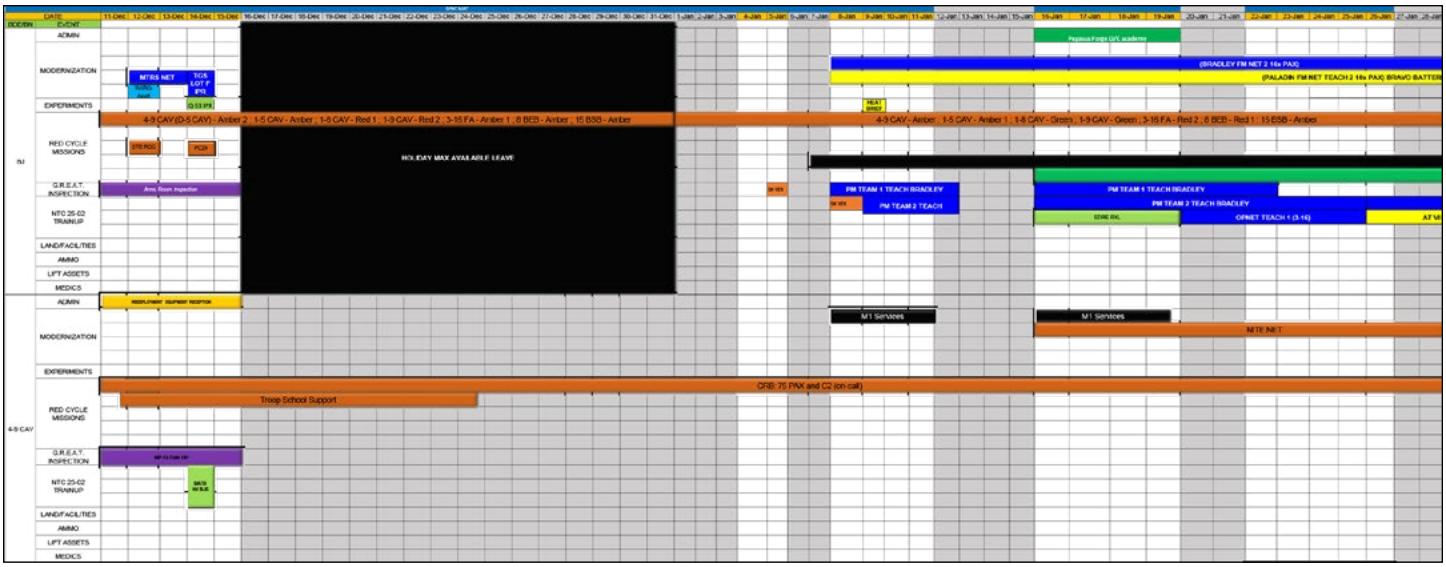
Fourth, the cornerstone of every BCT is training, and the ultimate way to provide shared understanding across the brigade is through effective command training guidance. Every commander has a different way of writing CTG. Field Manual (FM) 7-0, *Training*, recommends it be written in an OPORD format. For this article, an OPORD format will be the basis for all examples, and I highly recommend its use. The BCT must create the training guidance one year out from the next calendar year. There are two additions that must be included in the CTG: the RAG cycle and prioritized efforts. First, the base document needs to have the approved RAG in it. The RAG cycle is officially published in the CTG. Last, the base document must have prioritized efforts in the form of main efforts (MEs) and shaping efforts (SEs). Having MEs and SEs complements the RAG cycle. It helps the BCT understand the "glass balls" when juggling multiple tasks. The best technique is to have MEs and SEs in the quarterly training guidance, which are approved by the commander prior to publishing. This ensures that the BCT considers the changing conditions that often occur throughout the FY. All the outputs from the staff's previous work must be captured in the CTG. The training guidance, especially the quarterly updates, ensures battalions know what the priorities are for the brigade.

Fifth, fighting products are the glue that keep operations together. A common problem that BCTs face is the misinterpretation of an OPORD by subordinate units. Fighting products often mitigate the risks of misinterpreting orders. The planning phase of an operation produces the fighting products for current operations. The recommended fighting products a BCT needs to produce include a synchronization matrix and manning document. Every battle rhythm event should synchronize a published fighting product. The training meeting synchronizes the training calendar, command and staff synchronizes respective readiness trackers, and operational synchronization meetings update the synchronization matrix. As previously mentioned, a synchronization matrix for the entire year is the best way to create shared understanding of the orders that were published. It is the product that turns the complex into a simple timeline that any Soldier should be able to execute. The other recommended product is the manning document, which is a detailed troops-to-task report that forces subordinate formations to look at which individuals are allocated for all tasks. Battalion commanders, based off the case study, saw the execution manning document as a good practice because it was a forcing function for company commanders to manage their personnel effectively. Maintaining fighting products occurs in respective battle rhythm meetings. It's not easy to consistently synchronize these products, but the battle rhythm will ensure compliance from project officers.

Finally, project officers are key to ensuring that BCT field grade officers do not lose focus on the deep fight. Field grades should fight the urge to act as a project officer due to immediate satisfaction. In the lens of being the BCT S-3, utilize all the officers in your respective sections (i.e., current operations, future operations, training, etc.). Every officer should have a second job no matter what section they belong to. A best practice is to utilize warrant officers and NCOs (if you do not use them, you lose them). If everyone in the S-3 shop is over capacity in projects, coordinate with the BCT XO to begin using other staff members. Never shy away from maximizing the talent and personnel in the entire staff. In the end, field grades will be able to look deep for the commander only if they are not decisively engaged with multiple requirements in the close fight.

To conclude, managing the chaos of a BCT requires a P2P,

Figure 4 — Example BCT Synch Matrix



brigade RAG cycle, enabling battle rhythm, training guidance, fighting products, and project officer management. The case study of this article is centered on a BCT that is deployed overseas and is redeploying into executing modernization, a FORSCOM GREAT inspection, division red cycle, and an NTC train-up, all occurring in the next fiscal year. To manage these overlapping requirements, first, ensure the BCT has a solid P2P that creates a cycle of generating and sustaining options, receiving decisions from the commander, and operationalizing those decisions. Second, the P2P should identify the friction and decisions that will ultimately be mitigated through a brigade RAG cycle. The RAG cycle is the highlighted best practice that provides subordinate units with predictability and a shared understanding of which unit is the priority per month. Third, to ensure compliance and a good tempo, a BCT must have an enabling battle rhythm. The battle rhythm must be tailored to the environment the BCT will be operating in. Things like a daily synchronization meeting will produce shared understanding and compliance from subordinates for orders. Fourth, all outputs from the P2P, brigade RAG, and battle rhythm will be officially published in command training guidance. One of the best ways to establish ruthless priorities is through quarterly command training guidance, which establishes the main effort and shaping efforts for the BCT (i.e., modernization, individual training, etc.). Fifth, fighting products mitigate the risks of misinterpretation by subordinate units. Recommended products include a synchronization matrix for all operations in the BCT and a manning document. Finally, the utilization of project officers is key. Project officers ensure field grades continue to look at the deep fight and manage the overall systems of the BCT. All staffs should identify all personnel as potential project officers. The recommended technique is to ensure that every subordinate officer and NCO is poised to take on a second job.

One of the best ways to establish ruthless priorities is through quarterly command training guidance, which establishes the main effort and shaping efforts for the BCT (i.e., modernization, individual training, etc.).

In the end, all these recommended techniques should help a BCT manage the entropy of future and daily operations. The figures provided are examples of some fighting products and systems that can help field grades provide predictability and enable Soldiers to do their jobs. In the end, the individual Soldier suffers for our inability to manage the chaos.

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Optimizing Performance and Reducing Injury in Infantry OSUT:

The Role of Holistic Health and Fitness Strength Coaches, Athletic Trainers, and H2F Integrators

LTC MICHAEL B. MOORE

As the demands on today's Infantry Soldiers increase, the U.S. Army has made significant strides toward building a more resilient, capable force through the Holistic Health and Fitness (H2F) program. Integrating H2F into Infantry One Station Unit Training (OSUT) has become a game changer. By embedding strength coaches, athletic trainers, and H2F integrators directly into training, OSUT is transforming how Soldiers develop and maintain peak physical fitness while minimizing injuries.

This article explores how H2F professionals — strength coaches, athletic trainers, and H2F integrators — optimize performance, improve soldier readiness, and lay a foundation for lifelong health and resilience among Infantry trainees at Fort Benning, GA, ultimately leading to a more capable and combat-ready Infantry Soldier for the operational force.

Infantry OSUT and H2F: A Comprehensive Approach

Infantry OSUT combines Basic Combat Training (BCT) and Advanced Individual Training (AIT) into a seamless program, preparing Soldiers for the unique challenges of infantry combat. The addition of the H2F program within OSUT reflects the Army's commitment to developing well-rounded Soldiers who are physically and mentally prepared for the demands of the infantry.

H2F brings an integrated approach, focusing on all aspects of soldier readiness — physical, mental, spiritual, and injury prevention. Strength coaches, athletic trainers, and H2F integrators work together throughout OSUT to build strength, enhance mental resilience, and reduce injury rates. This team approach ensures that trainees adopt sustainable fitness and wellness practices, improving overall readiness and extending their careers.

The Role of Strength Coaches in OSUT: Building Holistic Fitness Programs

Strength coaches within OSUT focus on functional fitness to meet the physical demands of infantry work. H2F integrators or master fitness trainers (MFTs) at the company and battalion levels collaborate closely with these coaches to design and implement tailored physical training (PT) plans that meet the specific needs of each company.

A 198th Infantry Brigade strength coach guides cadre members through stretching and mobility work during the Tactical Strength and Conditioning Facilitator Course (TSAC-F). (Photos courtesy of author)

Building Strength and Muscular Endurance

H2F integrators and MFTs serve as a bridge between the OSUT cadre and H2F specialists. They work directly with strength coaches to align PT plans with training objectives. Integrators and MFTs ensure that PT plans follow proper progression, avoiding overtraining while addressing the unique requirements of each unit. OSUT strength coaches tailor workouts to build functional, combat-ready strength. Trainees work on exercises that enhance overall body strength, core stability, and endurance. From heavy carries to squats, deadlifts, and pull-ups, strength coaches guide trainees through exercises that mimic the weight-bearing and physically challenging tasks they face in the field. This collaboration results in comprehensive, science-based PT programs that balance strength, endurance, mobility, and recovery.

Cardiovascular Fitness

By incorporating a variety of interval and distance running sessions, strength coaches help trainees build a strong cardiovascular foundation. This foundation improves the

speed and endurance of trainees, allowing them to perform more efficiently while fatigued. By training a variety of cardiovascular stimuli, trainees are better prepared to face the wide array of physical demands in a combat environment. Company H2F integrators ensure these plans align with unit timelines and objectives while also coaching cadre on proper execution.

Recovery and Mobility Focus

H2F integrators reinforce the importance of recovery and mobility training as part of the company's PT plans. Together with strength coaches, they incorporate recovery sessions, stretching, and mobility drills into the training schedule. Strength coaches introduce recovery and mobility training early, helping trainees improve balance, coordination, and joint stability. These elements are essential for injury prevention and emphasize the importances of identifying and treating injuries early. This proactive approach reduces the risk of injury and prepares Soldiers for sustained physical activity.

Athletic Trainers: Preventing and Managing Injuries

Injuries can derail a trainee's progress during OSUT and delay graduation. Athletic trainers embedded in OSUT serve as essential resources for injury prevention, early intervention, and recovery, allowing trainees to stay in the training pipeline and avoid long-term setbacks.

Preventive Screening and Prehab

While athletic trainers in OSUT do not conduct initial screenings for trainees, they play a vital role in injury prevention by collaborating with strength coaches and H2F integrators. The strength coaches assess movement patterns during technique instruction to identify areas of weakness or improper form. By addressing these issues through targeted corrective exercises, the team helps trainees strengthen vulnerable areas such as knees, shoulders, and lower backs. This coordinated approach mitigates the risk of common training injuries and supports trainees in maintaining their readiness throughout OSUT.

Injury Treatment and Rehabilitation

When injuries do occur, OSUT athletic trainers are equipped to provide on-the-spot assessments, treatment, and customized rehabilitation plans. By managing injuries in real time, trainers enable trainees to return to training safely, minimizing recovery time. This support allows trainees to recover effectively without risking further injury, maintaining the continuity of their progress.

A 198th Infantry Brigade strength coach instructs cadre members on conducting proper warm-up drills.

Education on Recovery Techniques

Athletic trainers and H2F integrators teach recovery techniques that trainees can use throughout their careers, emphasizing techniques such as stretching, hydration, foam rolling, and proper sleep. By making recovery a priority, trainees avoid overtraining, reduce muscle fatigue, and build sustainable fitness habits. These techniques, ingrained early in OSUT, become integral tools trainees carry with them into their next assignment.

The Impact of H2F in Infantry OSUT

The integration of H2F has yielded measurable benefits in training outcomes, with a particular focus on injury prevention, improved performance, and enhanced resilience.

Reduced Injury Rates

While data collection is ongoing across all Infantry OSUT units, early results indicate that incorporating H2F practices has significantly reduced trainee injury rates. One notable example comes from 2nd Battalion, 19th Infantry Regiment, which has seen a 46-percent decrease in injury volume since H2F was embedded two years ago.

Injury Evaluation Trends: At 2-19 IN, the number of initial evaluations conducted by athletic trainers per 100 trainees in 22-week cycles has steadily declined as H2F became fully integrated:

- Fiscal Year (FY) 22 (no H2F): 65 evaluations
- FY23 (H2F introduced): 52 evaluations
- FY24 (H2F fully operational): 35 evaluations

Impact of Strength Coaches: The first company training cycles to fully implement strength coach-led programs at

2-19 IN experienced an average 35-percent reduction in injury volume compared to previous cycles. Below is the percentage decrease in injuries by company:

- A/2-19IN: 29.5-percent decrease
- B/2-19IN: 20.7-percent decrease
- C/2-19IN: 44.3-percent decrease
- D/2-19IN: 32.7-percent decrease
- E/2-19IN: 50.0-percent decrease

This success stems from carefully planned PT programs developed by strength coaches in collaboration with H2F integrators and athletic trainers. The emphasis on progressive training, recovery, and early intervention prevents setbacks and ensures trainees complete training on schedule.

Enhanced Physical Performance

Trainees demonstrate significant improvements in strength, endurance, and agility under H2F-guided programs. They complete exercises with better form, increased strength, and greater endurance, all of which are essential for the high demands of infantry operations. The trainees' physical progress, achieved through the collaborative efforts of H2F professionals, also bolsters their mental resilience as they gain confidence in their abilities.

Increased Combat Readiness

H2F ensures that Soldiers graduate from OSUT not only physically fit but also mentally resilient. The integration of holistic fitness practices equips them with the skills needed to adapt to complex operational environments and sustain performance under stress.

Sustainable Fitness Practices

The collaboration between H2F integrators and strength coaches establishes a foundation for lifelong health. Trainees leave OSUT with the knowledge and habits to maintain their physical readiness, contributing to longer, healthier careers.

The Role of H2F Integrators in Bridging Training and Operational Needs

H2F integrators and MFTs are essential in aligning OSUT fitness programs with the broader goals of the operational force. By coordinating with strength coaches to design and implement PT plans, they ensure that trainees develop the skills and resilience required to excel in their units.

Their involvement enhances communication between H2F professionals, cadre, and leadership, creating a unified approach to soldier readiness. This collaboration not only benefits individual trainees but also improves the overall effectiveness and cohesion of OSUT companies.

Why H2F Is Crucial for Delivering a Better Infantry Soldier to the Operating Force

The integration of H2F in Infantry OSUT is not just about preparing trainees for graduation – it's about delivering the best-trained, healthiest, and most resilient Soldiers to the operational force. By introducing trainees to comprehensive, science-backed fitness and wellness practices from day one, the Army is building a stronger Infantry Soldier that is better suited for the high-stakes demands of modern warfare.

A 198th Infantry Brigade strength coach observes a cadre member's form as part of the brigade Postpartum Physical Training Program.

Increased Combat Readiness

Infantry Soldiers arriving at their units after H2F-integrated OSUT should have a higher level of readiness than those who trained without this holistic approach. Their advanced physical and mental conditioning means they should perform combat tasks more effectively, adapt to complex environments, and endure prolonged physical strain. This heightened readiness ensures that units can rely on new Infantry Soldiers to contribute immediately to mission success.

Reduced Medical Downtime

H2F's emphasis on injury prevention and sustainable training practices aims to reduce injury rates not only during OSUT but also at the trainees' next duty station. By equipping trainees with proper recovery techniques, progressive training methods, and a focus on physical resilience, H2F helps prepare trainees to withstand the demands of their new units. Although data is still being gathered, the program encourages early intervention for health concerns and promotes habits that can reduce the risk of injuries, ensuring Soldiers remain mission-ready in their operational roles.

Sustainable Health and Operational Longevity

H2F's emphasis on injury prevention and recovery helps trainees sustain their health over longer careers, reducing attrition due to physical burnout. Infantry Soldiers who train under H2F are equipped with the skills and knowledge to manage their health, helping them maintain operational

effectiveness and reducing long-term wear and tear on their bodies. This sustainability directly benefits the Army by reducing the need for replacements and maintaining experienced Soldiers in the ranks.

Higher Morale and Unit Cohesion

Physically fit, injury-resistant Soldiers who are resilient in body and mind contribute to higher morale within their units. Units benefit from a team of Soldiers who are confident in their capabilities and share a common foundation in the H2F principles. This shared experience builds cohesion, allowing units to perform with greater coordination and effectiveness in high-stress environments.

A 198th Infantry Brigade strength coach runs cadre members through dynamic warm-up drills during the TSAC-F.

Shaping the Future of Infantry Training

The inclusion of the Holistic Health and Fitness program in Infantry OSUT is transforming how the Army prepares its Infantry Soldiers. The collaborative efforts of H2F integrators, strength coaches, and athletic trainers are delivering Soldiers who are stronger, more resilient, and less prone to injury.

The results will soon be clear: Trainees who train under H2F are not only stronger and more agile but also more resilient and less prone to injury. The knowledge and habits they acquire in OSUT form the foundation for a lifetime of physical and mental wellness, benefiting their personal and professional lives. This means the Army is delivering Infantry Soldiers to the operational force who are ready to face the challenges of modern combat — capable, dependable, and prepared for the demands of any mission.

These outcomes directly enhance operational effectiveness, reduce medical downtime, and increase unit cohesion. By investing in H2F, the Army is building a healthier, more capable infantry force, one Soldier at a time.

LTC Mike Moore currently commands 2nd Battalion, 58th Infantry Regiment, 198th Infantry Brigade, at Fort Benning, GA. An Infantry officer, he has served in various command and staff positions within airborne and Stryker brigade formations. He has completed four combat deployments to both Iraq and Afghanistan, and an operational deployment to Haiti. He received his undergraduate degree in mass communication from Miami University and has a Master of Aeronautical Science from Embry Riddle Aeronautical University. LTC Moore is also a Pose Method Certified Running Technique Specialist.

2025 Infantry Basic Officer Leader Course Reading List

- Stephen E. Ambrose, *Band of Brothers: E Company, 506th Regiment, 101st Airborne, from Normandy to Hitler's Eagle's Nest*
- John F. Antal, *Next War: Reimagining How We Fight*
- Dale Carnegie, *How to Win Friends & Influence People: The Only Book You Need to Lead You to Success*
- Constitution Annotated: Analysis and Interpretation of the U.S. Constitution, https://constitution.congress.gov/constitution/
- Christian A. Dionisio, "The Oath of Commissioned Officers Demands We Pursue Perfection," https://fromthegreennotebook.com/2024/05/28/the-oath-of-commissioned-officers-demands-we-pursue-perfection/
- Bob Drury and Tom Clavin, *The Last Hill: The Epic Story of a Ranger Battalion and the Battle that Defined WWII*
- Viktor E. Frankl, *Man's Search for Meaning*
- Jon Gordon, *You Win in the Locker Room: The 7 C's to Build a Winning Team in Business, Sports, and Life*
- MSG Aaron L. Griffling, "Servant Leadership: Ten Military Figures Who Got it Right," https://www.armyupress.army.mil/Journals/NCO-Journal/Archives/2019/April/Servant-Leadership/
- Ryan Holiday, *Right Thing, Right Now: Good Values, Good Character, Good Deeds*
- Sebastian Junger, *Tribe: On Homecoming and Belonging*
- Gunter K. Koschorrek, *Blood Red Snow: The Memoirs of a German Soldier on the Eastern Front*
- Gary Mack, *Mind Gym: An Athlete's Guide to Inner Excellence*

- James Mattis and Bing West, *Call Sign Chaos: Learning to Lead*
- James Mattis, "On The Matter of Professional Military Reading," https://thearmyleader.co.uk/mattis-professional-military-reading/
- Major Rusty Bradley and Kevin Mauer, *Lions of Kandahar: The Story of a Fight Against All Odds*
- Wiliam H. McRaven, *The Wisdom of the Bullfrog: Leadership Made Simple (But Not Easy)*
- Harold G. Moore and Mike Guardia, *Hal Moore on Leadership: Winning when Outgunned and Outmanned*
- William Oncken Jr. and Donald L. Wass, "Management Time: Who's Got the Monkey?" *Harvard Business Review,* November -December 1999, https://hbr.org/1999/11/management-time-whos-got-the-monkey
- Ralph Puckett, *Ranger: A Soldier's Life*
- Erwin Rommel, *Infantry Attacks*
- Mick Ryan, *White Sun War: The Campaign for Taiwan*
- Hampton Sides, *On Desperate Ground: The Marines at the Reservoir, the Korean War's Greatest Battle*
- E.B. Sledge, *With the Old Breed: At Peleliu and Okinawa*
- Jocko Willink and Leif Babin, *Extreme Ownership: How U.S. Navy SEAL's Lead and Win*
- *SMA Michael R. Weimer, "Combat Doesn't Care: How Ready Are You?" NCO Journal,* 14 October 2024, https://www.armyupress.army.mil/Journals/NCO-Journal/Muddy-Boots/Combat-Doesnt-Care-Weimer/
- Gregg Zoroya, *The Chosen Few: A Company of Paratroopers and Its Heroic Struggle to Survive in the Mountains of Afghanistan*

Find more IBOLC resources at https://www.benning.army.mil/Infantry/199th/IBOLC/

Stryker Gunnery: The Operational Crucible in Building Lethal Teams

CSM RAUL "RUDI" SOTO

Stryker gunnery is often viewed as a task, a series of exercises and training sessions that units must complete to achieve proficiency. However, this perspective undersells the true significance of Stryker gunnery. In reality, it is an operation that shapes a lethal, cohesive team — one that is capable of dominating on the battlefield. The process of Stryker gunnery is not just about technical mastery but about building a team that can work together seamlessly, anticipating and overcoming challenges in high-pressure situations.

I have seen firsthand how crews can stumble in gunnery training, often due to poor habits or a lack of focus early on. Crews that cannot get their systems aligned, with thermal and visual imaging modules (TIM/VIM) out of sync, will struggle to perform effectively. However, this failure is not just a technical issue but rather a symptom of a larger problem. It is a problem that begins long before crews hit the field during the early stages of preparation and planning. Half of Stryker gunnery is an operational process, but the other half is about putting lethality into actual use — mastering the small but crucial details that lead to success.

The role of NCOs is critical in this process. NCOs must be proactive in guiding the team through the crucial moments of Stryker gunnery, anticipating challenges before they become mission-stopping issues. They must be highly visible and involved in every stage of the process, from preparation to execution. By doing so, they can instill discipline and a sense of urgency in the team, driving them to master the technical aspects of Stryker gunnery and to work together as a cohesive unit.

To understand how Stryker gunnery builds lethal teams, it is helpful to break the process down into phases. Each phase is critical, and success in one phase sets the stage for success in the next.

A Soldier with a Stryker crew assigned to the 1st Stryker Brigade Combat Team, 4th Infantry Division loads a MK19 grenade launcher during Stryker Gunnery Table VI at Fort Carson, CO, on 6 November 2020. (Photo by CPT Daniel Parker)

Phase 1: Long-Term Preparation and Crew Selection

The first phase of Stryker gunnery is long-term preparation and crew selection. This phase begins approximately 18 months before the actual training exercises, and it is during this time that leadership identifies key personnel. The Soldiers who will attend the Master Gunner Course and the crew members who will train with simulators like Virtual Battlespace (VBS) 3 are selected during this phase. This is similar to scouting in sports, where the right players are identified and developed to create a winning team. Passion drives mastery, and the right personnel are essential to building a lethal team.

During this phase, leadership must also begin to develop a training plan that will prepare the crew for the challenges of Stryker gunnery. This plan should include a mix of classroom instruction, simulator training, and live-fire exercises. The goal is to create a comprehensive training program that will prepare the crew for every eventuality, from routine maintenance to complex combat scenarios.

Phase 2: Building Proficiency Through Training

The second phase of Stryker gunnery is building proficiency through training. This is where the bulk of the work happens, and it is during this phase that crews begin to come together or fall apart. Technical mastery is the focus of this phase, with crews working to align TIM and VIM, using embedded trainers and running through driver's training to handle preventive maintenance checks and services (PMCS) and operational assessments. NCOs play a critical role during this phase, troubleshooting issues and instilling discipline in the process. The more crews refine their basics, the better they will perform when the pressure is on.

During this phase, crews must also begin to develop their teamwork and communication skills. Stryker gunnery is a complex and dynamic process, and crews must be able to work together seamlessly to achieve success. This requires a high level of trust and communication, as well as a deep understanding of each crew member's role and responsibilities.

Phase 3: Live Fire and Results — The Moneyball Moment

The third and final phase of Stryker gunnery is live fire and its results, which I like to call the "Moneyball" moment. This is where everything comes together, and crews either shine or struggle. Live-fire exercises and real-time adjustments are the focus of this phase, and it is during this time that units can measure their lethality and identify gaps in training. The involvement of NCOs during the early phases pays off during this phase, as crews that have been guided and disciplined from the start will perform more effectively. If NCOs have not been involved, cracks in performance will become apparent, and leadership must step in to recalibrate.

The teams that take gunnery seriously, that focus on building a cohesive unit and mastering the technical aspects of Stryker gunnery, are the ones that become more than just proficient — they become a force capable of dominating on the battlefield.

During this phase, crews must be able to apply the skills and knowledge they have learned in a realistic and dynamic environment. This requires a high level of situational awareness, as well as the ability to adapt to changing circumstances and unexpected challenges. Crews that can perform effectively in this environment are truly lethal and are capable of dominating on the battlefield.

Lethality and Warfighting

At the end of the day, everything we do in Stryker gunnery comes back to one thing: creating lethal teams that are ready for warfighting. Every phase, every piece of training, and every moment of leadership involvement feed into this goal. The teams that take gunnery seriously, that focus on building a cohesive unit and mastering the technical aspects of Stryker gunnery, are the ones that become more than just proficient — they become a force capable of dominating on the battlefield. Stryker gunnery is not just a task; it is an operational crucible that shapes lethal teams and prepares them for the challenges of warfighting. By understanding the phases of Stryker gunnery and the critical role of NCOs, units can build teams that are capable of achieving success in the most high-pressure situations.

In conclusion, Stryker gunnery is a complex and dynamic process that requires a high level of technical mastery, teamwork, and leadership. By breaking the process down into phases and focusing on the critical role of NCOs, units can build lethal teams that are capable of dominating on the battlefield. The key to success lies in a comprehensive training program that includes a mix of classroom instruction, simulator training, and live-fire exercises. With the right personnel, training, and leadership, units can achieve a high level of proficiency and become a truly lethal force.

CSM Raul Soto currently serves as the command sergeant major for the 1st Stryker Brigade Combat Team (SBCT), 4th Infantry Division, Fort Carson, CO. He has held every position from rifleman to platoon sergeant while stationed at Fort Bragg, NC, culminating in him serving as operations sergeant major for 2nd Brigade, 82nd Airborne Division. CSM Soto then returned to the 1st Battalion, 73rd Cavalry Regiment as first sergeant for C Troop before serving as an instructor for the Reserve Officers' Training Corps (ROTC) at Colorado State University. His other assignments include serving as an operations sergeant major for United States Army Africa at Camp Ederle, Italy; first sergeant for Headquarters and Headquarters Company, 1/4 SBCT; operations sergeant major for 2nd Battalion, 3rd Infantry Regiment, Joint Base Lewis-McChord, WA; operations sergeant major for 1st Brigade, 2nd Infantry Division; and command sergeant major for 1st Battalion, 5th Infantry Regiment, Fort Wainwright, AK.

Infantry Week 2025

International Best Mortar Competition — 7-11 April

Lacerda Cup — 7-11 April

International Sniper Competition — 7-11 April

Best Ranger Competition — 11-14 April

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