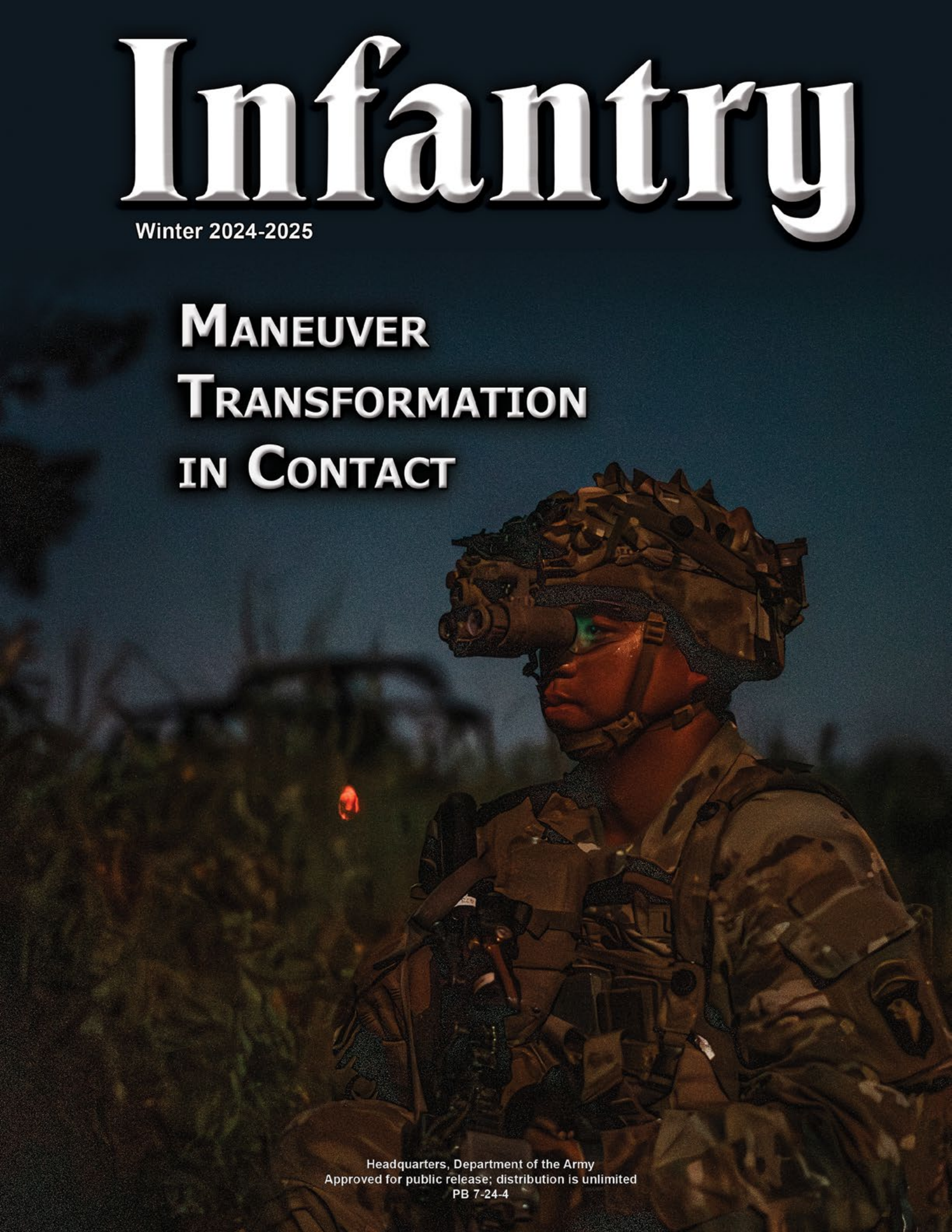
Infantry

Winter 2024-2025

Maneuver Transformation in Contact



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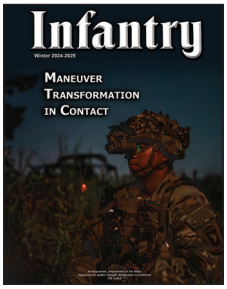

FRONT COVER:

A Soldier from the 2nd Mobile Brigade Combat Team, 101st Airborne Division (Air Assault) provides security of the landing zone as part of a large-scale, long-range air assault at Fort Johnson, LA, on 16 August 2024. (Photo by SSG Joshua Joyner)

BACK COVER:

Soldiers assigned to the 10th Mountain Division prepare to fire their next 120mm mortar round during the 2024 International Best Mortar Competition at Fort Moore, GA, on 11 April 2024. (Photo by CPT Stephanie Snyder)

This medium is approved for official dissemination of material designed to keep individuals within the Army knowledgeable of current and emerging developments within their areas of expertise for the purpose of enhancing their professional development.

By Order of the Secretary of the Army:

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Infantry

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Commandant's Note

BG PHILLIP J. KINIERY

The U.S. Army is rapidly adapting to meet the demands of the modern battlefield. Research and development efforts are underway to develop cutting-edge tools for American warfighters. We've already seen some of this advanced technology make its way to frontline units to begin implementing into the fight. These tools are exceedingly helpful in finding, fixing, and destroying the enemy. During times like these, there is an emphasis placed on the implementation of this new technology into our formations, but we must not discard the basics. Our strength has always been American Soldier, NCO, and officer competency, both tactical and technical.

There is an art to balancing priorities. Given the current operations tempo, it may seem difficult to balance and prioritize training goals and outcomes. I believe that two tasks should be prioritized in every training plan: focusing on fundamental Soldier skills and implementing new technology. Physical fitness, basic Soldier tasks, and military occupational specialty (MOS) competency are required to fight and win. New technology is great to have, but it's also useless without a capable fighting force to implement it. Tough physical training, team building, NCO training time, and MOS-specific leader professional development (LPD) events are required to build and maintain a competent Army. These Soldiers and NCOs will be responsible for fielding and implementing some of the most important systems the U.S. Army has ever had. These systems will revolutionize how we fight and win on the battlefield. This fact brings importance to the second training priority — implementing the new technology. Flattening the learning curve for our newly acquired systems should be important to all leaders. The quicker we build proficiency with a system, the better we can implement it into the fight.

In September, the Maneuver Center of Excellence hosted its annual Maneuver Warfighter Conference, where key leaders from across the force addressed the Army's ongoing continuous transformation efforts. During one presentation, COL James C. Stultz, commander of the 2nd Mobile Brigade Combat Team (MBCT), 101st Airborne Division, shared some of the lessons his unit has learned as part of the transformation in contact initiative. 2/101 MBCT Soldiers have been hard at work breaking down the barrier between implementation and expertise. Their focus on Soldiering and integrating new technology is unmatched.

This issue of *Infantry* includes several articles about 2/101's transformative efforts. In particular, two articles stand out to me: "Large-Scale, Long-Range Air Assault (L2A2) Lessons Learned," authored by CPT Jared Weece, and "Utilizing the Integrated Tactical Network (ITN) in Mobile Command Posts (MCPs)" by LTC Jonathan Nielsen and MAJ Eric Cannon. The L2A2 article examines lessons learned from the 2nd Battalion, 502nd Infantry Regiment at Fort Campbell. This battalion participated in a highly impressive air movement, spanning three states and 500 nautical miles. An operation of this size and complexity introduces various friction points. CPT Weece describes the importance of planning and communication between ground and aviation forces, pickup-zone operations, sustainability, and equipment utilization. The MCP article shares insights into the modernization efforts of battlefield command and control. The decision to integrate ITN into MCPs greatly enhanced mobility, adaptability, survivability, and efficient control of ground forces. These enhanced MCPs offer superb survivability and emit a much smaller electromagnetic signature. The enhanced survivability offered by an MCP with ITN stands out to me as a unique advantage for our next fight.

In closing, I would like to reiterate the importance of creating a tough fighting force and embracing the commitment to learn and integrate new systems. Our Army needs to be physically, mentally, emotionally, and spiritually ready for the next conflict. During modernization and transformation efforts, the Army is leading the way on implementing cutting-edge battlefield technology. Our warriors bear an important responsibility of figuring out how we can target and destroy the enemy with this never-before-seen tech. These lessons learned are valuable to the individual units who discover them, but they are useless to the force if they aren't shared. Professional discourse is critical, and our publications aim to create these worthwhile discussions. If you have lessons learned or any knowledge transfer that you think the Army can benefit from, I urge you to reach out to your Harding Fellow and branch professional bulletin. Harding Fellows are now integrated into all branch journals, and they are responsible for creating Army-wide professional conversations on critical topics. Contact *Infantry* staff at usarmy.moore.tradoc.mbx.infantry-magazine@army.mil.

I am the Infantry! Follow me!

Utilizing the Integrated Tactical Network in Mobile Command Posts

LTC JONATHAN NIELSEN
MAJ ERIC CANNON

Traditionally, when infantry brigade combat teams (IBCTs) reference command posts, thoughts gravitate towards tents, comfort, and antennas. Over the last two decades of conflict in the Middle East, IBCT command posts have lost the art of mobility, survivability, and minimal connectivity while maintaining a common operational picture (COP) and the effective communication that is needed to combat acute threats. With the recent advances in targeting capabilities based on innovation in information, surveillance, and reconnaissance (ISR), and given the Army's focus on fighting near-peer threats, it is vital that command posts modernize with these features in mind. The Army's recognition of the imperative mission command transition towards survivability is highlighted in the current Command and Control (C2) Fix initiative. C2 Fix strives to define the critical communication capabilities that brigade combat teams and below need to efficiently communicate and maintain consistent situational awareness with the least possible electromagnetic and physical signatures. To address these mission command needs, the 2nd Mobile Brigade Combat Team (MBCT), 101st Airborne Division (Air Assault) is incorporating the Integrated Tactical Network (ITN) while simultaneously reducing command post size to increase mobility.

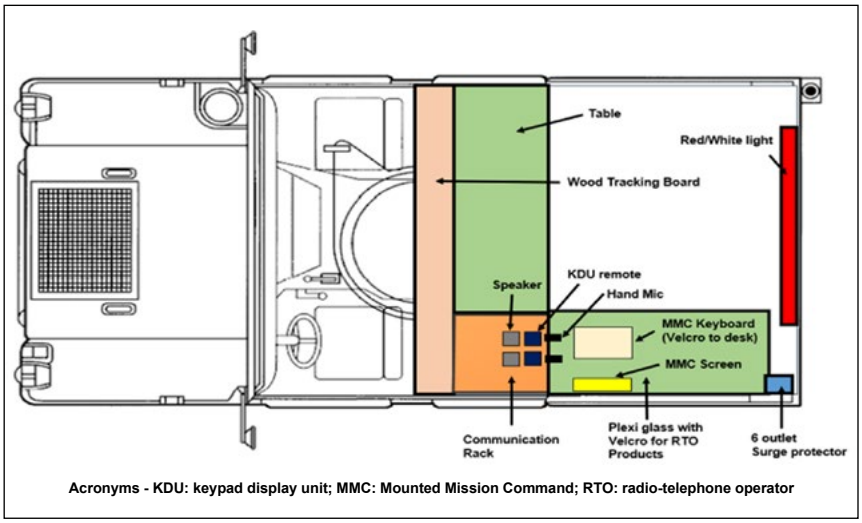


Figure 1 — HMMWV Mobile Mission Command Vehicle

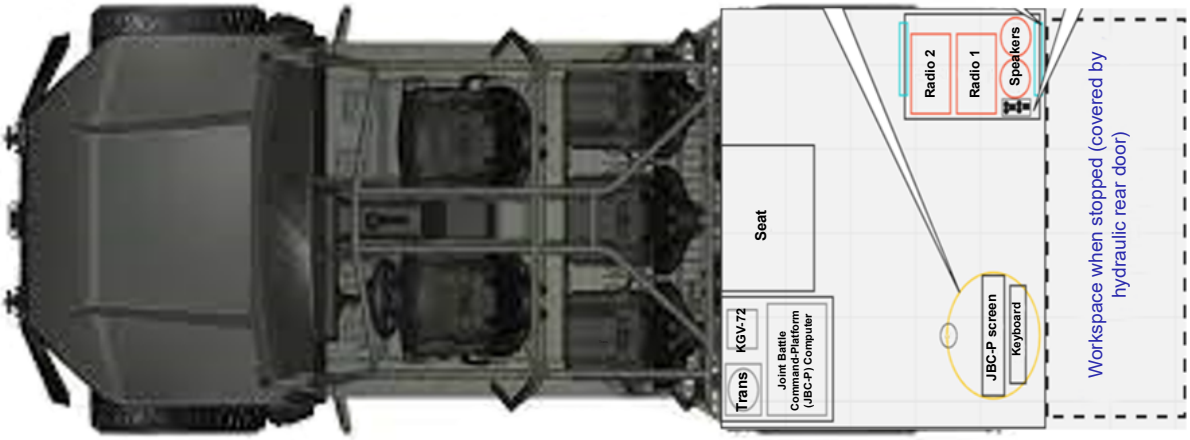
Figure 2 — Inside View of HMMWV MMC Vehicle

A deeper look at the attributes of mobility, survivability, and connectivity can raise awareness of how to incorporate ITN systems to create a shared understanding while maintaining a small and agile mobile command post (MCP) architecture to survive acute threats.

Mobility

Vehicle-based command posts provide constant mission command capabilities while reducing size but not limiting functionality. Critical to mission command mobility is the location of communication platforms that enable command and control on the move and placement of key personnel.

Current Construct: Vehicles (High Mobility Multipurpose Wheeled Vehicles [HMMWVs]) equipped with ITN architecture possess two to four PRC-163 nodes and Mounted Mission Command (MMC) screens and keyboards. These essential communication elements enable battalion and below operations to transmit voice via the Tactical Scalable Mobile (TSM) ad hoc network (PRC-163), operational graphics and COP via tactical ITN/Windows Team Awareness Kit (WinTAK), and messaging (chat) and position location information (PLI) awareness via MMC. Utilizing a mobile command post construct with multiple ITN-enabled vehicles provides redundant systems and a shared understanding across all warfighting functions. Placing these systems in the back of a HMMWV allows key personnel to maintain situational awareness while on the move, reduces setup



ISV Description

- 5x seats at front of ISV remain unchanged
- Back of ISV: enclosed space (hard shell) to house electronics
- Onboard ISV power system used to run C2 equipment
- Total height of ISV must stay the same as the standard variant to allow internal loading in a Chinook helicopter.
- Recommend single and dual point sling ability as well

C2 Components Layout

- Minimum 1x seat required inside back of C2 variant to monitor comms on the move
- Dual radio mount in back (2x 158s)
- Requires MMC, transceiver, and KGV-72 in back
- Keyboard and screen located on a turntable
- Turntable must lock in place while moving

Figure 3 — Infantry Squad Vehicle C2 Variant

time at the long halt, and facilitates a shared understanding across the headquarters.

Recommendation: As 2/101 MBCT integrates new Infantry Squad Vehicle (ISV) variants into the mobile brigade concept, it is critical to retain this MCP capability with the C2 ISV variant. Communication mediums located in the rear of the ISV with a seat for a battle captain/radio-telephone operator (RTO) will maintain this same C2 on-the-move function. Once in the halt, the ability to rotate digital C2 mediums to the rear of the vehicle will facilitate the MCP concept. (**Editor's Note:** *The authors further discuss the C2 ISV as well as other ISV variants in a subsequent article in this issue*.)

Survivability

Small and camouflaged MCPs reduce setup and teardown time, prevent detection, and facilitate a shared understanding. Utilizing multiple MCP vehicles with a standardized packing list and camouflage scheme can reduce setup and teardown time to 12 minutes (four vehicles) or 18 minutes (five vehicles). Additionally, the ITN architecture alleviates the need for large Tactical Communications Node (TCN) satellites and antennas, reducing the need for additional vehicles/trailers and the size of the collective footprint. However, it is important to note that the ITN provides units the ability to connect to the Long-Term Evolution (LTE) network, creating an electromagnetic spectrum vulnerability. To reduce risk of detection,

Figures 4 and 5 — Interior and Exterior Views of Mobile Command Post

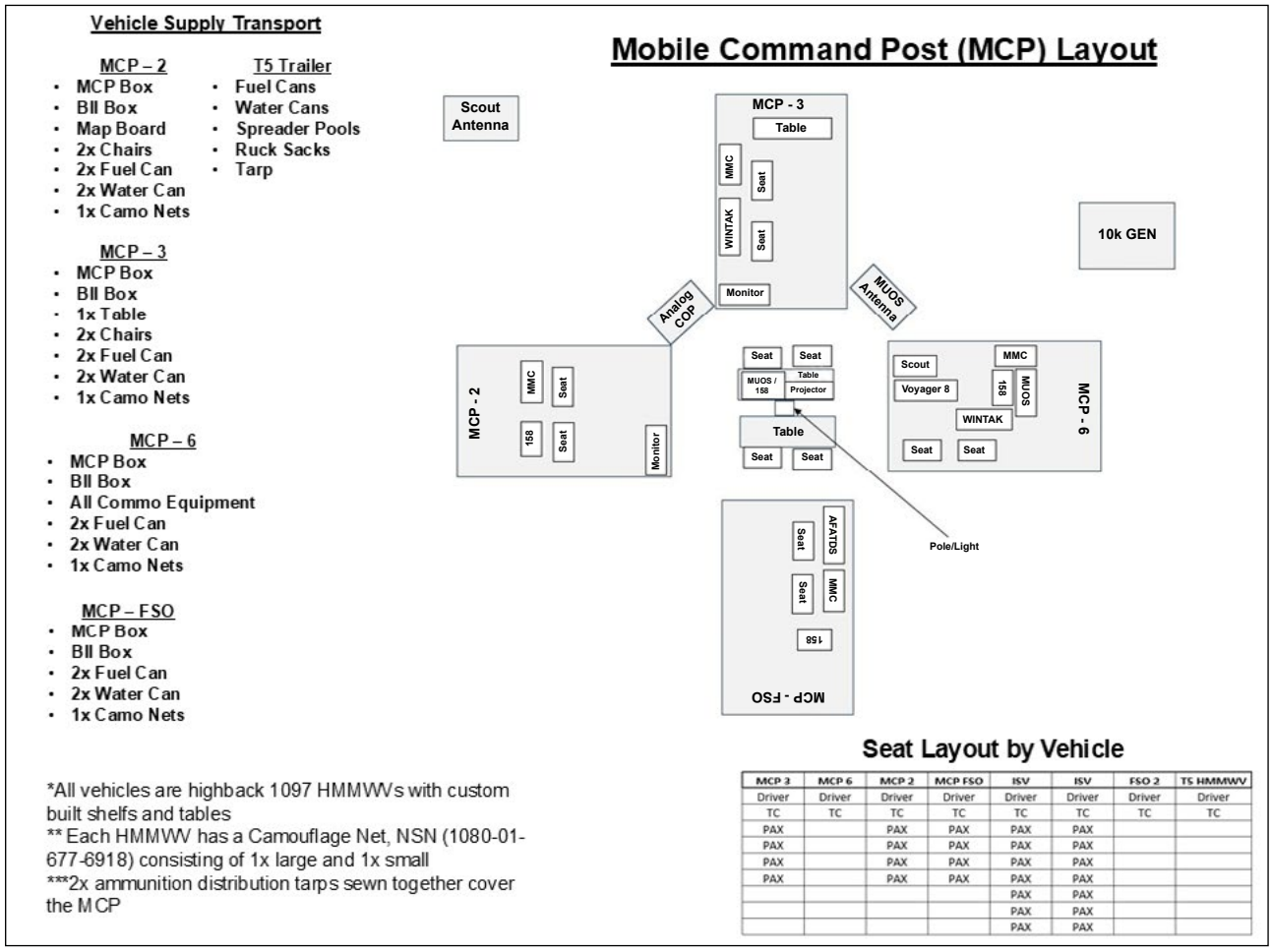


Figure 6 — MCP Layout

units can employ three practices: hide LTE Wi-Fi pucks to prevent collection, limit LTE network usage to certain time periods (e.g., morning and evening data synch windows), and offset decoy emitters that simulate the MCP construct (e.g., computers, printers, etc.) to reduce risk of the real MCP being located and correctly identified.

Connectivity

The traditional practice of having one voice and data PACE (primary, alternate, contingency, emergency) plan is unrealistic with ITN. This is not a hindrance but rather a benefit as multiple systems offer similar capabilities, albeit with different ranges. This allows units to plan near and far communication plans that reduce reliance on a single communication medium. Below is a list of ITN capabilities and benefits that create redundancy for MCP connectivity:

MMC-Software (MMC-S) PLI Federation — Two-way PLI and chat between MMC-S and Nett Warrior (NW) devices (TSM and LTE) can send and receive messages from MMC-S but not the Android Team Awareness Kit (ATAK). Two-way PLI sharing and chat is sustainable from the MCP to about 20 kilometers. This asset allows units to maintain communication with the forward line of own troops (FLOT) even though they are outside TSM range.

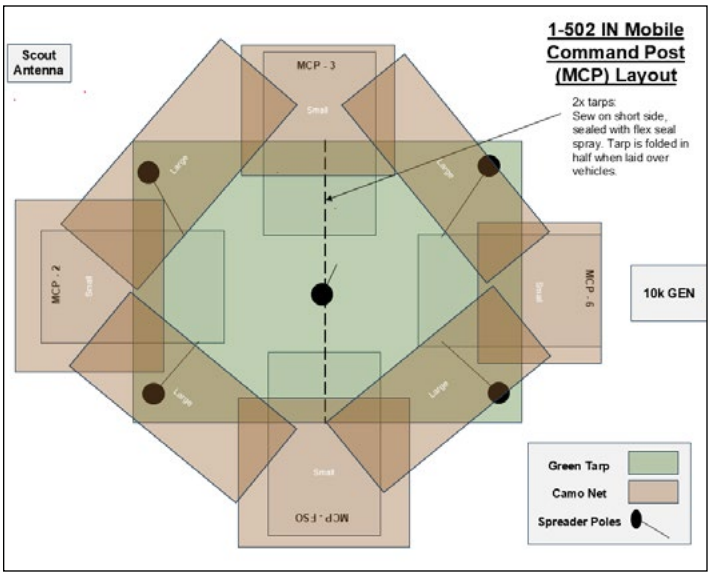


Figure 7 — MCP Camouflage Scheme

Scalable Class of Unified Terminal (SCOUT) — The SCOUT provides communication and data transmission capabilities in areas where cellular service is unreliable. The SCOUT can also use the mobile broadband kit (MBK) as transport, allowing hardline to be ran from the terminal

to the Non-classified Internet Protocol Router (NIPR), which negates the need to launch a virtual private network (VPN). Additionally, the SCOUT can be used as transport for the Tactical Radio Integration Kit (TRIK) Voyager 8 in areas with unreliable cellular service.

***TSM Voice* —** Planning factor for TSM distance is 2.5 kilometers. With 10-plus nodes between the MCP and a distant end, units can increase the range by 1.5-2.5 kilometers. To connect TSM bubbles, units can use the 166 Ghost as a single node to connect multiple bubbles.

***Mobile User Objective System (MUOS)* —** MUOS provides over-the-horizon communications that can be utilized at the halt or on the move. Communication over MUOS was confirmed to be sustainable from the MCP at about 20 kilometers. MUOS can be used to conduct command update briefs over a group call, which negates the need for in-person link up.

***Power Consumption* —** ITN equipment creates an increased and unstable power consumption for mission command vehicles. To reduce vehicle battery consumption, the PTS base mount provides power and consolidates speakers to the MCP's 158. Additionally, the MMC tactical operations center kit's power supply allows the MMC to be converted back to generator power.

Figure 8 illustrates the overlapping ITN voice and data capabilities at different ranges for an infantry battalion.

Conclusion

Tactical units must be able to execute mission command on the move, communicate at distance via voice and data, and survive against acute threats. The recent conflicts in Ukraine and Nagorno-Karabakh, which involved adversaries armed with drones and long-range precision fires, raise awareness for the necessity of mobile command in future combat operations. Being able to mission command on the move with voice and data is no longer a convenience but a requirement. Units that adopt a mobile command post utilizing the near and far capabilities of ITN will not only create a common operational picture but, more importantly, increase survivability.

LTC Jonathan Nielsen currently commands 1st Battalion, 502nd Infantry Regiment, 2nd Mobile Brigade Combat Team (MBCT), 101st Airborne Division (Air Assault) at Fort Campbell, KY.

MAJ Eric Cannon currently serves as the executive officer (XO) of 2/101 MBCT. He previously served as the XO of 1-502 IN. MAJ Cannon earned a bachelor's degree in history from Auburn University and a Masters in Operational Studies from the U.S. Army Command and General Staff College.

Figure 8 — Example ITN Data and Voice Communication Plan for an Infantry Battalion

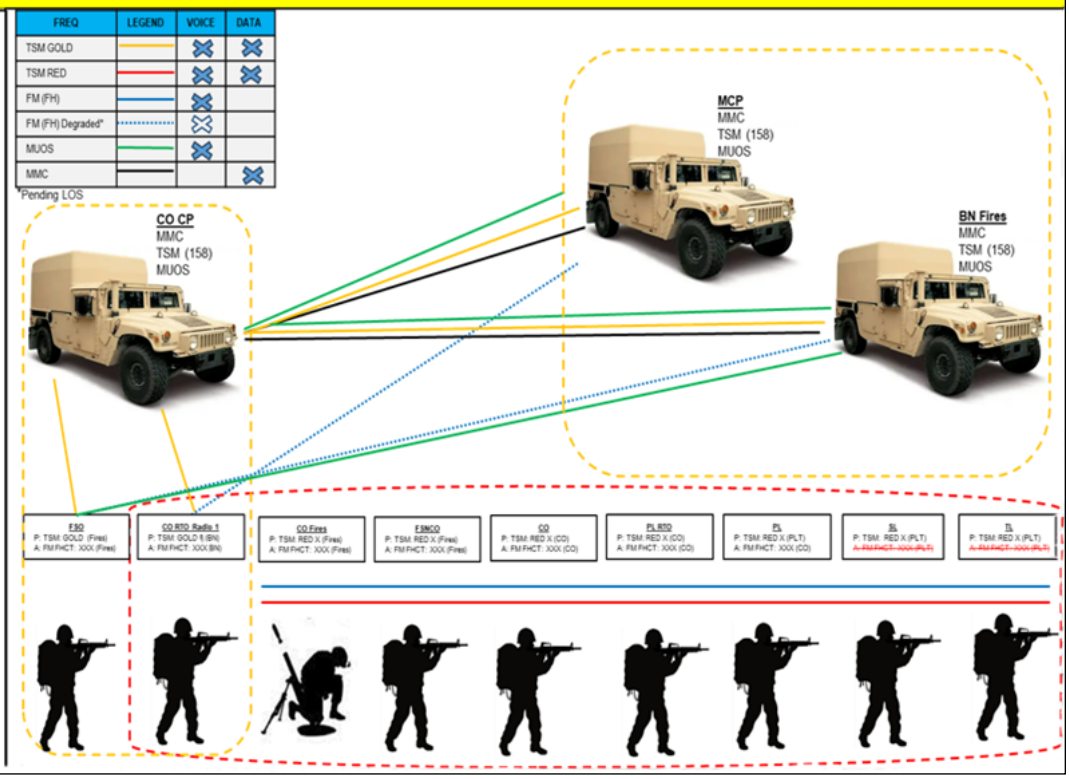
This course of action efficiently utilizes the capabilities of new and legacy equipment to provide sustained communication at every echelon. The company and platoon leaders' TSM preset is synched on one TSM preset (red), allowing faster/accurate reports. Brigade fires, battalion fires, and company fire support officer TSM preset was deconflicted by sharing one TSM preset (Gold), increasing TSM bubble and streamlining reports.

Key Points

1. TSM, MUOS, WINTAK, and FM from CO to BN.
2. Increases TSM Preset available hops
3. Increases CO and Fires C2
4. TSM utilized with intended purpose (CO>TM level)

Pros:
1. CO and PLT C2 increase
2. BN, CO intel and battle tracking is faster/accurate
3. Fires net deconflicted from CO>BDE
4. Increased range for FSO

Cons:
1. BDE C2 to CO CMD degraded
2. BDE intel and battle tracking relies on MMC and BN reports



Mobility Learning Event — Infantry Squad Vehicle Modification

LTC JONATHAN NIELSEN
MAJ ERIC CANNON

The introduction of the Infantry Squad Vehicle (ISV) into the traditional infantry brigade combat team (IBCT) offers formally slow and limited formations a transition to speed and mobility. ISVs drastically increase the amount of terrain an IBCT can cover while providing a platform that enhances lethality but not a dependence on the platform to fight their formations. The Army's Transformation in Contact (TiC) initiative to reorganize IBCTs to mobility brigades (MBDEs) raises awareness of the need for different ISV variants to accommodate this new formation. The MBDE construct removes all legacy vehicles from the IBCT (High Mobility Multipurpose Wheel Vehicles [HMMWVs], Light Medium Tactical Vehicles [LMTVs], trailers, etc.) and replaces them with variants of the ISV. As these variants are still in development, it is important to consider the importance of specificity and modularity with this new vehicle. In this article, we provide a few examples to serve as a starting point to address the brigade's long-term needs for its vehicle platforms.

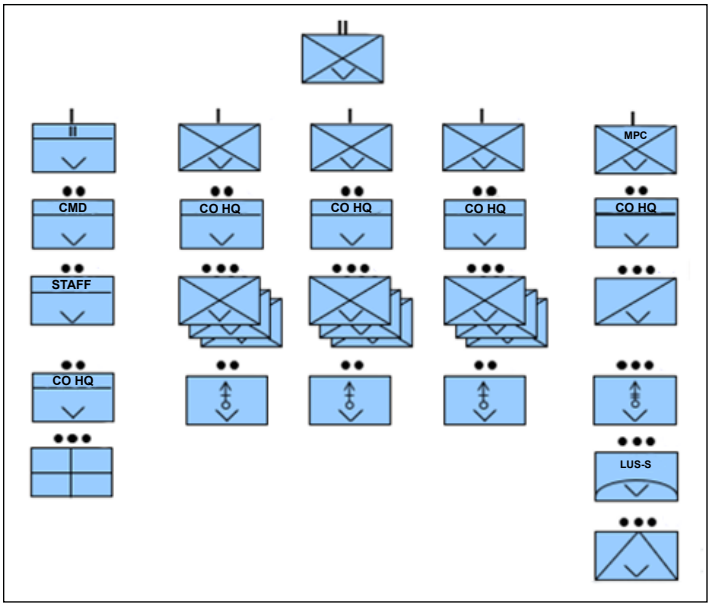


Figure 1 — Mobility Brigade

Specific ISV Models

The MBDE's task organization highlights the need for tailored ISV models to support this emerging formation. The need for command and control (C2), anti-tank, mortar, and

Soldiers in 2nd Battalion, 502nd Infantry Regiment conduct operations as part of Operation Lethal Eagle 24.1 in April 2024 at Fort Campbell, KY. (Photo courtesy of 101st Airborne Division Public Affairs Office)

flatbed modular variants to provide efficient transport of personnel and key equipment is imperative with this new force structure. In this article, we provide explanations and diagrams of each proposed ISV variant to explain the unique requirements and multipurpose capabilities of each formation.

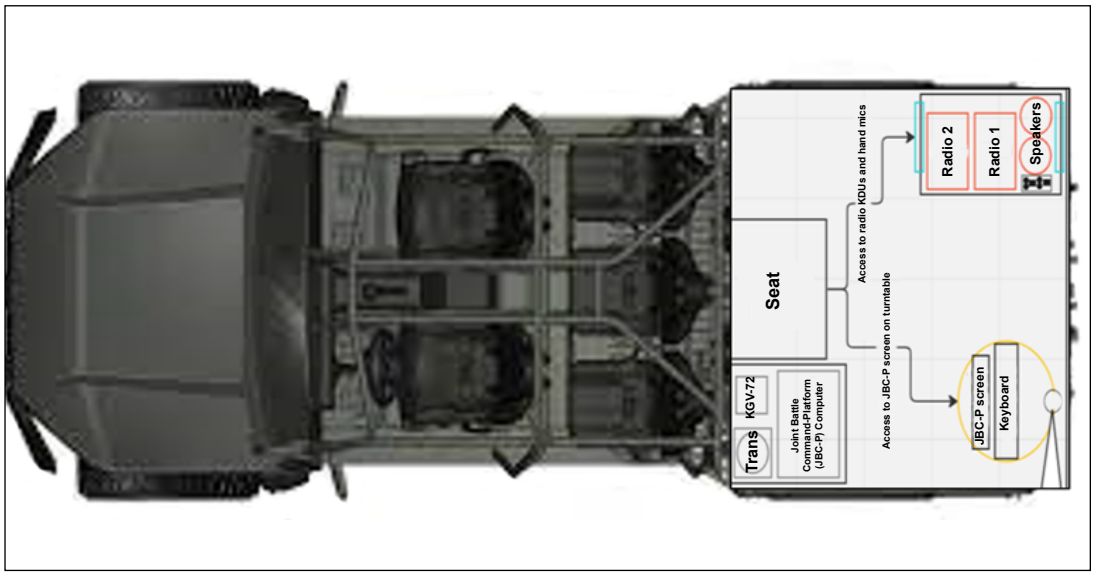


Figure 2 — Command and Control (C2) ISV Variant

C2 ISV

The C2 ISV would provide companies and battalions C2 on the move with fabricated power supply and communication platforms to quickly transition to long or short halt operations.

Below are the key characteristics needed for the C2 ISV variant:

- Crew: Five-seat ISV
- Total height of ISV with protective shell must stay the same as the standard variant to allow internal loading in Chinook and via sling load. Recommend single- and dual-point sling ability.
- Minimum of one seat required inside back of C2 variant to monitor communication on the move.
- Dual radio mount located in back (2x 158s)
- Mounted Mission Command-Software (MMC-S), transceiver, and KGV-72 located in the back of ISV under a protective shell.
- Keyboard and screen located on a turntable would allow for C2 on the move or halt.
- Rear entrance to C2 area is a hydraulic lift gate to provide cover when at the halt.
- Lift gate can be supplemented with poncho/tarp to provide even more protection.
- MCC-S and other hardware located near front wall to make power routing easier. May have to relocate transceiver to top of hard shell.
- MMC-S screen and keyboard turn 180 degrees to create “standing” desk at back of ISV.
- Radio remote keypad display units and hand microphones are easily relocated to rear when stopped.
- Charging requires 12-volt A/C outlet for net mission planners and USB-C for Android Team Awareness Kit (ATAK) and radio batteries.

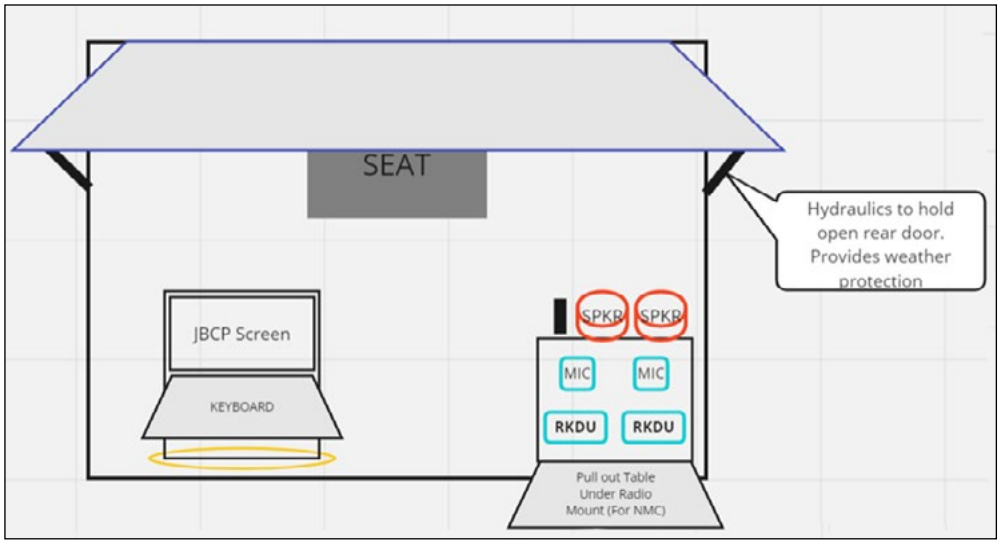


Figure 3 — Rear View of C2 ISV Variant when Parked

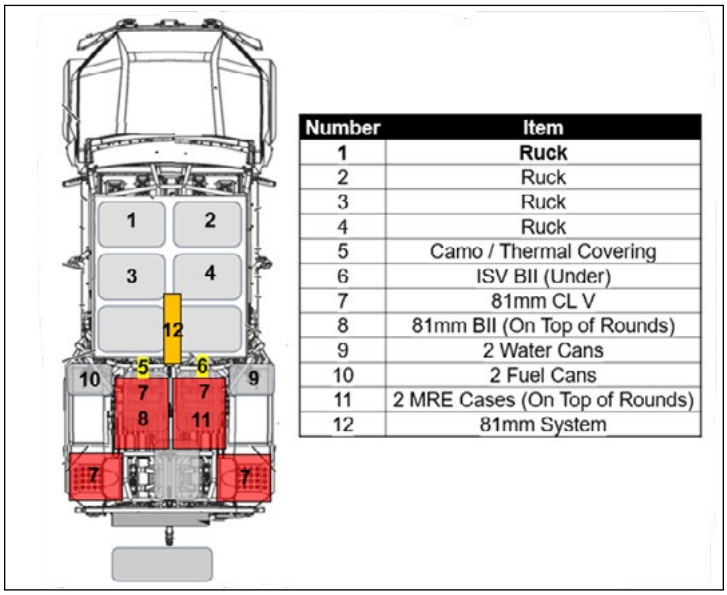
Mortar ISV

The Mortar ISV would provide company mortar teams and battalion mortar platoons mobility and a platform to store and transport 81mm/60mm tubes, ammunition, and equipment. This ISV variant will reduce setup and teardown time while also improving the efficiency of fire missions.

Below are the key characteristics needed for the Mortar ISV variant:

- Crew: Four-seat ISV
- Weapon: 1x 81mm system stowed in place of the middle row middle seat. Secured via rubber cup to hold the breach cap Velcroed to the console between vehicle commander and driver with the muzzle secured to ISV frame at eye level by strap and rubber foot.
- Class V: 102x 81mm rounds (12x 8-round fire missions; rear seats removed) or 90x 81mm rounds (11x 8-round fire missions; rear seats left installed).

Figure 4 — Mortar ISV Examples



Number	Item
1	Ruck
2	Ruck
3	Ruck
4	Ruck
5	Camo / Thermal Covering
6	ISV BII (Under)
7	81mm CL V
8	81mm BII (On Top of Rounds)
9	2 Water Cans
10	2 Fuel Cans
11	2 MRE Cases (On Top of Rounds)
12	81mm System

Figure 5 — Example Mortar ISV Layout

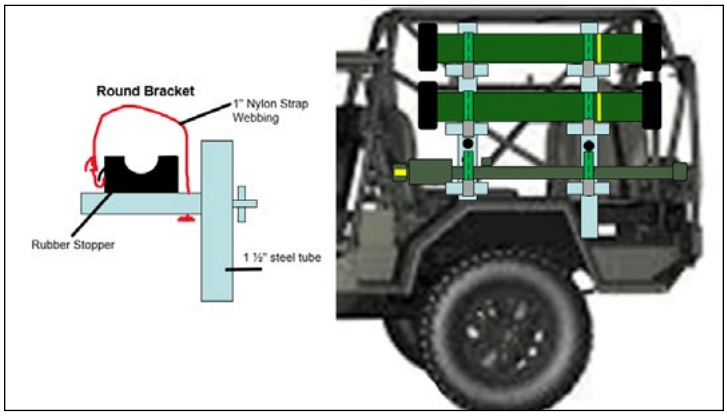


Figure 6 — AT ISV Variant Bracket

• No change to height, length, or width of the ISV. This affords the ability to move an entire section (2x Mortar ISV, 1x C2) with a single CH-47.

Anti-Tank (AT) ISV

The AT ISV consists of a fabricated rack to store metal tubes (Javelin/Stinger) in transport. This variant would allow the AT platoon to move as independent sections to support company teams or as a collective platoon effort.

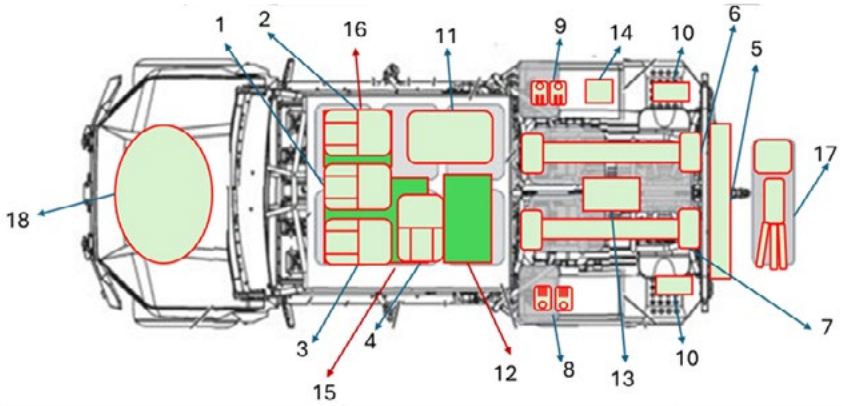
Below are the key characteristics needed for the AT ISV variant:

• Crew: Five-seat ISV

• The tube round rack storage will utilize two metal tubes on each side of the rear of the ISV bed (4x total tubes)

• Each tube will have holes to allow for brackets to be placed in at different heights dependent on the round (Javelin or Stinger).

• Round holder (see Figure 6) will be used to secure rounds and allow for expedient access (follows closely after the M2A3 Bradley).



1	Ruck	7	Missile (2x JAV 1x TOW)	13	Thermal / Camo covers
2	Ruck	8	Fuel Cans x 2	14	MUB-C
3	Ruck	9	Water Cans x 2	15	Transversing Unit (TOW)
4	Ruck	10	MREs (2 Boxes)	16	Fire Control System (TOW)
5	BII	11	Range Box / Battery Box	17	Battery / Tripod (TOW)
6	Missile (2x JAV 1x TOW)	12	TAS (TOW)	18	C-Wire

Figure 7 — Example AT ISV Variant Layout

• Vehicle layout provides dedicated location for transversing unit, fire control unit, and tripod to facilitate rapid employment and storage.

Flatbed Transport ISV

The flatbed ISV variant fills the logistics ISV role (LMTV replacement) with additional attachment for modifications of various loads.

Below are the key characteristics needed for the flatbed ISV variant:

• Crew: Two-seat ISV
• Base configuration is a flatbed truck with multiple tie-down points to various load configurations.
• Increased towing capability needed to facilitate water buffalo, trailer, or M7777 howitzer.
• A hard cover attachment allows the cargo ISV to sling with equipment loaded, single-point sling configuration not necessarily required. Loaded flatbed ISV will likely exceed the weight limitation for UH-60.
• Tie-down points must be recessed into bed to create a flatbed layout for movement of equipment on and off the vehicle.
• Option to add short, pickup bed-like sides for transportation of loose equipment.
• Option to add hard shell cover to entire bed for weather protection of sensitive equipment.
• Removable sides/shell is not organic to truck; therefore, all flatbed ISVs would be modular and interoperable.

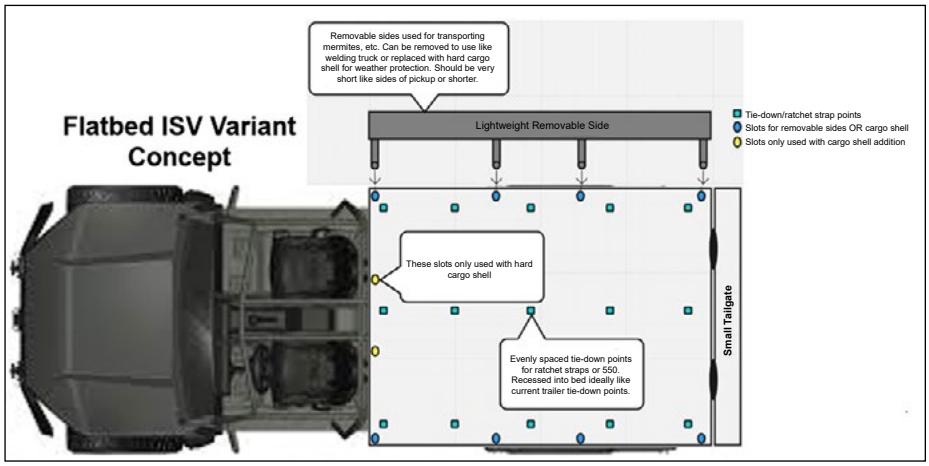


Figure 8 — Flatbed ISV Variant

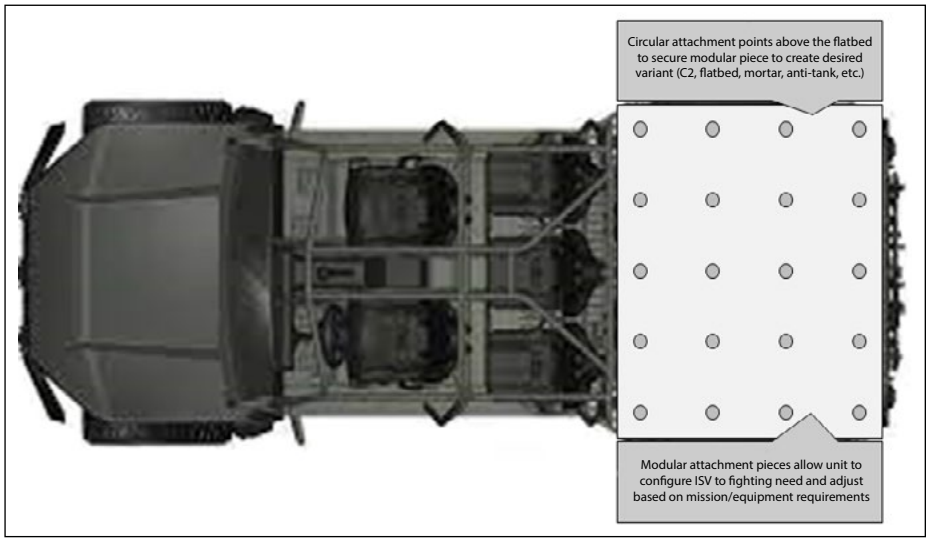


Figure 9 — Modular Flatbed ISV Variant

Modular Flatbed ISV Model

The modular flatbed ISV affords units the ability to modify the vehicle platform based on mission and equipment need. At its base, the ISV can transport two or five personnel with the back of the ISV providing a modular platform to add mortar, anti-tank, anti-air, mission command, and transport attachments in various configurations.

Below are the key characteristics of the flatbed ISV variant:

• Crew: Two- or five-seat ISV, adjustable based on the size of the modular section.
• Flatbed sits at tire height with circular attachments spaced evenly across the flatbed to install modular kit.
• Attachments are universal to allow units to modify flatbed to need.
• Attachments for all unique ISVs (mortar, AT, and C2) are available for the modular ISV.
• Modular ISV allows unit to mix capabilities by putting mortars and anti-tank attachments on one vehicle.
• Modular C2 capability allows units to execute disaggregated operations or split mobile command post and tactical command post operations.

Conclusion

The unique and modular ISV recommendations within this article offer additional ideas to refine the mobility needs for a mobile brigade. These models are not all inclusive to the needs of a MBDE but provide a starting point to modify ISVs to increase the lethality of specialty elements within the multi-purpose company (MPC) and improve mobility for battalion and company operations.

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Can You Hear Me Now?

Radio Planning for the Modern Brigade

MSG JOHN TIBBITTS

Driven by advancements in technology, radio planning has undergone a significant evolution with the recent changes in military strategies and the introduction of new waveforms. Traditional radio planning focused on optimizing coverage and frequency allocation for terrestrial broadcasts; however, the emergence of Integrated Tactical Network (ITN) digital radio and streaming services has introduced new complexities to the process. With the establishment of ITN, a new radio programming and planning platform was introduced. This platform helps signal planners manage the modernized frequency modulation (FM), high frequency (HF), Tactical Scalable Mobile ad hoc network (TSM) and Multiple User Objective System (MUOS) waveforms.

Modern radio planning now encompasses considerations for a wide range of capabilities, including video streaming services, common operational picture (COP) distribution, mesh network design, and network scalability. Despite these advancements, the fundamental principles of effective radio planning remain unchanged. Understanding audience demographics, optimizing signal propagation, and ensuring reliable communication remain paramount.

A Soldier with 1st Battalion 320th Field Artillery Regiment conducts a radio check in preparation for a gun raid during Operation Lethal Eagle 24.1 on 29 April 2024 at Fort Campbell, KY. (Photo by SPC Zachery Blevins)

Commanders now have a plethora of options to communicate with their formations thanks to the introduction of ITN radio systems. These systems bridge the gap between traditional analog voice networks and Internet Protocol (IP) computing networks, significantly increasing the requirement for detailed planning by the unit's communications team.

In this dynamic landscape, effective radio planning is essential for maintaining situational awareness, facilitating command and control, and ensuring seamless communication across the battlefield. By embracing new technologies, while also adhering to established principles, units can optimize their communication capabilities to support mission success in ever-changing operational environments.

Ruggedized Applications Platform - Tactical Radio (RAP-TR)

Radio planning begins with RAP-TR. This system serves as the cornerstone for creating, manipulating, and distributing radio plans across formations. Within the RAP-TR system, the radio planning application Atom takes center stage; it is designed to act as the "one-stop shop" for organizational radio planning.

ITN radios were specifically developed to streamline communication planning and operations across formations, and they represent a significant advancement in simplifying the complexities of communication planning by offering intuitive interfaces and enhanced capabilities to meet the evolving needs of modern military operations.

Together, the RAP-TR system and ITN radios empower units to efficiently plan and execute radio communications, ensuring seamless connectivity and interoperability across formations while enhancing situational awareness and mission effectiveness.

Current Tactic: The process of radio network ownership involves owners creating baseline configurations and seeking feedback from subordinate elements. This feedback is then integrated into the base plan, consolidated, and redistributed. Ownership of radio networks is determined based on the highest echelon requiring access. This approach has demonstrated to be effective and is sustainable moving forward.

Ensuring ownership at the correct echelon minimizes the impact of plan changes on the formation. However, implementing changes to plans can be challenging during active operations. Certain waveform plans necessitate a complete reload of every radio across a formation, rendering execution impossible in such scenarios.

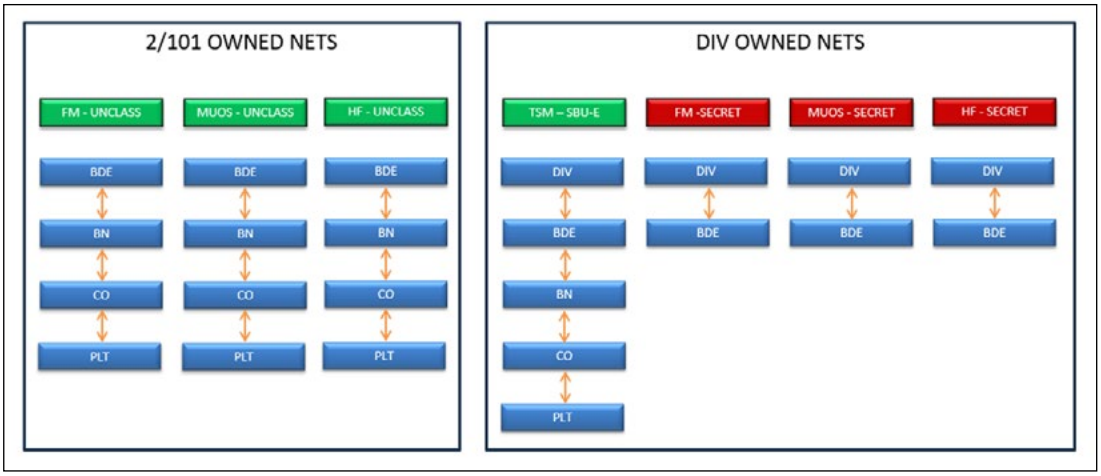


Figure 1 – Example Brigade- and Division-Owned Nets

Implementing plan changes during our active operations would have required a consolidation of the brigade and the establishment of complex mechanisms to maintain communications during the transition. The problem we learned was the mass distribution of the updated plan and the time it would take to physically reload the required equipment. Due to the lack of an established and vetted process, we decided against enforcing a new radio plan. A radio network change management plan would have allowed for network changes and minimized disruptions to critical communications, thereby supporting mission success.

Recommendation: Maintaining the current ownership structure of radio network management while codifying a change management plan is crucial for effective communication. The plan should outline specific criteria and processes for initiating plan changes. Key tasks to prevent changes include:

• ***Early enabler integration:*** Ensure that enablers are integrated early in the planning process to provide input and identify potential challenges or opportunities for improvement.

• ***Bottom-up refinement:*** Encourage bottom-up refinement of plans by soliciting feedback from organic subordinate elements. This allows for input from those directly impacted by the changes and helps to ensure that plans are practical and effective in meeting operational needs.

• ***Thorough Testing:*** Conduct thorough testing of proposed plan changes prior to unit deployment. This includes testing the compatibility of new configurations with existing systems as well as evaluating their performance under simulated operational conditions. Testing helps to identify and address any issues or shortcomings before implementation.

By incorporating these key tasks into the change management plan, units can better anticipate and mitigate potential disruptions to communications caused by plan changes. This approach fosters a more systematic and controlled process for managing changes, ultimately enhancing the reliability and effectiveness of communication systems in support of mission objectives.

FM Planning

With the FM waveform serving as the longstanding backbone of military communications, the integration of ITN radios required minimal special planning. The fundamental infrastructure and procedures for FM communication remained largely unchanged, with the primary enhancement being the ability to prebuild presets for each FM net.

This addition streamlines operations by allowing for the setup of predefined presets tailored to specific FM networks. With these presets in place, users can swiftly access the appropriate FM nets without the need for manual configuration, enhancing efficiency and reducing the potential for errors during communication setup.

Overall, the incorporation of ITN radios into FM communication systems represents a seamless integration that builds upon the existing robust framework of the FM waveform, reinforcing its role as a reliable and enduring component of military communications.

Current Tactic: At each echelon, units determine the FM nets required for their specific operational needs and include only those nets in their published communication plans. Excess nets are stripped out to simplify radio preset management and ensure that users are not overwhelmed by unnecessary presets when accessing their radios.

This streamlined approach ensures that each unit's communication plan is tailored precisely to its requirements, optimizing efficiency and minimizing confusion for radio operators. By focusing on the essential FM nets relevant to their operations, units can effectively manage their radio presets without having to sift through a multitude of unnecessary options.

Ultimately, this practice enhances operational effectiveness by providing clear and concise communication plans that enable users to quickly access the required FM nets without unnecessary clutter or complexity.

Recommendation: Maintain this tactic without adjustment.

HF Planning

The HF waveform has long served as a dependable last resort for organizations requiring beyond line-of-sight communication. Despite its reputation as the least robust waveform in use, its enduring popularity among seasoned communicators, affectionately known as "old timers," can be attributed to its relative simplicity and ease of use when properly trained.

While other waveforms may offer greater robustness and sophistication, the HF waveform remains a staple in communication arsenals due to its ability to provide connectivity in situations where other methods may fail. However, its underutilization by some organizations is often linked to a lack of training and familiarity rather than inherent deficiencies in the technology itself.

With proper training and expertise, the HF waveform can be effectively deployed as a reliable communication solution, particularly in challenging environments where other options are limited or unavailable. Its continued presence underscores its enduring value as a fallback option for maintaining connectivity in critical situations.

Current Tactic: Units report their HF communication requirements to either the brigade or division level, where a plan is formulated and disseminated. The HF waveform is tailored to a single radio that only operates on the HF waveform; no additional complexity is needed. This radio is equipped to establish both voice and data connections through point-to-point calls or network broadcasts, ensuring streamlined and efficient communication within the designated network. The simplicity of this approach minimizes logistical overhead and maximizes operational effectiveness in fulfilling HF communication needs.

Recommendation: Maintain current planning tactic and provide additional training to users as this waveform is robust and underutilized.

TSM Planning

The TSM network represents a revolutionary solution to a constant challenge in communications: terrain. By leveraging a barrage relay mesh network, the TSM network effectively overcomes terrain obstacles that have historically impeded communication. In this network architecture, each radio functions as a repeater for all other radios within the network, creating a resilient communication infrastructure that circumvents terrain barriers.

Strategic placement of radios is key to the success of the TSM network. Radios are positioned on hilltops, at corners inside bunkers, and at the peripheries of radio transmission bubbles to maximize coverage and fill in communication blackout areas. This proactive approach ensures that commanders have access to reliable voice and data communication even in rugged terrain where traditional communication methods would falter.

By defeating terrain limitations, the TSM network empowers commanders with enhanced situational awareness and operational effectiveness, enabling seamless communication across the battlefield and facilitating decisive action in challenging environments.

Current Tactic: To create a flexible and adaptable radio plan that can be easily updated on the fly, we employed a system that relied on colors for preset identification and numbers for talk groups. By avoiding permanent assignments of unit names or organizations to specific presets or talk groups, radio planners are quickly able to adjust and distribute new plans by updating the radio plan spreadsheet and issuing the updates via an operation order (OPORD).

The general framework for the plan:

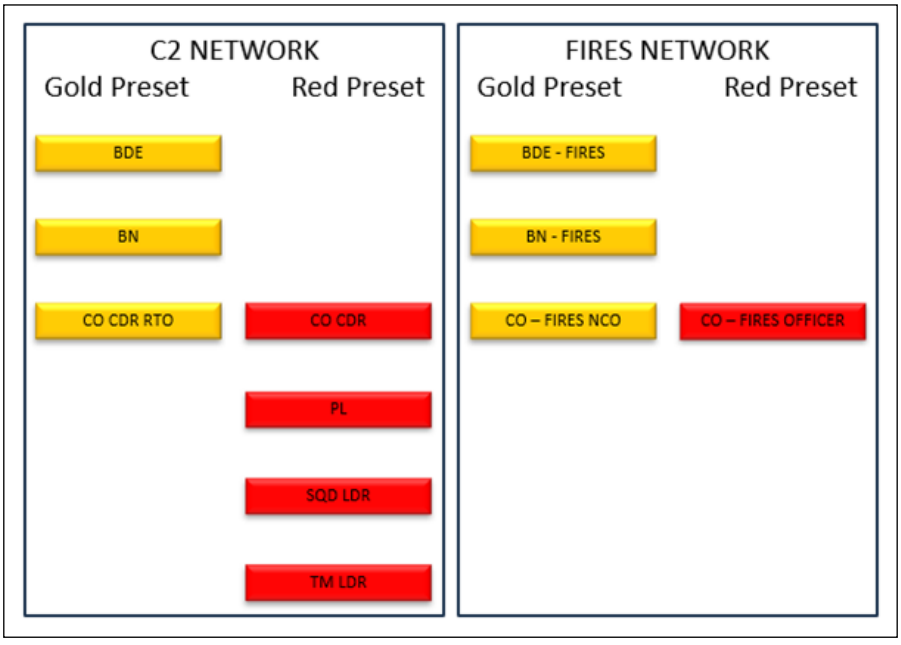
Preset Organization:

- Presets are identified by colors (e.g., blue, red, green).
- Brigade and battalion nets are nested on the same preset for streamlined communication within the chain of command.
- Company and platoon networks are nested by battalion in additional presets to facilitate communication within subordinate units.

Talk Groups Assignment:

- Talk groups are assigned numbers for easy reference and organization.
- Each unit within the brigade or battalion is allocated specific talk groups for internal communication.
- Talk groups for command and control, fires coordination, logistics, and other functional areas are predefined for quick access.

Figure 2 — Example C2 and Fires Network Presets



Talk Group	GOLD PRESET	Talk Group	RED PRESET	Talk Group	YELLOW PRESET	Talk Group	BLUE PRESET	Talk Group	WHITE
1	BDE CMD	1	O&I/1-502	1	O&I/2-502			1	O&I/1-26
2	BDE O&I	2	A&L/1-502	2	A&L/2-502			2	A&L/1-26
3	BDE A&L	3	HHC/1-502	3	HHC/2-502			3	HHC/1-26
4	BDE FIRES	4	MEDICS/1-502	4	MEDICS/2-502			4	MEDICS/1-26
5	PZ CONTROL	5	A-CMD/1-502	5	A-CMD/2-502			5	A-CMD/1-26
6	HEAVY PZ	6	1PL/A/1-502	6	1PL/A/2-502			6	1PL/A/1-26
7	LIGHT PZ	7	2PL/A/1-502	7	2PL/A/2-502			7	2PL/A/1-26
8	SHHC	8	3PL/A/1-502	8	3PL/A/2-502			8	3PL/A/1-26
9	BN CMD/1-502	9	FIRES/A/1-502	9	FIRES/A/2-502			9	FIRES/A/1-26
10	FIRES/1-502	10	B-CMD/1-502	10	B-CMD/2-502			10	B-CMD/1-26
11	BN CMD/2-502	11	1PL/B/1-502	11	1PL/B/2-502			11	1PL/B/1-26
12	FIRES/2-502	12	2PL/B/1-502	12	2PL/B/2-502			12	2PL/B/1-26
13	BN CMD/1-26	13	3PL/B/1-502	13	3PL/B/2-502			13	3PL/B/1-26
14	FIRES/1-26	14	FIRES/B/1-502	14	FIRES/B/2-502			14	FIRES/B/1-26
15	BN CMD/1-320	15	C-CMD/1-502	15	C-CMD/2-502		NOT IN USE	15	C-CMD/1-26
16	FIRES/1-320	16	1PL/C/1-502	16	1PL/C/2-502			16	1PL/C/1-26
17	HHB/1-320	17	2PL/C/1-502	17	2PL/C/2-502			17	2PL/C/1-26
18	A/1-320	18	3PL/C/1-502	18	3PL/C/2-502			18	3PL/C/1-26
19	B/1-320	19	FIRES/C/1-502	19	FIRES/C/2-502			19	FIRES/C/1-26
20	C/1-320	20	MPC-CMD/1-502	20	MPC-CMD/2-502			20	MPC-CMD/1-26
21	MFRC-CMD	21	1PL/MPC/1-502	21	1PL/MPC/2-502			21	1PL/MPC/1-26
22	HKP1/MFRC	22	2PL/MPC/1-502	22	2PL/MPC/2-502			22	2PL/MPC/1-26
23	HKP2/MFRC	23	3PL/MPC/1-502	23	3PL/MPC/2-502			23	3PL/MPC/1-26
24	JKP3/MFRC	24	4PL/MPC/1-502	24	4PL/MPC/2-502			24	4PL/MPC/1-26
25	TUAS-EW/MFRC	25	FIRES/MPC/1-502	25	FIRES/MPC/2-502			25	FIRES/MPC/1-26
26	FIRES/MFRC	26	G-CMD/1-502	26	H-CMD/2-502			26	J-CMD/1-26
27	BN CMD/526	27	Maint PLT	27	Maint PLT			27	Maint PLT
28	BN CMD/39	28	Distro PLT	28	Distro PLT			28	Distro PLT
29	PZ NORTH	29	NOT ASSIGNED	29	NOT ASSIGNED			29	NOT ASSIGNED
30	PZ NORTH	30	NOT ASSIGNED	30	NOT ASSIGNED			30	NOT ASSIGNED
31	PZ SOUTH	31	NOT ASSIGNED	31	NOT ASSIGNED			31	NOT ASSIGNED
32	PZ SOUTH	32	NOT ASSIGNED	32	NOT ASSIGNED			32	NOT ASSIGNED

Figure 3 – Example Brigade Talk Group Assignments

Dynamic Updates:

• A centralized spreadsheet serves as the master document for the radio plan, allowing for easy modification of preset and talk group assignments.

• Changes to the plan can be made swiftly and efficiently by updating the spreadsheet.

• An OPORD is issued to communicate the updated plan to all relevant personnel, ensuring widespread dissemination.

Position Location Information (PLI) Propagation:

• PLI dissemination is integrated into the plan to ensure situational awareness across the battlefield.

• Nested nets facilitate the propagation of PLI data within and between units, even in areas without PLI gateways such as Tactical Radio Integration Kits (TRIK) or Mounted Mission Command – Software (MMC-S).

By implementing this approach, the 2nd Mobile Brigade Combat Team (MBCT), 101st Airborne Division (Air Assault) can maintain flexibility and adaptability in radio communications. This enables seamless updates and adjustments to the plan while ensuring widespread connectivity and situational awareness across the battlefield. This flexibility allows for swift responses to changing operational requirements and ensures that communication remains robust and effective in dynamic environments.

Recommendation: Leverage TSM's flexibility during operations. The approach proved highly effective for 2/101 MBCT, allowing for real-time adjustments to the plan with minimal disruption to subordinate units. When it became apparent that one preset was causing interference with aircraft, 2/101 swiftly executed a full preset move for 1st Battalion, 26th Infantry Regiment, demonstrating flexibility and adaptability in response to operational challenges.

Maintain spare nets at the brigade echelon. Maintaining spare nets enabled 2/101 MBCT to promptly address the needs of units requiring additional resources. Throughout various phases of the operation, requests for extra nets were met with swift allocation and distribution. Updating the communication card with the latest OPORD ensured widespread dissemination of information, facilitating seamless coordination among units.

Multiple User Objective System (MUOS) Planning

The MUOS is ushering in a new era by replacing the outdated Integrated Waveform (IW) and Demand Assigned Multiple Access (DAMA) tactical satellite (TACSAT) networks. MUOS offers a robust beyond line-of-sight network solution that brigades can rely on, supporting both voice and data transmission. It's particularly adept at facilitating command and control operations as well as voice and digital fires.

In MUOS planning, radios can be connected in three primary ways:

• Point-to-Point: Direct calls between radios using their Mobile Subscriber Integrated Services Digital Network Number (MSISDN) or phone numbers;

• Point-to-Group: Group conference calls; or

• Point-to-Net: Connecting radios to an IP network for data sharing.

MUOS comes in two classifications: secret and unclassified.

Secret Waveform: This version offers reliability and scalability, dynamically discovering IP addresses and accommodating a network of 250-plus radios. With this capability, adding a single radio to a plan enables seamless communication without the need to reload every radio.

Unclassified Waveform: While also reliable, this version lacks scalability due to its inability to support dynamic IP discovery, limiting it to 100 radio profiles. Unclassified networks primarily support voice communication, with voice groups and communications security (COMSEC) configurations mirrored across networks.

Both classifications support Secure Communications Interoperability Protocol (SCIP) voice calls. SCIP calls enable users to conduct telephone conversations through the radio via a dedicated voice bridge, proving invaluable for

commanders requiring remote participation in conference calls while deployed on the battlefield.

Current Tactic: 2/101 MBCT has spearheaded the adoption of the unclassified version of MUOS within the division. However, due to the network's limitation of 100 profiles, there were significant constraints on profile distribution across the formation. To overcome this limitation, the unit opted to divide its networks into two distinct entities: command and control (C2) and fires. These networks operated autonomously and were unable to communicate with each other. The C2 networks were dedicated to command-and-control systems, whereas the fires network was designated for voice and data fires systems. Each radio was equipped with a FireFly Vector set for point-to-point calls, pre-placed keys for point-to-group calls, and two profile keys issued to the COMSEC office for each requested profile. Additionally, a limited number of SCIP call keys were provided to facilitate secret meetings at the division level.

Recommendation: Based on the insight that two unclassified MUOS networks can communicate with each other via point-to-group calls, we propose a refinement in network structure. It is recommended to divide networks into voice-only and data-only networks. For voice networks, it's essential to ensure that all have identical group and group COMSEC configurations. This approach allows for the creation of multiple voice networks as needed to encompass all profiles across any given formation. By organizing networks in this manner, communication efficiency can be optimized while maintaining consistency and interoperability across the system.

Conclusion

Radio planning has evolved into a meticulous process that demands collaboration from every organization within a unit to ensure wide-ranging network coverage. Commanders must convene planning sessions with their teams at all echelons to refine their network architecture. The introduction of ITN grants commanders the flexibility to tailor their communication infrastructure according to their specific requirements. Drawing from both successes and setbacks, 2/101 MBCT has accumulated invaluable insights and anticipates ongoing learning opportunities. While positioned at the forefront of innovation, the unit remains committed to continuous refinement through planning, testing, execution, assessment, and iteration.

MSG John Tibbitts currently serves as the S-6 NCOIC for the 2nd Mobile Brigade Combat Team, 101st Airborne Division (Air Assault) at Fort Campbell, KY.

A Soldier assigned to the 101st Airborne Division (Air Assault) waits on standby to make movement while helicopters depart at the Oxford University Airport in Mississippi during forward arming and refueling point operations on 14 August 2024. (Photo by SSG Raymond Valdez)

Power Generation – Reducing Excess in the LSB

1LT JORDAN BLOOMFIELD
1LT SAMUEL PANNEK

Light, mobile, and agile — these are all terms used to describe the new light support battalion (LSB) concept. As transformation in contact (TiC) progresses, we continually look for ways to live up to them; to do so, we must rightsize our organization and the equipment it carries. Legacy power generation continues to weigh us down as we prepare for the next war. While generators are required for maintaining command and control (C2) nodes as well as conducting general operations within an LSB, they are often underutilized, with our Soldiers possessing no true understanding about how much power a single generator produces. Reducing the size and number of generators within the LSB ultimately improves the battalion's capabilities and balances the formation against our future mission.

Waste of Energy

Throughout Operation Lethal Eagle (OLE) 24.1, the 526th Light Support Battalion operated three 5-kilowatt (kW) generators, three 15-kW generators, and two 30-kW generators in a moderately dispersed base cluster. These generators, while capable of producing 185 kW of power, on average produced 31 kW of power daily. The average power usage per company was 28.56 percent of its total capability. The most notable energy waste was from the Headquarters and Headquarters Company (HHC) node: It was capable of producing 65 kW of power but only required 3 kW daily, a mere 5 percent of its capability. J Forward Support Company had the least utilized amount of energy based off its capabilities; it was able to produce 25 kW but only utilized .5 kW of power daily — just 2 percent of its maximum capability. The only company that frequently met the max capability was C Company (medics), which used 3-10 kW daily (the 10 kW being utilized during X-rays). This met the 10 kW capacity. The effects of wasting a generator's power are more serious than simply transporting unnecessary equipment. During large-scale combat operations (LSCO), near-peer threats possess the capability to detect emitted energy in a given area and target the source with deadly unmanned aerial systems (UAS) and indirect fires. It is critical to reduce energy emissions as much as possible.

Capabilities by Variations

3- or 5-kW Generators:

Mobility: These generators are highly portable and can be easily transported by hand or mounted on a small trailer. They are ideal for rapid deployment and use in remote areas.

Placement: Due to their compact size, they can be placed in tight spaces or concealed to avoid detection or reduce noise.

Utilization: While they may not provide sufficient power for larger command posts at echelon, they can be effectively used to power smaller mobile command posts, distributed operations centers, or medical stations.

15- or 30-kW Generators:

Mobility: Larger generators are bulkier and may require specialized vehicles or equipment for transportation. They are less maneuverable and best suited for semi-permanent or fixed installations.

Placement: These generators require more space for setup and operation, limiting their use in confined or congested areas.

Utilization: While they offer higher power output, these generators are most suitable when equipment or circumstances require fully utilizing the maximum available power output. Running a larger generator at partial capacity is inefficient, requires larger vehicles to move, and reduces flexibility to disperse when multiple capabilities tie into a single power source.

How Small Can We Get?

A 15-kW generator is likely more than enough to run a battalion-level main command post (MCP). The 30-kW generator still has its place; however, that should be within a setting such as the Role II with Charlie Company to utilize the X-ray machines sporadically throughout the day. The benefits of having a 15-kW generator include but are not limited to: reducing the amount of fuel consumed per day, reducing electricity emissions, and increasing a unit's mobility. For supply service activities, unit maintenance collection points and various other sites that require less power, a simple 5-kW generator will meet the necessary requirements. Tactically positioning multiple smaller generators through the brigade support area (BSA) will allow the maximum reach of energy, provide redundancy for maintenance contingencies, and allow dispersion of the BSA.

Share the Power

The best way to effectively minimize the waste of power is by utilizing the power distribution box. This box serves as a centralized hub for distributing power from a single generator

to multiple tents. By connecting the generator to the distribution box, power can be divided and distributed through various outlets to different users as needed. This allows for better organization, management, and allocation of power within the BSA.

Best Setup for Powering Tactical Operations Center (TOC) and Other Tents

Considering the analysis and Army publications, the best setup for powering a TOC and other tents in a BSA would involve a combination of smaller generators and a power distribution system. Here are three different courses of action (COAs):

COA 1 - Multi-Generator Setup

Generator Selection: Deploy multiple 3- or 5-kW generators strategically throughout the BSA to power smaller nodes.

Power Distribution: Utilize power distribution boxes to divide and distribute power from each generator to multiple users.

TOC Power: Use a larger 15- or 30-kW generator specifically dedicated to powering the TOC and other high-demand areas.

Strength: Maximum dispersion when paired against a UAS or indirect threat.

Weakness: Less utilization of generator capability, which will lead to a waste of power.

COA 2 - Single Generator with Distribution

Generator Selection: Utilize a single 15- or 30-kW generator as the primary power source for the entire BSA.

Power Distribution: Use power distribution boxes to distribute power from the main generator to different tents.

Utilization: Ensure that equipment is efficiently utilized to make the most of the available power capacity.

Strength: Lack of excess equipment, making the LSB more maneuverable.

Weakness: If the generator breaks down, the entire BSA will be under blackout until repaired.

COA 3 - Hybrid Approach

Generator Selection: Combine smaller and larger generators based on specific power requirements of different areas within the BSA.

Power Distribution: Implement a flexible power distribution system that can adapt to changing power demands.

Utilization: Include backup generators or power sources to ensure continuity of operations in case of generator failure.

Strength: Allows for scalability, adaptability, and redundancy to meet power requirements within the BSA to ensure optimal utilization of resources.

Weakness: Increases the number of generators being utilized, causing a reduction in maneuverability.

Conclusion

Each COA has its place depending on a unit's power generation needs and threat capabilities. There is no one correct COA; they each need to be analyzed based off of the mission. If there is a high UAS or indirect fire threat, COA 1 will be favorable. If there is little to no threat to the BSA and it is co-located with another battalion that has its own power generation capabilities, COA 2 would likely be the best fit. COA 3 allows for the most compatibility with the various missions and therefore could be utilized as the standard operation procedure.

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Technical Manual (TM) 5-6115-584-12, *Operator and Organizational Maintenance Manual, Generator Set, Diesel Engine Driven, Tactical Skid Mtd, 15 kW, 3 Phase, 4 Wire, 120/208 and 240/416 Volts*, 2017.

Field Manual (FM) 4-30.31, *Distribution Operations*, 2019.

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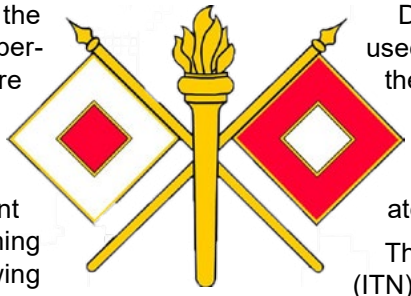
C2 Fix Officer Strength and Education Management

CPT CORY MULLIKIN



As the U.S. Army switches to the concept of large-scale combat operations (LSCO), multiple areas are evolving and changing the way we look at contested environments. Arguably the largest area that needs restructuring is how the Army communicates at different echelons, namely with division becoming the unit of action. This consists of reviewing manning and equipment at division and below. The Army Structure (ARSTRUC) and Command and Control (C2) Fix initiative have stated that the amount of signal equipment, classification of material, and manning at echelon needs to change to support survivability in a LSCO environment against a peer or near-peer adversary. This article considers the manning of specialized Signal military occupational specialty (MOS) positions in the brigade S-6 shop and assesses proposed changes that would move those positions from the brigade to the division or a signal battalion. I will offer analysis of the impact of these proposed moves and a recommendation to change the training for specialty MOSs that will remain at the brigade level to help fill capability gaps that will otherwise result from the changes.

In keeping with C2 Fix and ARSTRUC, much of the upper tactical internet we are used to seeing at the brigade and battalion echelon will either be moved to the division level for a signal battalion or phased out in general. Equipment such as the Tactical Communication Node (TCN) and Satellite Transportable Terminal (STT) are getting cut because they are too large and inconsistent with the intent of getting lighter and faster to increase survivability. With these assets going away in one way or another, the need for personnel in the brigade S-6 shop will shift greatly, particularly in the technical expert officers — the network technician (255N), server technician (255A), cyber security technician (255S), and data systems engineer (26B). Three of these four are being slated to move to division or the signal battalion.

The cyber security technician has already been identified to move up to division. These technicians are frequently underutilized in their specific role at the brigade level because most firewall management and cyber security policies are overseen by the division. Given that this MOS is are also significantly below desired strength Army wide, it is not hard to understand moving them to the division level.

Data system engineers have chiefly been used as the assistant brigade S-6, supporting the S-6 OIC with planning and administrative dealings, but typically getting minimal hands-on utilization with servers and other equipment they have been trained to operate.

The fielding of Integrated Tactical Network (ITN) equipment expanded the scope of equipment and responsibilities of the network technician (255N). Since nearly every piece of signal equipment has an Internet Protocol (IP) address (including radios), this has significantly expanded the scope of responsibilities of the 255N.

Lastly, the server technician — when the brigade hosted its own services, it made sense for the 26B and 255A to manage those pieces of equipment. Now the division will host effectively all services, and the brigade may have one or two Tactical Server Infrastructure (TSI) Small servers in its formation to act as local compute and store devices to help alleviate bandwidth needs on common operating picture services like the Command Post Computing Environment (CPCE).

Senior Army Signal leaders, such as COL Michael Wacker and BG Paul Howard, have expressed a preference of bringing the network technician and data system engineer, along with the cyber security technician, to division echelon or alternatively reassigning them to the signal battalion. This would leave the S-6 officer-in-charge (OIC) — a major — and the server technician as the only officers in the brigade S-6 section. The server technician would then need to manage the admittedly limited server presence at the brigade, while also remaining responsible for the larger networking requirements that go along with ITN. However, the return of signal battalions will alleviate a significant part of a 255A's current workload. This still puts server technicians at a stark disadvantage when operating and troubleshooting with non-organic signal teams due to lack of relevant training at their Warrant Officer Basic Course (WOBC).

For the reasons discussed above, it is recommended that if the U.S. Army begins manning brigades this way, with only the OIC and server technician, the training for 255As must be revisited. Network technicians and data system engineers both receive six weeks of Cisco networking classes in their training, but server technicians only receive the first

two weeks of this course. This puts 255As at a significant disadvantage without those additional four weeks of training. They will still be competent with some network and server knowledge, but providing the additional four weeks of training will alleviate the steep learning curve if they come straight from their WOBC to a brigade S-6 assignment.

The initiative to move the network technician, cyber security technician, and data system engineer to the division and signal battalion is ultimately the right move, albeit there will be some growing pains associated with it. Utilizing their skill sets to enhance augmented teams that will support brigades is the better move — due to operators and technicians being able to focus almost exclusively on their job set and not have the additional requirements found in a brigade combat team. Keeping the server technician at the brigade level, at least for a first assignment (especially if TSI Small servers will stay at that level) makes sense, but they will need to have that additional network training to be fully prepared for their first assignment.

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Soldiers from the 2nd Mobile Brigade Combat Team, 101st Airborne Division (Air Assault) conduct vehicle preparations in anticipation for the Large-Scale, Long-Range Air Assault as part of Operation Lethal Eagle 24.1 on 21 April 2024, on Fort Campbell, KY. (Photo by SFC Joseph Truesdale)

Intelligence Challenges Under the C2 Fix Construct

CW2 JONATHAN I. THOMPSON

S-2 Current Operations (CUOPS)

A brigade S-2's CUOPS section is responsible for tracking enemy locations, conducting update briefs to the brigade commander, intelligence processing, exploitation, and dissemination (PED) as well as providing intelligence support to situational awareness and disseminating products. Minimal personnel (3-4 Soldiers) are required for CUOPS to achieve the S-2's essential tasks while limiting our electromagnetic signature and conducting operations on the move or at the halt. For the 2nd Mobile Brigade Combat Team (MBCT), 101st Airborne Division (Air Assault), the recommended personnel includes 1x 35A – Military Intelligence officer (major), 1x 35Z5O – intelligence NCO, 1x 35F3O – intelligence analyst, and 1x 35F1O – intelligence analyst, split between two 12-hour shifts. CUOPS is not the ideal place for a new analyst, so choosing an experienced 35F1O will ensure success. However, training requirements for CUOPS will be more system focused than analytical, such as One System Remote Video Terminal (OSRVT), Mounted Mission Command (MMC), Mounted Family of Computer Systems (MFoCS) - Joint Battle Command-Platform (JBC-P), and PRC-158 training. A communications security (COMSEC) custodian in CUOPS will be critical to success during pre-execution and initial setup to quickly establish communication with division and battalions.

In addition, CUOPS has to conduct PED using the OSRVT to positively identify targets for fires to process, which removes one analyst from daily operations. In 2/101 MBCT, the S-2 is working with the Program Executive Office Command, Control, Communications – Tactical (PEO C3T) team to determine pertinent targeting data, such as target type and name, military grid reference system (MGRS) location, and whether its mobile or static. However, intelligence and fires functions are difficult to synchronize due to the intelligence handover line (IHL)/coordinated fire line (CFL) not aligning and a less deliberate targeting process. Human sensors such as scouts will be heavily utilized to fill gaps in the detection and assessment phase of targeting due to the limitations of multi-functional reconnaissance company (MFRC) assets.

The dissemination of intelligence products to battalions is simple through unclassified channels, but battalion commanders must trust unclassified intelligence to conduct operations. The division G-2 open-source intelligence (OSINT) cell should feed brigade/battalion S-2s to ensure verified intelligence is available on unclassified networks. Also, allowing the brigade S-2 to have an OSINT mission could allow analysts to utilize creditable websites to analyze information. The recommended personnel for an OSINT mission would be 2x 35F (1x CUOPS, 1x Plans) to enable continuous production at the halt or on the move.

S-2 Plans

The S-2 plans section is responsible for conducting mission analysis, course-of-action (COA) development, COA analysis, orders production, collection management, and intelligence support to targeting. The remaining personnel in the S-2 should occupy the plans section due to the preponderance of work occurring there. For 2/101 MBCT, the recommended personnel are 2x 35A (O3), 1x 350F (W2), 3x 35F1O at minimum. The assistant S-2 at the MFRC will become the collection manager (CM) during field training exercises and deployments. In addition, consolidating the 1x 12Y4O and 1x 35G1O at the division level will allow additional analysts to occupy those slots. For new intelligence analysts, the plans section is the best location for them to continue development as an analyst. A training glidepath for these Soldiers will be more analytical and focused on intelligence preparation of the operational environment (IPOE); this would include on-the-job training (OJT), the All-Source Production Course, and the All-Source Operations Course to establish a baseline for success. For the targeting working group (TWG), the brigade intelligence support element (BISE) chief and CM, at a minimum, should attend to brief enemy situation and align collection assets to named areas of interest (NAIs).

From the S-2 plans perspective, integration of MFRC assets has been challenging for a few reasons. Prior to Operation Lethal Eagle (OLE) 24.1, the CM possessed minimal knowledge of new unmanned aerial system (UAS) capabilities being fielded, making it difficult to allocate assets to NAIs for collection. The data sheets for the assets were available; however, these minimally informed the brigade S-2. The recommended solution is for brigade S-2 personnel to conduct familiarization training with the new assets to assist the CM and understand brigade organic capabilities. Also, longer range UAS assets are limited to the Carrier H6 electronic fuel injection (EFI), making it difficult to conduct battle damage assessments (BDA) and less survivable in large-scale combat operations (LSCO). For 2/101, we plan to have UAS or robots make contact with enemy forces before Soldiers, which may be unrealistic. Moving further from the forward line of own troops (FLOT), human sensors will

be more valuable for collection, even though it poses a higher risk. To reduce risk, a possible solution would be to utilize human sensors during critical events, such as enemy decision points and culminating points of battle to determine follow-on operations.

Primary, Alternate, Contingency, Emergency (PACE) (Division to Brigade)

Currently, the division G-2 primarily operates on the Secret Internet Protocol Router (SIPR) which makes it difficult to share products to lower echelons. Inherently, this creates an issue for intelligence support to situational awareness and targeting due to lower echelons primarily using Secure but Unclassified-Encrypted (SBU-E) and Nonclassified Internet Protocol Router (NIPR). To rectify this issue, brigade and battalion must possess an MFoCS to receive SIPR products via data packages and overlays on MMC. Division G-2 did not account for getting products to SBU-E prior to OLE 24.1. A possible solution is for the division G-2 to acquire MMC SBU-E tablets to maintain the common intelligence picture (CIP) and streamline products being distributed to lower echelons, as well as to conduct bottom-up refinement.

Furthermore, the division G-2 is hesitant to act as the battlespace owner for intelligence, which adds to brigade S-2 intelligence requirements. Without a direct support Military Intelligence company (MICO), the G-2 should be responsible for providing a CIP, targeting data, general support for collection to the main effort. Also, brigade S-2 intelligence requirements have not changed despite having 10 percent of its normal manning. Division G-2 and the intelligence and electronic warfare (IEW) battalion should consolidate geospatial intelligence (GEOINT) and assign teams to support each brigade.

Brigade S-2 Issues

Collectively, the brigade S-2 section did not thoroughly plan for the multitude of friction points that arose during OLE 24.1. Conducting OSRVT training with the 101st Combat Aviation Brigade (CAB) would have identified some issues, such as line-of-sight (LOS) challenges and possessing the correct keys to access feeds. The lack of training on MMC SBU-E and MFoCS slowed us down when building products and distributing them out in a timely manner. Due to minimal space in the M1097 High Mobility Multipurpose Wheeled Vehicle (HMMWV), practicing a load plan prior to operations will ensure all equipment can fit and workspaces are adequate.

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The command team from 2nd Battalion, 502nd Infantry Regiment, 2nd Mobile Brigade Combat Team, 101st Airborne Division (Air Assault), conduct battlefield circulation during hasty defense and vehicle drop off operations during Operation Lethal Eagle 24.1. (Photo by SFC Joseph Truesdale)

OLE 24.1

Soldiers assigned to 2nd Brigade Combat Team (Strike), 101st Airborne Division (Air Assault) took part Operation Lethal Eagle (OLE) 24.1, a 21-day, division-level field training exercise, at Fort Campbell, KY, in April 2024.

During the exercise, the Strike brigade tested and fielded a prototype for the Army's new Mobile Brigade Combat Team, an organizational structure being implemented as part of the Army's Transformation in Contact.

A Soldier with 2/101 MBCT participates in a combined arms rehearsal for a large-scale, long-range air assault as part of OLE 24.1 on 22 April 2024. (Photo by SFC Joseph Truesdale)

UH-60 Black Hawk helicopters from 5th Battalion, 101st Combat Aviation Brigade sling load Infantry Squad Vehicles during OLE 24.1 on 24 April 2024. (Photo by SFC Joshua Tverberg)

Large-Scale, Long-Range Air Assault Lessons Learned

CPT JARED WEECE

In August 2024, 2nd Battalion, 502nd Infantry Regiment, 2nd Mobile Brigade Combat Team (MBCT), 101st Airborne Division (Air Assault), participated in a large-scale, long-range air assault (L2A2) from Fort Campbell, KY, to Fort Johnson, LA. The L2A2 extended over three states and 500 nautical miles for three mission nights to kick off a 10-day brigade force-on-force exercise. This was Task Force (TF) Falcon's third iteration of L2A2 with increasing success along the way. We have learned that L2A2 is an incredibly complex operation that requires an immense amount of detailed planning and coordination to not only conduct the L2A2 but successfully fight and win when no help is coming. Below are highlights of lessons we learned with an emphasis on planning, pickup zone (PZ) operations, Soldier load, and the Infantry Squad Vehicle (ISV) in L2A2.

Planning and Execution

2-502 IN successfully moved 88 percent of its combat power by air assault utilizing 18 CH-47 and 61 UH-60 loads. The unique capability to rapidly move that amount of combat power sets the 101st apart as the only air assault division in the world. However, every unit encountered issues with inaccurate planning estimates when allocating aircraft to passenger (PAX) and vehicle loads. The primary source was inaccurate planning data from previous L2A2s that did not align with the requirements for this specific mission. As we analyzed this problem, we found that the issue wasn't as simple as a few incorrect planning factors. The ground force began planning with the assumption that loads and configurations validated on previous L2A2s would be authorized for this mission. However, every mission is different, and endless variables change given the mission, enemy, weather, number of helicopter landing zones (HLZs), aircraft available, route planning, and number of forward arming and refueling points (FARPs) planned throughput. This mission included an increased number of HLZs and participating battalions compared to the previous mission (three infantry battalions and a full artillery battalion in this ground tactical force vs only two infantry battalions during Joint Readiness Training Center [JRTC] Rotation 24-03). The higher demand

A UH-60 Black Hawk helicopter from the 101st Combat Aviation Brigade, 101st Airborne Division (Air Assault) sling loads an Infantry Squad Vehicle during a large-scale, long-range air assault operation in August 2024. (Photos courtesy of 101st Airborne Division Public Affairs Office)

for the ground tactical force and dispersed HLZs stressed the planning process. False planning assumptions led to either the loss of available space on an aircraft from loads being underweight or last-second scratches or changes due to loads being overweight. To resolve this issue, it is essential that the ground force and aviation task force come to an early agreement on each aircraft's max load weight, aircraft allocation, and lift serial composition. However, this is not as simple as it seems.

This is challenging for numerous reasons. The ground tactical force and the aviation task force typically have a simple agreement on the planning timeline and synchronization of a small-scale, short-range air assault. The complexity of an L2A2 necessitates parallel planning between the ground tactical force and the aviation task force because one plan does not drive the other sequentially, and both forces have valid limitations and constraints for the other. The ground tactical force needs information such as lift and serial composition by mission night, max load weight of each aircraft, and specific guidance on unique loads to make informed decisions on how to flow combat power onto the battlefield. This is critical to mission success when factoring in sustainment and the increased dispersion of ground units. However, the aviation task force needs a ground tactical plan to build flight plans, which drives the max load weight of aircraft and specific guidance for the ground force.

These planning factors begin to impact the ground force on the long-range portion of the air assault. The tactic for the long range is "PAX heavy" as aircraft cannot carry external loads during the long-range movement. This has significant impacts to the flow of combat power and influence on the ground tactical plan, specifically with ISVs and sustainment. The MBCT with ISVs requires drivers and truck commanders (TCs) for roughly 18 vehicles per company, which equates to about one-third of the combat power in a company. Sending the majority of the PAX early results in a lack of personnel to move the ISVs that make it the mobile brigade. Additionally, due to load limits, UH-60s with an ISV sling-loaded on follow-on lifts had no personnel onboard the aircraft. Furthermore, the unit had to move a majority of our ISVs with limited fuel, no additional load, and no personnel to drive them. In a fight where no help is coming, an ISV with limited fuel and no sustainment package is detrimental to the ground tactical plan and mission of a force built around mobility. The limitation of the UH-60 lift capacity in the L2A2 emphasizes the importance for how the unit prioritizes PAX and equipment based off airframe availability and capability.

UH-60s have a limited capability to move ISVs over distance in a combat configuration that is suitable to sustain combat operations over time. This aircraft is limited in the combat power that it can deliver in a manner that is beneficial to the ground force. Additionally, utilizing CH-47s for an L2A2 alleviates the planning friction caused by utilizing numerous load plans and configurations. For the MBCT, a CH-47 is essential to conducting an L2A2. Lastly, sustainment planning during an L2A2 is fundamental to success.

The complexity of an L2A2 necessitates parallel planning between the ground tactical force and the aviation task force because one plan does not drive the other sequentially, and both forces have valid limitations and constraints for the other.

Endurance of the unit is critical to sustaining the fight behind enemy lines. 2-502 IN prioritized sustainment loads early over mobility platforms, but we still could have done better. Formations have the proclivity to move their ISVs in early, but this may reduce the endurance of the unit due to the logistical tail required and inability to overload vehicles if being transported by UH-60s. To be successful for more than three days, units must utilize their allocated aircraft in the early mission nights to move water and ammunition to their area of operations. TF Falcon achieved this by prioritizing A-22 cargo bags of Class I/V, hand-carrying 5-gallon water jugs, and infilling water blivets. This enabled the ground tactical force to continue to fight and build combat power over the three days of operations. Charger Company utilized fabricated water filters from Eagle Werx and conducted emergency resupply with individual water filtration systems. This capability was limited but still played a crucial role in sustaining the fight. There are already many good systems on the market, and incorporating them into our formations would be extremely beneficial.

Water filters at the company level would alleviate sustainment issues and allow units to prioritize combat power over sustainment. For example, the Parker Hannifin H2O Pro system can filter up to 600 gallons a day and has the NATO ports to receive power from an ISV. Adding a water filter that can provide potable water at this capacity is an incredible force multiplier.

PZ Operations

2/101 MBCT tasked the 39th Division Engineer Battalion (DEB) to run the PZ for our L2A2, which allowed the battalions taking part in the L2A2 to be free of the heavy planning and coordination requirements for the PZ. However, when it came to execution, it created several issues for the ground force. The 39th DEB provided crisis action teams (CATs) on the PZ to rapidly troubleshoot frustrated loads, which undoubtedly decreased the number of scratched loads for 2/101 and contributed to our success. However, the ground force was not allowed onto the PZ with the intent of increasing DEB control in a high-risk environment, which in effect limited ground force awareness of actions on the PZ and their flexibility as problems arose. When an aircraft had any

Soldiers from 2nd Battalion, 502nd Infantry Regiment prepare to conduct a large-scale, long-range air assault in August 2024. (Photo by SPC Parris Kersey)

issue, CATs would begin rearranging equipment loads and personnel to ensure the maximum amount of combat power made it on each serial. Each ground unit certainly needed that combat power, but it caused a lot of confusion for both the PZ and landing zone (LZ) teams. The simple solution to this problem is allowing battalion liaison officers (LNOs) on the PZ to battle track equipment/personnel and additionally inform the PZ team on which loads they want prioritized when more than a simple bump plan is required. Our recommendation would be to utilize either the assistant S-3 planner, who made the air movement table, or the operations sergeant major, who has the detailed understanding to make informed decisions.

Two additional notes can assist in situational awareness during the L2A2. One, have a ground serial leader ride with the serial air mission commander. The air crews/pilots were the best way to maintain real-time situational awareness of any frustrated loads or any changes/friction with timelines. This also allowed the ground force commander to communicate any decisions with frustrated loads to stay on timeline or wait for bump of PAX and equipment. The second note is to utilize the PZ tracking application on an end user device. The 39th DEB served as the administrator of the data packages on the app from its PZ MAIN and provided situational awareness to the rest of 2/101 MBCT in real time through the PZ tracking app. However, we experienced several points when the data was improperly entered either by user error or simply a misunderstanding of what was loaded on each aircraft. We recommend using the PZ tracking app along with an in-person LNO at PZ MAIN to verify as redundancy to ensure an accurate picture of the flow of personnel and equipment from PZ to LZ.

A heavy leadership presence is required during load weigh-in, pre-staging, initial manifest call (IMC), and final manifest call (FMC). This should not be the case, but typically the timelines and information regarding these events are not well disseminated to the team executing these tasks. In an operation as complex as L2A2, this can quickly devolve into many small deviations from the plan which then have large rippling effects. IMC is typically conducted separately from the load weigh-in and pre-staging of loads, which can cause conflict when executing the FMC for chalks that have both personnel and loads. In our case, we conducted IMC with the planned number of personnel from the air movement table (AMT), but Soldiers conducting vehicle weigh-in for those same chalks attempted to load their vehicles to the max load capacity of their aircraft. In doing so, Soldiers were unknowingly detracting from the number of personnel that the aircraft could carry as this number was planned against a specific vehicle weight. When units showed up to FMC, their number of allowable personnel suddenly dropped, and it was too late to “de-rig” and “re-rig” the loads, ultimately bumping the personnel to the next mission night or scratching them completely. The solution to this issue is doing the further detailed analysis to ascribe a unit internal max load weight for each individual load separate from the max load of the aircraft. To ensure this is executed properly and ensure these guidelines are being followed during pre-staging, task a Pathfinder-qualified E-7 or higher who understands the impact of being underweight or overweight to assist in helping squad-level leaders prioritize which equipment to add or subtract as secondary loads. Utilizing a unit internal max load ensures the correct number of personnel can manifest

and allows our subordinate units to exploit every last bit of available space possible.

Soldier Load/Configuration Considerations

Temperatures during the JRTC 24-10 rotation averaged around 96 degrees Fahrenheit with high humidity. Movement length was longer than average due to the increased size of unit areas of operation and dispersion of LZs. These things, combined with the challenge of providing the necessary sustainment for the ground force during an L2A2, emphasize the importance of a detailed Soldier load plan. Our companies did several things that made them very successful and had a few recommendations as well.

Charger Company's scheme of maneuver involved three separate ambush sites spread across five kilometers. This required their Soldiers to move with only mission-essential equipment. They utilized a link-up point near the LZ where Soldiers dropped non-essential mission equipment (rucksacks with hygiene, clothes, etc.) and then carried on to their ambush sites. Utilizing a link-up point gave them the added benefit of providing their leaders an intelligence update and confirmation of their task and purpose on the ground as the fight evolved. Establishing a cache at the link-up point required them to be draconian in their approach to managing Soldier longevity through their load. Soldiers in Charger Company loaded mission-essential items in an assault pack and put the rest in a ruck. Upon link up, Soldiers downloaded their ruck and only carried water, ammunition, and communications equipment to their ambush point. The Charger Company headquarters element utilized only two vehicles and a Silent Tactical Energy Enhanced Dismount (STEED) to move sustainment packages to their ambush points. Additionally, they configured the STEED to carry a generator and fuel on the L2A2 to provide power generation for their Integrated Tactical Network (ITN) equipment.

We recommend that for the first night, units prioritize bringing in sustainment loads and only a few vehicles per company. Companies needed their command and control (C2) platform and one to two ISVs to load equipment and sustainment packages onto. The ISV provides the ability to cache supplies and return later for them. This mitigated heat casualties significantly and enabled our companies to make longer movements under lighter loads while still being able to push them necessary supplies.

L2A2 with the Infantry Squad Vehicle

With Soldier load and sustaining the fight in mind, TF Falcon conducted detailed analysis into planning aircraft configurations and selecting what combat power to deliver to the battlefield during the first period of darkness. We prioritized the ISV over other pieces of equipment. This vehicle is unique to the MBCT and sets it apart from every other brigade combat team in the U.S. Army. It is imperative that ISVs arrive to the battlefield with Soldiers to provide agility, increase the capacity to carry surplus classes of supply, and lighten Soldier load. However, delivering ISVs is a challenge when conducting an L2A2.

The ability to deliver not one but two ISVs to the battlefield with a single aircraft is imperative to the mobility and survivability of the MBCT. The CH-47 is capable of delivering two ISVs internally loaded with up to nine Soldiers. 2-502 IN selected to load the commander's assault command post ISV and the mortar platoon ISV into one CH-47 to deliver the ability to command and control and provide indirect fires on the first lift. This capability enabled the commander to quickly move across the battlefield and deliver fires to support the ground tactical plan. The process of loading two ISVs onto a CH-47 for the L2A2 uncovered several friction points that units should consider before loading the ISV. These include front axle weight, external attachments to the ISV, and cold-load training.

2-502 IN discovered that the front axle of the ISV loaded last into the aircraft must weigh less than 3,000 pounds at weigh in. The CH-47 is unable to close the ramp during a dual-load configuration, and the weight on the ramp cannot exceed 3,000 pounds. At final manifest, the 2-502 assault command post (ACP) ISV's axle exceeded the limit and was unfit to fly in the dual-load configuration. While the ISV was

The 2nd Battalion, 502nd Infantry Regiment's mortar platoon fabricated an 81mm mortar-carrying system that attached to the rear of the ISV. (Photo courtesy of author)

Soldiers from the 2nd Mobile Brigade Combat Team, 101st Airborne Division (Air Assault) create a defensive perimeter around a CH-47 during a large-scale, long-range air assault into the Joint Readiness Training Center at Fort Johnson on 15 August 2024. (Photo by SSG Joshua Joyner)

under the maximum allotted weight, there was not enough weight in the rear of the vehicle to offset the weight of the front axle. 2-502 IN solved this problem by loading extra 81mm mortar rounds to the ACP ISV. The additional weight increased the weight in the rear of the vehicle, which lightened the front axle. This tactic also delivered more mortar rounds to the fight. In the future, units should outfit the last ISV loaded onto the CH-47 with surplus sustainment to deliver supplies to sustain the force and reduce the weight of the front axle.

The 2-502 IN mortar platoon fabricated an 81mm mortar-carrying system that attached to the rear of the ISV. This carrying system enabled the ISV to transport two 81mm mortar tubes, baseplates, and basic issue items on the cage — leaving the rear of the ISV open for classes of supply and gear. Initially, the CH-47 crews were skeptical that it would fit; however, after testing the load two days prior to D-Day, it was certified by the crews as safe to fly. The mortar-carrying system is a combat multiplier and enabled 2-502's mortar platoon to quickly emplace/displace from mortar firing point (MFP) to MFP and establish MFPs in areas unreachable by High Mobility Multipurpose Wheeled Vehicle (HMMWV). The lesson learned is that any external attachments to the ISV cannot be wider than the ISV, add height to the ISV, or add more than 6 inches to the length; they must also be tested with the aircraft crew days before the air assault to allow for modifications. Lastly, TF Falcon recommends that Fort Campbell add a CH-47 mockup at the flight line for units to test loads prior to execution.

Cold-load training is always a necessity before any air assault. However, it is critical when dual loading an ISV. The configuration constrains air crew members' ability to move and execute their duties inside the aircraft. The Soldiers riding in the ISV must know how to react in the event of an emergency and where to move if needed. Additionally, loading and unloading two ISVs at day and night takes practice to ensure no damage is done to the ISV and aircraft.

2-502 IN will continue to improve on the unique capability to conduct an L2A2 as part of a rapidly mobile force capable of fighting in an environment where no help is coming. Overall, the L2A2 in JRTC 24-10 was successful at scale, but the battalion has much to improve. Strike Force will continue to build upon our air assault planning proficiency to deliver hyper-mobile and lethal combat formations at distance to fight and win in the fiercest conditions.

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Multi-Functional Reconnaissance Operations

CPT CHARLES J. O'HAGAN
MAJ SAMUEL H. DEJARNETT

Warfare is changing and the U.S. Army needs to adjust rapidly. Partnering the Multi-Functional Reconnaissance Company (MFRC) with the field artillery (FA) battalion represents one of the key adjustments the 2nd Mobile Brigade Combat Team (MBCT), 101st Airborne Division (Air Assault) has made during its transformation in contact. The MFRC is tasked with being painfully light and disproportionately lethal to sense, kill, and protect on behalf of the brigade. It executes these tasks by leveraging traditional reconnaissance doctrine, emerging technology, and self-developed electronic warfare (EW) capabilities. The MFRC-FA collaboration increased the lethality and survivability of the brigade by identifying the FA battalion's electromagnetic (EM) signature, creating decoys to emulate that signature, and maximizing emerging technology to hunt and destroy high-payoff targets.

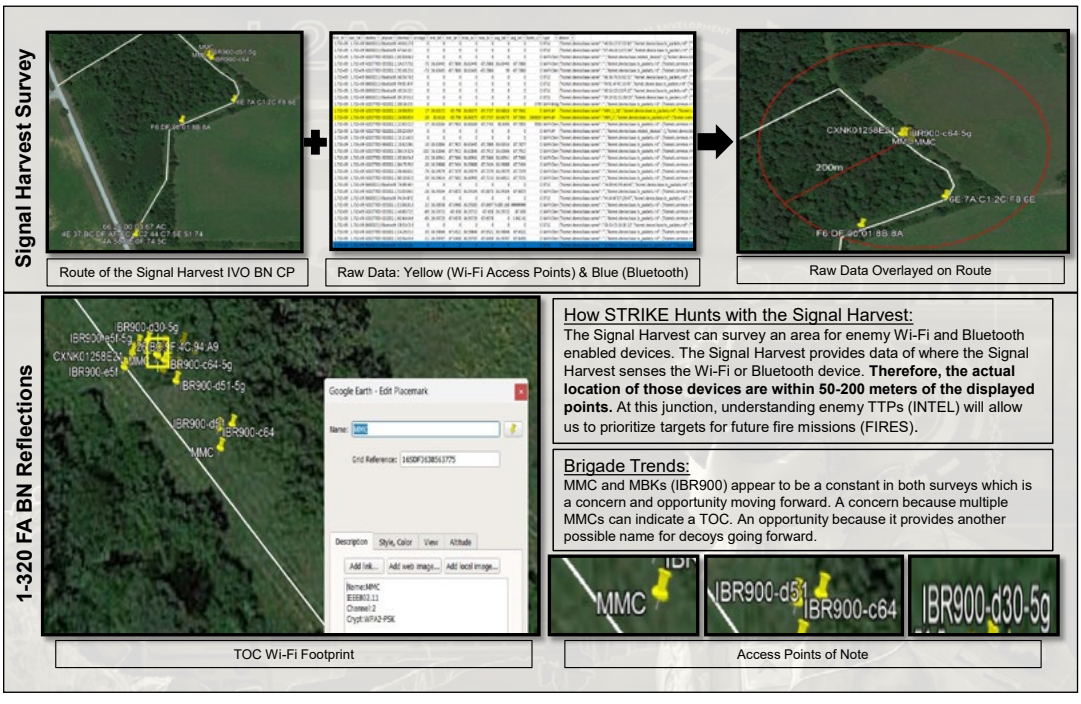
Battalion EM Signature

The MFRC enables 2/101 MBCT to understand its electromagnetic signature across multiple spectrums that can offer unique survivability capabilities. After a Joint Readiness Training Center (JRTC) rotation in January 2024, 2/101 identified that Geronimo — the opposing force (OPFOR) — hunted the brigade based on its EM signature, specifically Wi-Fi and Bluetooth-enabled devices. Geronimo demonstrated the capability of identifying service set identifier (SSID) and Bluetooth device names, which led to the identification of 2/101 MBCT's critical assets like artillery units and main command posts. The brigade followed a generic naming convention for devices that facilitated accountability, but this highlighted key assets to adversaries. To combat this capability, the MFRC created a similar system called the "Signal Harvest" that would help the brigade understand its own Wi-Fi and Bluetooth signature. The MFRC first conducted a digital survey mission and gained an understanding of what the brigade looked like at echelon (see Figure 1). The next step was to confuse the enemy to protect the brigade's most casualty-producing weapon, the FA battalion.

Wi-Fi/Bluetooth Decoys

The MFRC's EW Soldiers created digital decoys that mirrored the brigade's FA battalion. These decoys emitted an electronic signature to reduce confidence in adversary sensors and force them to commit additional assets to confirm composition and disposition of friendly forces. An early example of the decoy consisted of relatively cheap material solutions to emulate Wi-Fi access points: a Raspberry Pi zero, a secure digital (SD) card, a universal serial bus (USB) cable, and a low-cost power source. At division exercises like Operation Lethal Eagle, 2/101 MBCT tested these decoys and experienced initial success in slowing the efforts of OPFOR. In the lead up to the JRTC 24-10 rotation in August 2024, 2/101 committed to purchasing and employing hundreds of digital and visual modification decoys to deceive the enemy. Leaders within the brigade then integrated the decoys and deception plan into the ground tactical plan through the military deci-

Figure 1 — 1st Battalion, 320th Field Artillery Battalion Signal Harvest Survey



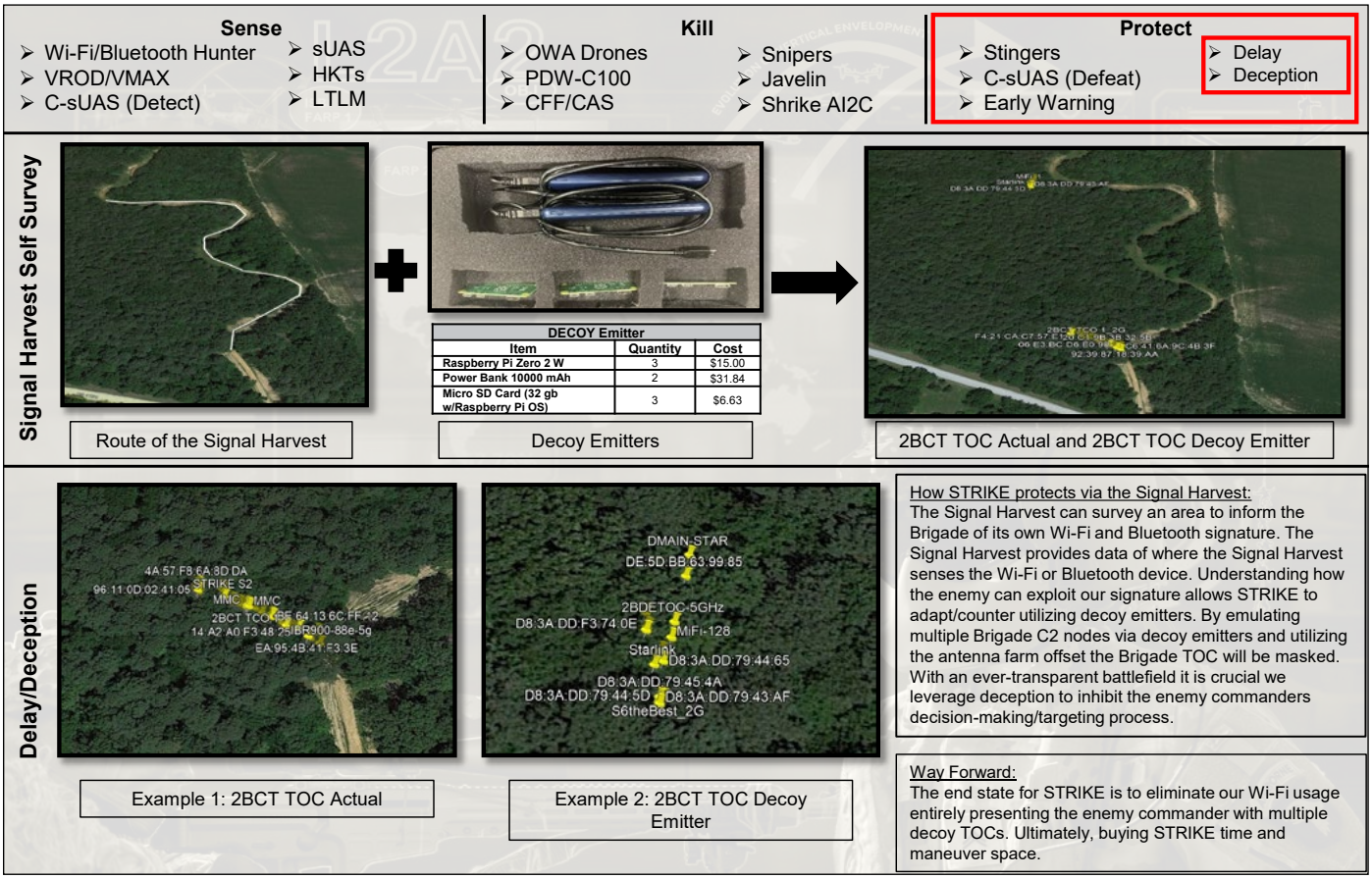


Figure 2 — Signal Harvest and Decoy Emitters

sion-making and targeting processes. During the long-range, large-scale air-assault (L2A2) joint forcible entry into JRTC 24-10, the MFRC deployed decoys that replicated critical assets such as the M777s and M119 howitzers.

As expected, Geronimo immediately conducted targeted reconnaissance on command posts, radars, and howitzers. However, their signal intelligence (SIGINT) failed them. One report stated that Geronimo began troubleshooting their collection equipment because their ground observers could not confirm decoy positions reported by SIGINT. When the observers could identify assets such as FA batteries, the batteries moved, disrupting the targeting cycle. The movements by the batteries and emitters meant Geronimo's process to find and fix critical assets had to start over. The combination of movement and signal decoys created limited windows of opportunity for Geronimo to deliver effects against the artillery. Ultimately during both Geronimo's attack and defense, they exposed their entire integrated fires command with massed fire missions on dirt, missing all critical assets except for the Q53 radar. During the rotation, the OPFOR was unable to consistently deliver effects against the FA battalion; therefore, the FA battalion massed effects at critical points with limited threats from counterfire or ground attack.[1]

Emerging Technology

The 2/101 MBCT's operating concept shows the effectiveness of pairing the MFRC with the FA battalion as a lethal means of hunting high-payoff targets. The MFRC and 1st Battalion, 320th Field Artillery Regiment communicated directly and through the 2/101 MBCT main command post during JRTC 24-10 and achieved outsized effects on Geronimo. The MFRC acted as a highly mobile and hyper-enabled reconnaissance company that moved deep behind enemy lines, facilitating fires and answering priority intelligence reports (PIR) to assist the brigade commander. The key technologies that enabled the MFRC's effectiveness included the Infantry Squad Vehicle (ISV), Integrated Tactical Network (ITN) suite of communications, unmanned aerial systems (UAS) with signal and artificial intelligence (AI) payloads, and connections to the FA battalion through observers' digital kill chain. The Army's AI Integration Center (AI2C) outfitted UAS platform — a Anafi Parrot Mil — in the hunter killer platoons (HKPs) to leverage Shrike AI. Shrike AI runs three algorithms: aided threat recognition, call for fire, and adjust for fire. The first example of Shrike AI employment occurred within the first 24 hours of JRTC 24-10 when HKP 2, operating in enemy territory, utilized Shrike AI via the Anafi Parrot Mil to identify three enemy D-30 artillery pieces. The Shrike AI program generated a call for fire, and HKP 2's forward observers relayed the information back to the brigade command post. The brigade main command post ingested this call for fire and prosecuted the target with direct support artillery, resulting in the destruction of the three D-30s. This was one of many examples to highlight the lethality of

reconnaissance enabled by technology and tied to the FA battalion.

The MFRC's ability to identify and relay targeting data on the high-payoff target list enabled the field artillery to mass fire against the enemy numerous times. These missions, enabled by UAS and AI, led to lethal effects against Geronimo for 2/101 MBCT in the offense and defense. The MFRC's HKPs employed these capabilities with attached forward observers to achieve the brigade's targeting objectives and were key factors in getting and keeping the artillery batteries in the fight. The attached forward observers are critical to the company because the MFRC will need an all-weather proficient observer in the formation if/when the technology fails.

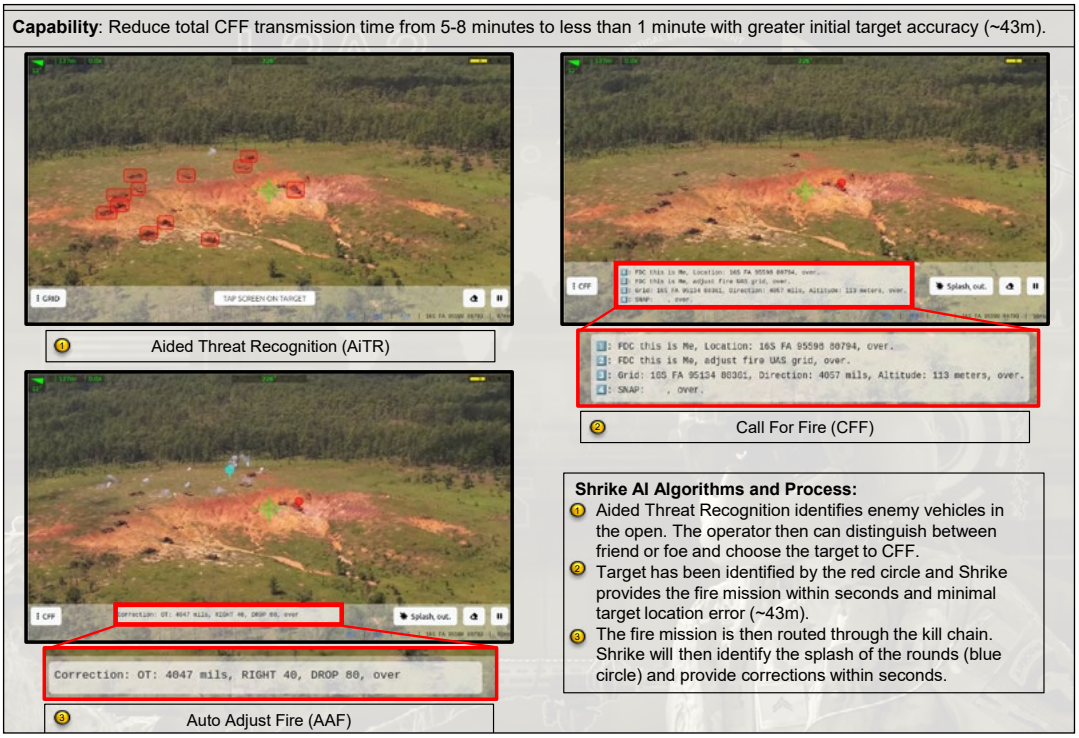


Figure 3 — Artificial Intelligence Integration Center Shrike AI

Conclusion

The Army will face multiple challenges during large-scale combat. Technology is evolving and operating concepts are changing similar to what occurred during World War I with the employment of aircraft, tanks, and predictive artillery fire. Success will come with the right force structure that is enabled by technology and paired with combat fundamentals and principles. The MFRC — tied to the artillery through the brigade command post and enabled by technology — represents a great opportunity for success. During JRTC 24-10, the MFRC served as a flexible, reliable, and deadly reconnaissance element that worked directly for the brigade commander. Key capabilities of EW assets and UAS allowed the smaller force to both detect the enemy and remain hidden. The union of the MFRC and the FA battalion through a dynamic targeting process proved to increase lethality of 2/101 MBCT.

CPT Charles O'Hagan, commander of the Multi-Functional Reconnaissance Company, briefs visitors during Joint Readiness Training Center Rotation 24-10 on the implementation of medium-range reconnaissance drones. (Photo by SSG Joshua Joyner)

Notes

[1] Reports on effects of the decoys were recorded during both JRTC 24-10's mid-rotation and final after action reports from both the commander of Geronimo and the commander of JRTC's Operations Group.

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Tactical UAS:

Three-Tiered UAS Manning for Increased Lethality and Situational Awareness

CPT CHARLES J. O'HAGAN
1LT PARKER MITCHELL
1LT NOAH PAFFENROTH
1LT ADAM HENDRICK

The world has watched as unmanned aerial vehicles became as ubiquitous a weapon of war in Ukraine as the improvised explosive device (IED) turned out to be during Operation Iraqi Freedom. A relatively low-cost, remote-piloted vehicle is capable of removing multimillion-dollar tanks from the battlefield. As the U.S. armed forces observe the success of unmanned aerial systems (UAS) tactics, techniques, and procedures (TTPs) in Ukraine, we must consider how to equip and operate drones at the tactical level within our own formations. To maintain its strategic edge and adapt to the rapidly changing landscape of warfare, the U.S. Army must effectively man and operate drones at this level.

Inspired by the recent experiences of Ukrainian forces and lessons learned from Joint Readiness Training Center (JRTC) Rotation 24-10, this article recommends a three-tiered approach to manning UAS operators, encompassing additional duty, designated position, and military occupation specialty (MOS)-specific roles. This approach will ensure that the vast, and still growing, variety of UAS — ranging from small, simple systems to larger, more complex platforms — is considered. Drones at this echelon are currently broken down by aircraft weight, range, and endurance (see Table 1). However, with improvements in battery technology, endurance will soon be a metric of the past, and range will prove to be the differentiating factor between small UAS (sUAS).

Additional Duty Concept

Soldiers should employ relatively simple and short-range UAS as an additional duty. A rifleman in an infantry squad could operate smaller, easy-to-use drones for reconnaissance or target acquisition tasks. For example, Ukrainian forces have effectively used smaller, hand-launched drones, such as the DJI Mavic or Phantom series, for tactical reconnaissance and target acquisition missions. These drones require very little instruction and do not necessitate extensive training. During JRTC 24-10, Soldiers from the 2nd Mobile Brigade Combat Team (MBCT), 101st Airborne Division (Air Assault) employed similar platforms to observe targets 2-5 kilometers away in minutes. These smaller systems are not cumbersome during prolonged movements; however, they have limited range and flight duration. This limits them to target refinement based on cues from larger UAS platforms, electronic signature detection, or audio-visual contact. Soldiers would utilize these platforms for short-duration flights while primarily acting as riflemen who may need to engage rapidly in a fight. These platforms enhance team maneuverability since they do not require a significant power draw; they can charge with portable battery packs from hide sites and be deployed by mobile teams in heavily restricted areas. Portability and mobility are crucial in densely vegetated areas, where the signal range will degrade severely, and in contested areas, where launching and landing pose the greatest chance of compromise.

On day one of the 24-10 rotation, these capabilities immediately impacted the battlefield. Using a Skydio drone, a small element in front of the forward line of own troops (FLOT) identified three enemy artillery pieces. The brigade called for fire and destroyed all three, along with another enemy vehicle and multiple dismounted personnel. This marked the first of many fire missions using small UAS to identify and observe effects. However, to maintain observation, the Soldier whose additional duty involved drone operations had to fly one drone after another. This example highlights that while this Soldier's primary duty is serving as a rifleman, the tactical situation can create an environment where drone operations frequently supplant that primary duty. Ideally, this Soldier would have identified the targets and cued another platform during a deliberate handoff to a more robust reconnaissance

Table 1 — Short-Range, Medium-Range, and Long-Range Reconnaissance Capabilities

	Aircraft Weight	Range	Endurance
Short-Range Reconnaissance	3-5 pounds	3 kilometers	30 minutes
Medium-Range Reconnaissance	<20 pounds	10+ kilometers	1.5 hours
Long-Range Reconnaissance	<55 pounds	30-60 kilometers	5-8 hours

Figure 2 — Skydio X2D
(2.5-3 kilometers recommended)

Figure 3 — Parrot Anafi MIL
(2.5-3 kilometers recommended)

platform, which would be manned by personnel whose primary duty is their operation. This situation highlights the need for a dedicated UAS operator position who can work in a multi-layered and coordinated approach with other UAS operators at lower and higher echelons.

Primary Duty Concept

Creating designated UAS operator positions within units would ensure operators with specialized training can manage larger, more complex drone platforms. Ukrainian forces have utilized medium-range drones, such as the R18 octocopter, for more extended reconnaissance and surveillance missions, requiring operators with specific skill sets and dedication. These operators are crucial in conducting longer duration missions, often in contested environments. Another example is the first-person view (FPV) drone, which requires extensive practice and training to operate proficiently. While any Soldier can fulfill this role, the time necessary for proficiency justifies the need for a dedicated position rather than simply an additional duty. During this JRTC rotation, the robotics and autonomous systems (RAS) platoon assigned specific platforms to personnel. Two-person teams managed the maintenance and operation of the PDW C-100, a medium-range reconnaissance (MRR) UAS capable of carrying up to a 10-pound payload. This assignment emerged from the greater complexity, power demands, and practice required for accurate munitions delivery. Although the RAS platoon comprises 15Ws (UAS operators) and 15Es (UAS repairers), the personnel assignment to platforms was MOS agnostic, with operating that platform becoming their primary duty. Just as the platoon radio-telephone operator (RTO) must detach from the fight to facilitate crucial communications with higher command, MRR operators must focus on observation and medium-duration surveillance. During call-for-fire missions, maintaining constant visual contact with targets helps deliver accurate effects and can prevent overkill. This was evident during JRTC 24-10 when the RAS platoon attached to 2/101's Attack Company, 2nd Battalion, 502nd Infantry Regiment. The PDW C-100 maintained visual contact with enemy forces during the brigade defense on 19-20 August.

Figure 4 — PDW C-100 (10 kilometers recommended)
(Photo courtesy of PDW)

Consequently, the operators became the primary observers for all fire missions. They directed the prosecution of fires far beyond the FLOT, alleviating the difficulty of placing an observation post (OP) that can observe fires and remain outside risk estimate distances (REDs). The MRR operator must focus on providing a real-time picture of the battlefield to higher command. These drones have a more significant signal output, louder takeoffs and landings, and require a higher power draw, making it difficult to operate in contested areas. The demanding tasks on the operator tie this platform to the company command post (CP), where we are farther from the front, have electronic warfare (EW) assets, a

Figure 5 — Ghost-X (12 kilometers recommended)
(Photo by SGT Charile Duke)

semi-defensible position, and vehicles for power supply and rapid relocation.

Career Progression for Primary UAS Operators

A counterargument to creating designated UAS operator positions within units is the possible negative career impact for 11B Soldiers. For example, making an 11B20 a dedicated UAS operator could potentially put the Soldier behind the power curve of peers acting as team leaders, who are maneuvering teams to close with and destroy the enemy. However, we could argue that the individuals selected to serve in UAS operator roles will learn far more about maneuvering and tactical decision-making in the assigned UAS position. Considering that a UAS operator would be co-located with the platoon or company CP, those Soldiers will gain a better understanding of what is happening across the battlefield and how leaders maneuver squads or platoons in the close fight. The specified role for a UAS operator primarily addresses Soldiers who would be operating an MRR. However, the same holds true for Soldiers who are designated as FPV operators. Soldiers who effectively employ an FPV will understand the breadth of their company/platoon fight and will be utilized as a combat multiplier. Those with a primary duty of operating an FPV with multiple payloads have the potential to be more lethal and precise than a company's 60mm mortar section. Their primary duties would be akin to those of an RTO position. In the same regard as how Soldiers tasked as a platoon RTO are separated from the rest of the formation to focus on the radio equipment, drone operators will have their UAS as their focus during the fight. UAS, and specifically FPVs, are here to stay when it comes to modern combat; therefore, our formations need to adapt to this evolving battlefield without adding MOS-specific roles at the company and platoon level.

Figure 6 — Stalker VXE30 (160 kilometers recommended)
(Photo by Sgt Jacqueline C. Parsons, USMC)

Figure 7 — Shadow (125 kilometers recommended)
(Photo by John Hughel)

New UAS Operator MOS Concept

The Army should also consider creating a new MOS for UAS operators, specifically for specialized drone platforms. These MOS-qualified operators would possess unique skills including advanced sensor management, organization-specific TTPs, and specialized payload optimization. Operators controlling sophisticated systems, such as the Bayraktar TB2 used by Ukrainian forces for significant reconnaissance and precision strike missions, require extensive training and specialized skills. By having MOS-designated drone operators, Soldiers would arrive with considerable expertise. These individuals can join battalions, fill modified table of organization and equipment (MTOE) positions, and integrate seamlessly with long-range reconnaissance (LRR) systems aligned to battalions. They would serve as brigade/battalion-level assets. This designation grants them protection, enabling them to focus on flight operations while remaining farther removed from the frontlines. Long-range drones provide top-down, real-time intel that can cue smaller platforms on pertinent areas to direct their drone assets, preserving their limited power resources and limiting exposure time. During JRTC 24-10, we did not utilize any LRR platforms, resulting in an overreliance on division assets such as the Gray Eagle. LRR UAS will enable battalions to shape their close fight while the brigade can shape the next ridgeline. Battalions can find, fix, and finish at their level without relying on brigade or echelon above brigade assets. The brigade will then be able to find, fix, and finish the brigade high-payoff target list (HPTL) with the multi-functional reconnaissance company, setting conditions for future operations. This additional platform

enhances information flow and situational awareness on the battlefield, both top down and bottom up. Due to their large frames, heavy power draw, and logistical requirements, the lowest level at which they can be effectively employed is from a battalion CP.

Human-Machine UAS Integration

It is essential to discuss the differences between short-range reconnaissance (SRR), MRR, and LRR; the handover lines between each platform at the echelon; the training required for each; and the focus that should be spent on additional, primary, and MOS duties; however, the primary emphasis should remain on decreasing human involvement in UAS operations. UAS technology and human-machine integration advancements present an opportunity to reduce the burden on UAS operators. Autonomous technologies like artificial intelligence and machine learning can improve mission efficiency and decrease operator workload. The current platforms lack the software to minimize human involvement and require more personnel and an increased cognitive load. We should continue to invest time, effort, and money in acquiring platforms and, more importantly, operating systems that allow for the control and integration of multiple systems. A UAS must autonomously identify HPTLs, present options for kinetic actions, and execute — all through a standard operating system. Ideally, this UAS should communicate with other sensors. A UAS that communicates with visually based ground and electronic warfare sensors will sense and present various kinetic options for action to a commander and work off standard software, achieving human-machine integration. By maintaining situational awareness and decision-making skills among operators, the Army can leverage advanced automation capabilities for operational success while fostering human-machine teaming and promoting force multiplication.

Center of Excellence to Unify Efforts

An Army center of excellence must be designated to codify this tiered approach, ensure lessons are learned, and dedicate resources to understand the human-machine integration of the future. Currently, tactical UAS employment, TTPs, and doctrine are not directly owned by a center of excellence. Every warfighting function has a center of excellence that shapes what the future of that function will be and codifies it in doctrine. 2/101 MBCT's current recommendation is that either the U.S. Army Maneuver Center of Excellence or the Aviation Center of Excellence take control of this critical and emerging capability.

As seen during JRTC 24-10, tactical UAS facilitate maneuver and fires more than any other warfighting functions. Tactical UAS can reduce risk to the force and mission for maneuvering units by allowing for greater standoff while increasing situational awareness and enabling more effective C2 for leaders. A commander could see when a maneuvering element was about to hit a phase line, call up a shift fire, receive confirmation, and continue advancing his force far quicker than more traditional confirmation methods. Likewise, tactical UAS allow forward observers to maintain observation on targets from a greater distance and increase the breadth of what they can sense/hunt. Additionally, UAS provide additional avenues with which to prosecute fires targets, either through dropped munitions or one-way attack drones. However, keeping UAS with the Aviation Center of Excellence provides benefits. Historically, Aviation has had ownership of legacy sUAS platforms, institutional knowledge of airspace management, and tactical employment of manned aviation assets. During JRTC 24-10, the brigade aviation officer played a crucial role in setting conditions for maneuver forces to fly sUAS during complex air assault operations. This permitted effective airspace management allowing 2/101 MBCT to synchronize fires, maneuver, and aviation assets. Given the fundamental difficulty of managing an ubiquitous sUAS presence while safely conducting air assault operations, it would be prudent for both centers of excellence to be stakeholders in future implementation. Ultimately, tactical UAS are now a part of warfare, and to keep pace with the dynamic nature of warfare, a center of excellence needs to be established to oversee this revolution.

Conclusion

In conclusion, inspired by the Ukrainian experience, adopting a three-tiered approach to manning UAS operators within the U.S. Army, based on drone complexity and operational requirements, will optimize the utilization of these versatile assets. This approach involves integrating drone operations into additional duties, establishing designated UAS operator positions, and creating a new MOS for specialized drone platforms. The next step in this revolution of military affairs is leveraging advancements in human-machine integration, and autonomous technologies will reduce the burden on UAS operators and foster effective human-machine teaming. Additionally, there must be a center of excellence that is designated to unify these efforts and spread lessons learned across the force. By implementing these recommendations, the U.S. Army can effectively adapt to the ever-changing landscape of modern warfare and maintain its strategic edge.

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1LT Noah Paffenroth currently serves as a hunter killer platoon leader in the MFRC. He commissioned as an Infantry officer in 2021 from Florida Atlantic University.

1LT Adam Hendrick currently serves as a hunter killer platoon leader in the MFRC. He commissioned as an Armor officer in 2022 from the University of Connecticut.

HUMAN-MACHINE INTEGRATION:

Tactical-Level Employment and the EXFOR RAS Platoon

CPT TIMOTHY A. YOUNG
MARK D. WINSTEAD

What is HMI? Human-machine integration (HMI) provides the U.S. Army with integrated formations that blend Soldiers with robotic and autonomous vehicles. "It's about putting those two things together in an optimal way that makes the Army better."[1] Army senior leaders — informed by experimentation, current conflict lessons learned, and the current/projected state of robotics and autonomous systems (RAS) technologies — have determined that maintaining the U.S. Army's edge in both mounted and dismounted close combat requires leveraging HMI-enabled formations to the maximum extent. This is best expressed by their top-line messaging regarding robotics:

1. Machines will not replace humans, but the right combination of humans and machines can optimize formations.
2. "No blood for first contact." Use robotic systems to shape first contact with the enemy.

This article shares the experiences of the Army's only Experimentation Force (EXFOR) and seeks to inform the introduction of HMI RAS capabilities into U.S. Army Forces Command (FORSCOM) formations. GEN James Rainey, commanding general of Army Futures Command (AFC), has stated, "Units will leverage their integrated robotics and autonomous systems (RAS) in persistent experimentation to meet learning demands that will inform concept refinement, force design, capabilities development, funding decisions, and future experimentation."

A Soldier in Alpha Company, 1st Battalion, 29th Infantry Regiment, operates a ground robot during the human-machine integration experiment for Project Convergence – Capstone 4 at Fort Irwin, CA, on 11 March 2024. (Photo by SSG LaShic Patterson)

Current HMI RAS Capabilities and Technology

Small Multi-Purpose Equipment Transport (S-MET) **—** a program of record (PoR) system designed to provide infantry brigade combat teams (IBCTs) a method of offloading weight traditionally carried by the Soldier. This platform has been adapted with the addition of an autonomy kit and payloads to transition from load carrying to the execution of other military tasks.

ORIGIN (An uplifted S-MET with various Modular Mission Payloads (MMPs) **—** NOT a PoR robotic vehicle and is still experimental. It is capable of mounting a Common Remotely Operated Weapons Station-Javelin (CROWS-J) .50cal/Mk19, a vertical mast-mounted 360-degree camera for reconnaissance, a smoke-generating Screening Obscuration Module, a tethered unmanned aerial system (UAS) for persistent surveillance with an electro-optical infrared (EO/IR) camera, or a multi-pack loitering munitions launcher.

Medium-Range Reconnaissance (MRR) UAS surrogate **—** a company echelon teleoperated or waypoint-enabled intelligence, surveillance, and reconnaissance (ISR) UAS that provides full-motion video (FMV). The current

system is a surrogate on loan from Anduril. Anduril and other companies are competing to win the award for the company-level (group 2) UAS directed requirement.

Short-Range Reconnaissance (SRR) UAS — a platoon echelon PoR UAS in its second tranche (fielding) that is a teleoperated or waypoint-enabled ISR UAS that provides FMV.

Hunt and Releasable Kill (HaRK) UAS — a surrogate for a weaponized medium-range UAS that drops guided and unguided drop/glide munitions (equivalent to an 81mm high explosive mortar round).

Low Altitude Stalk and Strike Ordnance (LASSO) — a PoR to deliver a loitering munition with an antipersonnel or anti-armor warhead. It can be launched from either the All-Up Round (AUR) packaging/carry tube from the ground or a multi-pack vehicle-mounted launcher. They are controlled via a Ground Control Station (GCS) tablet. Current surrogates for this are Switchblade 300/600 systems.

Quadruped (Robotic Dog) — a teleoperated ground ISR robot deployed ahead of dismounted formations to recon dead space to confirm or deny enemy presence in likely or suspected areas.

Throwbot — a hand-thrown or UAS-dropped rolling, electrically powered, teleoperated ISR robot.

Dismounted Unit Soldier Transport (DUST) — an electrically powered (battery) wheeled dismounted mobility system that allows one to two Soldiers to move up to 500 pounds of equipment, supplies, or casualties over rough terrain and within buildings. The current surrogate for DUST is the Silent Tactical Energy Enhanced Dismount (STEED).

Efforts to Date

In September 2023, A Company (EXFOR), 1st Battalion, 29th Infantry Regiment, was selected by the Maneuver Center of Excellence (MCoE) to stand up the Army's first HMI RAS platoon as part of modernizing Infantry and Armor formations for large-scale combat operations (LSCO). For the past 10 months, the RAS platoon located at Fort Moore, GA, has worked with AFC, U.S. Army Training and Doctrine Command (TRADOC), and FORSCOM entities to validate robotic employment concepts using a combination of live, virtual, and constructive training exercises. The EXFOR most recently demonstrated RAS platoon capabilities to Army senior leaders during Project Convergence Capstone 4 (PC-C4) at the National Training Center (NTC) by integrating with both 1st Squadron, 4th Cavalry Regiment (Fort Riley, KS) and 2nd Battalion, 508th Parachute Infantry Regiment (PIR) (Fort Liberty, NC) to conduct situational training exercises (STXs) and the Army's first HMI-enabled battalion-level combined arms live fire. Before PC-C4, the EXFOR conducted multiple STXs at both the company and platoon level with the RAS platoon during the Army Expeditionary Warrior Experiment (AEWE) 2024 at Fort Moore, where the company conducted prototype-assessment experimentation with FORSCOM, British, German, and Dutch units to provide critical feedback on developing technologies to AFC and industry partners. **The following sections describe how the EXFOR organized, trained, and now fights the RAS platoon and the challenges that HMI commanders may face in the future.**

Soldiers assigned to the 1st Battalion, 29th Infantry Regiment take part in a human-machine integration experiment using the Ghost Robotic Dog during Project Convergence - Capstone 4 on 17 March 2024. (Photo by SPC Samarion Hicks)

How the EXFOR RAS Platoon Was Organized

While still experimental, the 18 personnel resourced for the HMI-Infantry (HMI-I) platoon by the EXFOR were all 11-series military occupational series (MOS) Infantry Soldiers and leaders. The RAS platoon's current organization (structure and equipment) was based on the Soldiers and leaders available to man the platoon and the air/ground systems available from industry and the U.S. Army Combat Capabilities Developmental Command (DEVCOM). This combination is the minimal viable structure and manning that is thought to be operationally effective. The RAS platoon's base structure consists of a platoon headquarters (with air/ground RAS) and two RAS squads (with air/ground RAS). During live experimentation, A/1-29 EXFOR task organized the original platoon structure into air and ground sections, each led separately but collaboratively by the RAS platoon leader and platoon sergeant (see Figure 1). The individual air and ground sections operated primarily as a cohesive platoon, but they could still be broken into smaller elements

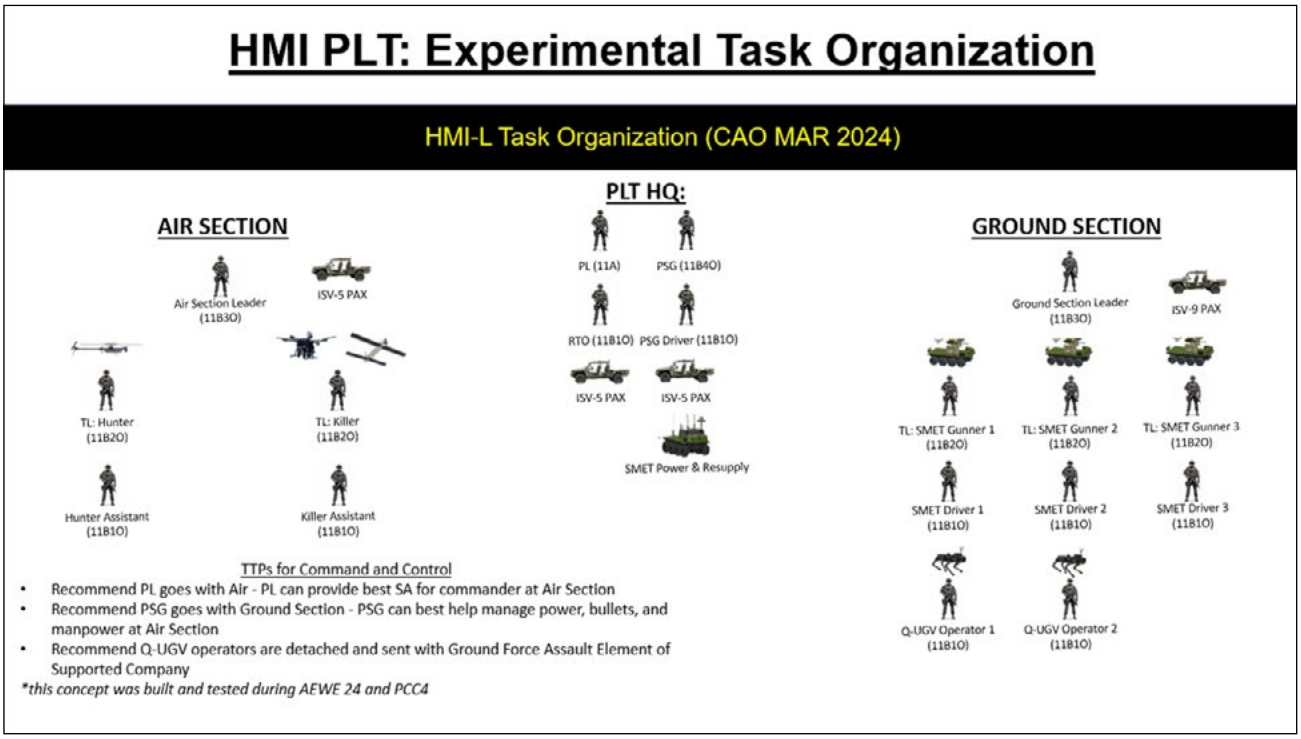


Figure 1 — RAS Platoon Experimental Task Organization

to support the commander's specific tactical requirements, such as aerial reconnaissance, geo-mapping of urban terrain, ground direct fires, or aerial fires. The platoon is equipped with Infantry Squad Vehicles (ISVs) for mobility; payload-enabled S-METs, ORIGINs, quadrupeds; and an array of aerial systems such as SRRs, MRRs, and loitering munitions.

The RAS platoon headquarters controls the employment of both the HMI air and ground sections per guidance from the battalion or company commander, depending on the directed support relationship. The headquarters element comprises a platoon leader, a platoon sergeant, a radio-telephone operator (RTO) (who also serves as the platoon leader's driver), and a driver for the platoon sergeant. The platoon leader and platoon sergeant each have their own ISV to allow these key leaders to exercise tactical control at different points of friction on the battlefield.

The air section conducts aerial reconnaissance, provides additional aerial fires, and conducts battle damage assessments (BDAs). Led by a staff sergeant (SSG), the air section comprises a hunter and a killer team. The hunter team is currently equipped with one MRR, and the killer team is armed with an armed drone and LASSO. The HaRK armed drone is capable of dropping up to four drop/glide munitions at a time, which is equivalent to an 81mm mortar, while the LASSO can be launched, loiter, then fly directly at an enemy target and explode. The entire air section includes five personnel, and all personnel and equipment will fit into one five-passenger ISV.

Similarly, the RAS ground section is also led by a SSG and conducts ground maneuvers ahead of Soldiers to gain and maintain direct fire first contact with the enemy out of contact with Soldier-manned squads and platoons. The RAS ground section contains three teams. Two of the teams are identical, consisting of an ORIGIN team leader (who also serves as the ORIGIN gunner), an ORIGIN operator, and a quadruped operator. The third team includes an ORIGIN team leader and ORIGIN operator but no quadruped operator. Typically, the EXFOR would employ each ORIGIN with a CROWS system (mounting either an M2A1 .50 caliber or M240B machine gun). Quadrupeds were non-lethal and, during experimentation with the EXFOR, were only used for reconnaissance and clearing urban spaces. The section leader also has two SRRs that the quadruped operators can employ to clear dead space for ORIGINs when the quadrupeds are not in use. The entire ground section comprises nine personnel with one ISV for mobility.

How the RAS Platoon Trained

The EXFOR trained the RAS platoon utilizing a crawl, walk, run method. The crawl phase focused on exposing Soldiers to the HMI equipment and allowing them to touch and operate the equipment with the assistance of vendor field service representatives (FSRs) and DEVCOM trainers. Soldiers achieved proficiency with the suite of all RAS equipment in a week, while complete mastery of the systems, including troubleshooting procedures, occurred in roughly two weeks. During the walk phase, the EXFOR utilized tactical exercises without troops (TEWTs) to work on the synchronization of assets and to develop an understanding of how RAS capabilities change tempo and the scheme of maneuver decisions. In the run phase, the EXFOR conducted platoon and company STX against a free-thinking and unrestricted opposing force (OPFOR). The culmination of this run phase

occurred during PC-C4 experimentation when the RAS platoon was under operational control (OPCON) of 1-4 CAV and 2-508 PIR against NTC's OPFOR (11th Armored Cavalry Regiment "Blackhorse").

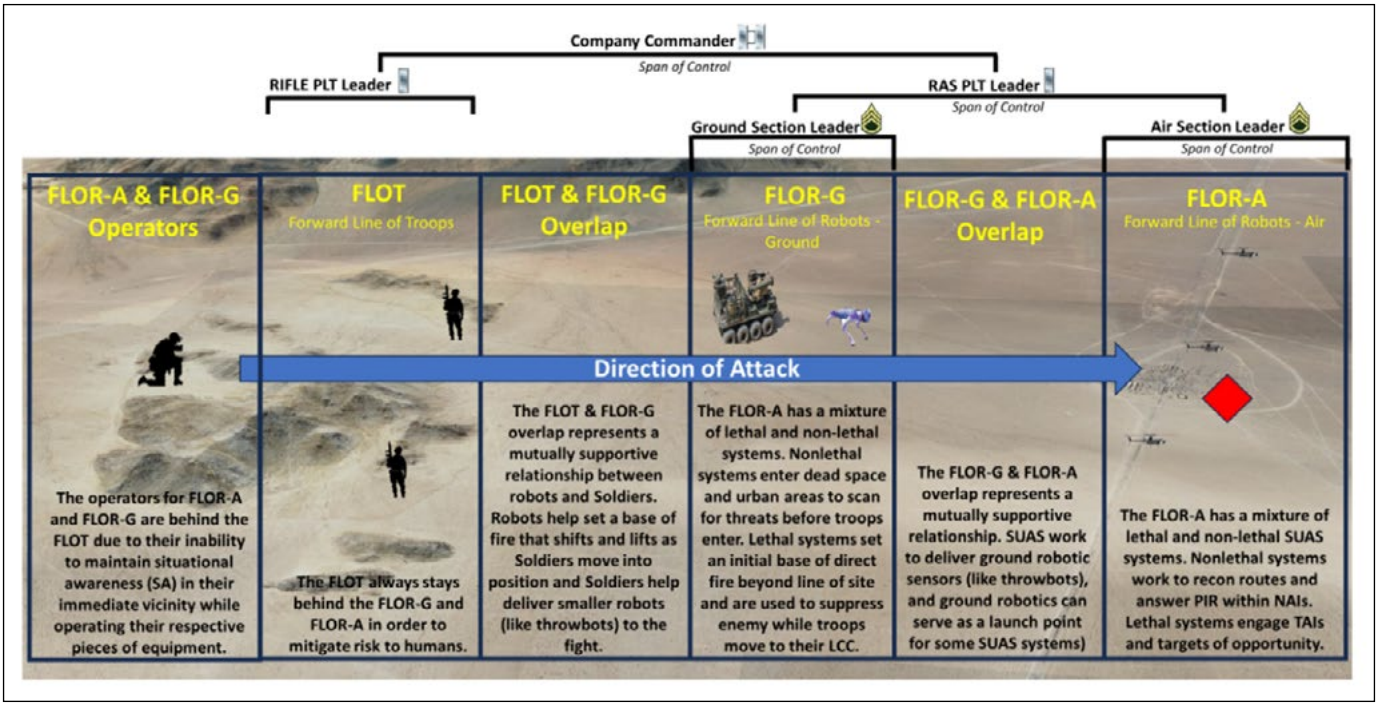
How the RAS Platoon Can Fight

The proposed RAS platoon is organized to serve as a specialty platoon in an IBCT infantry battalion and equipped to enable infantry maneuver companies with a robotic capability as an entire platoon element or split into two elements with near-similar capabilities. The RAS platoon fights as a cohesive unit, leveraging the simultaneous employment of air and ground robotic capabilities to support the commander's decision-making and achieve the desired effects that support the close fight. While less optimal, ground and air elements can be individually cross-attached to subordinate units to support tactical maneuver. When the RAS platoon fights as a cohesive element, its platoon leader is responsible for the placement, movement, and deployment locations of all RAS assets. The platoon leader's focus centers on controlling the overlap of air and ground activity synchronized within the battalion/company's scheme of maneuver. Proper synchronization of this overlap is crucial to maintain tempo and concentration during the offense and security, concentration, and disruption on the defense.

The RAS air section operates its assets at the front edge of the battlefield and establishes the forward line of robotics – air (FLOR-A) while its operators remain behind the forward line of own troops (FLOT) for protection. In the movement phase of an operation, the hunter team conducts aerial reconnaissance of routes and observes named areas of interest (NAIs). The RAS air section must be stationary to launch the aircraft but can then move freely along a route in its ISV while the hunter team controls the MRR. In the "actions on" phase of an operation, the killer team provides the battalion commander, or supported company commander, with further options on engaging enemy targets. At the same time, the hunter team continues to observe NAIs and conduct BDA. During STXs and at NTC, the air section had tremendous success destroying entire platoons and armored vehicles before Soldiers ever fired a shot. The air section's MRR and SRR UAS proved to be rugged and able to withstand relatively harsh wind conditions compared with previously fielded ISR UAS platforms.

The RAS ground section typically operates its assets behind the FLOR-A and establishes the forward line of robotics – ground (FLOR-G) in front of the FLOT in order to trade blood for steel on first contact. In the "actions on" phase, the ORIGINs were controlled by the RAS ground section leader in the same way that a weapons squad leader would control his machine guns, emphasizing controlling fire rates and ensuring continuous suppression of the objective. When not operating a quadruped, the quadruped operators employed SRR UAS within the ground section to visually clear dead space for the ORIGINs, but this would be unnecessary if the ORIGINs could move with their sensor masts and tethered drones up. When required by the mission, the quadruped operators were integrated into the lead squad of a rifle platoon tasked to enter and clear a building. Those operators moved with that squad to provide immediate information on what was behind a wall or up a set of stairs. Overall, experimentation and STXs demonstrated that the RAS ground section poses a significant dilemma for the enemy that draws direct and indirect fire away from Soldiers. However, there is still much work to be done ruggedizing, powering, and controlling these robots at range for best effect.

Figure 2 — Proposed Battle Space Management with RAS Platoon



Potential Challenges and Opportunities for Commanders with an HMI-IBCT RAS Platoon

The RAS platoon will bring unique changes and challenges both in garrison and on the battlefield. It will be critical for leaders at all levels to "buy in" to these new formations and embrace how they will increase unit effectiveness and might change the way we fight.

Personnel Selection. In garrison, the battalion and company commanders, with their command sergeants major and first sergeants, respectively, will need to ensure the right people are selected for the RAS platoon. The platoon can be MOS agnostic, but these Soldiers will directly shape and support the battalion and company fight.

Training. Commanders will have to consider different training requirements for the RAS platoon when it comes to resourcing training. Just having land will not be enough. The RAS platoon will require airspace training and multiple types of frequency allocations to train effectively with the suite of HMI equipment.

MDMP and Maneuver. Commanders, the S-3, and the RAS platoon leader will have to plan to manage the tempo and overlaps of the FLOR-A, FLOR-G, and FLOT. A second tempo challenge came with managing the overlap between the ground section and the FLOT. In this case, the EXFOR had the opposite problem with tempo: Soldiers from the lead rifle platoon would often engage too early, not allowing the ground robotic assets to absorb the first contact and setting conditions for the assaulting squads.

Spectrum Management. At all echelons (platoon through brigade), increased awareness and emphasis on radio frequency (RF) spectrum management is required to ensure the optimal employment of different radios, UAS capabilities, robots, etc., to prevent systems from jamming one another. The inclusion of RF spectrum management will be critical in the planning process.

Power Management. Power management of robotic systems is critical to ensuring they can effectively contribute to the close fight when and where the commander needs them.

Employment of Armed UAS and LASSO Systems. Army policy for the training and employment of armed UAS and LASSO at lower and lower echelons is currently being worked out. These systems are non-line of sight (NLOS) and beyond line-of-sight (BLOS) and share characteristics with both aircraft and traditional indirect fire systems (mortars and tube artillery).

Airspace Management. Commanders and staff at echelon will need to increase their awareness of managing airspace to maximize the employment of UAS and LASSO. To ensure conflict between manned and unmanned systems, three-dimensional graphic control measures with prescribed altitudes and periods of time will also be necessary.

Range. Currently, ground robotics are limited in their ability to operate long distances. Lessons learned from PC-C4 showed that when UAS can be used as an aerial comms extension or network relay, unmanned ground vehicles can extend their FLOR-G ranges during missions. An additional air asset dedicated to connecting the operator to the robot would be ideal within the RAS platoon.

A drop/glide munitions drone releases munitions during Project Convergence - Capstone 4. (Photo by SGT Brahim Douglas)

Who Is Involved

TRADOC, MCoE — The Army Force Modernization Proponent System (Army Regulation 5-22) establishes the MCoE commander as the maneuver force modernization proponent. The force modernization proponent is the commander with primary duties and responsibilities relative to doctrine, organization, training, materiel, leadership development, personnel, facilities, and policy (DOTMLPF-P) requirements for a particular function (e.g., maneuver). The proponent determines DOTMLPF-P requirements. It also establishes the MCoE commander as proponent for robotics in addition to previous requirements. The Chiefs of Armor/Infantry serve as branch proponents, executing training, leader development, education, and personnel responsibilities for their designated branch. The Chief of Infantry also serves as director of the Soldier Lethality Cross-Functional Team.

MCoE, 316th Cavalry Brigade and A/1-29 IN (EXFOR) — The 316th Cavalry Brigade generates leaders and lethality for the Army in order to fight as part of a combined arms team that delivers precise direct fires to win the first battle of the next war decisively. A/1-29 IN (EXFOR) is a subordinate unit and the Army's only dedicated experimentation force.

AFC, Maneuver Capabilities Development and Integration Directorate (MCDID) — MCDID determines and develops future force capabilities and future infantry, armor, and robotic requirements across DOTMLPF domains, resulting in a trained and ready maneuver force fully integrated into Army, combined, and joint operations to maintain the battlefield primacy of our Soldiers and the formations in which they fight.

MCDID, Maneuver Battle Lab (MBL) — MBL conducts combined arms, cross-domain maneuver experiments in live, virtual, constructive, and gaming environments. Integrated within the centers of excellence, joint services, and multinational partners, MBL uses live prototyping, force-on-force experiments, modeling, and simulation capabilities to support Soldier and small unit modernization efforts. It recommends DOTMLPF-P solutions supporting force development, brigade combat team (BCT) modernization, future force concepts, and current operational needs from the BCT through the Soldier level. MBL's objectives are to mitigate risk to the force, help focus science and technology efforts, quantify value with validated underpinnings, and shape investment strategies to align resources to solutions of the highest operational value.

MCDID, Army Capabilities Managers IBCT, Armored BCT, and Stryker BCT (ACM) — The ACMs integrate and synchronize requirements across the dimensions of DOTMLPF-P for all maneuver brigades, both active component and National Guard, to ensure success on the battlefield. The ACMs are the voice of the warfighters who advocate and advise Army senior leaders as the "user representative."

MCDID Robotic Requirements Division (RRD) — RRD, in coordination with key stakeholders, enables the Army to deliver robotics that enable our Army to fight, win, and dominate in a multidomain environment by 2030.

Conclusion and Way Ahead

"The one thing we've really got to offload on the machines is risk. Shame on us if we make first contact [in combat] with a human again. The technology absolutely exists for us to make sure that we don't trade blood for first contact. Let's trade robots for that."[2] An HMI formation described in this article begins to achieve that effect. Utilizing prototype capabilities based on the latest technologies that industry can offer, the AFC-TRADOC-FORSCOM triad of experimentation has established a firm base from which we, as an Army, can leverage new capabilities and begin to change the way we fight. We are informing a larger modernization effort that stretches from the present "Transformation in Contact" effort directed by the Chief of Staff of the Army through the conceptual Army 2030 to the future Army 2040. For HMI, the Army Rapid Capabilities and Critical Technologies Office (RCCTO) will, in the near future, provide two operational prototype HMI sets of equipment to two FORSCOM units for tactics, techniques, and procedures development and lessons learned to inform future requirements.

> ***"The one thing we've really got to offload on the machines is risk. Shame on us if we make first contact [in combat] with a human again. The technology absolutely exists for us to make sure that we don't trade blood for first contact. Let's trade robots for that."***
> ***— GEN James Rainey[2]***

Notes

[1] GEN James Rainey, "Rainey: Army Needs Industry's Help to Transform," Association of the U.S. Army, 27 March, 2024, https://www.ausa.org/news/rainey-army-needs-industrys-help-transform.

[2] GEN James Rainey, "Rainey: Service Needs Help Designing Army of 2040," Association of the U.S. Army, 18 August 2023, https://www.ausa.org/news/rainey-service-needs-help-designing-army-2040.

A robotics and autonomous systems platoon sergeant assembles the Ghost-X UAS during Project Convergence Capstone 4. (Photo by SSG LaShic Patterson)

CPT Timothy A. Young currently serves as the company commander of the U.S. Army's sole experimentation force (EXFOR) infantry company — A Company, 1st Battalion, 29th Infantry Regiment at Fort Moore, GA. He previously served in the 2nd Brigade Combat Team, 25th Infantry Division as a battalion S4, company executive officer, and platoon leader. He is a 2018 graduate of the United States Military Academy at West Point, NY.

LTC (Retired) Mark D. Winstead is a Department of the Army Civilian and combat developer (experimentation) in the Maneuver Battle Lab at Fort Moore. He served 24 years as an Infantry officer with assignments in the U.S. Army Europe and Africa, Central Command, Republic of Korea, U.S. Army Forces Command, and U.S. Army Training and Doctrine Command. He is a 1987 graduate of The Citadel.

Cutting Your Teeth with the Basics:

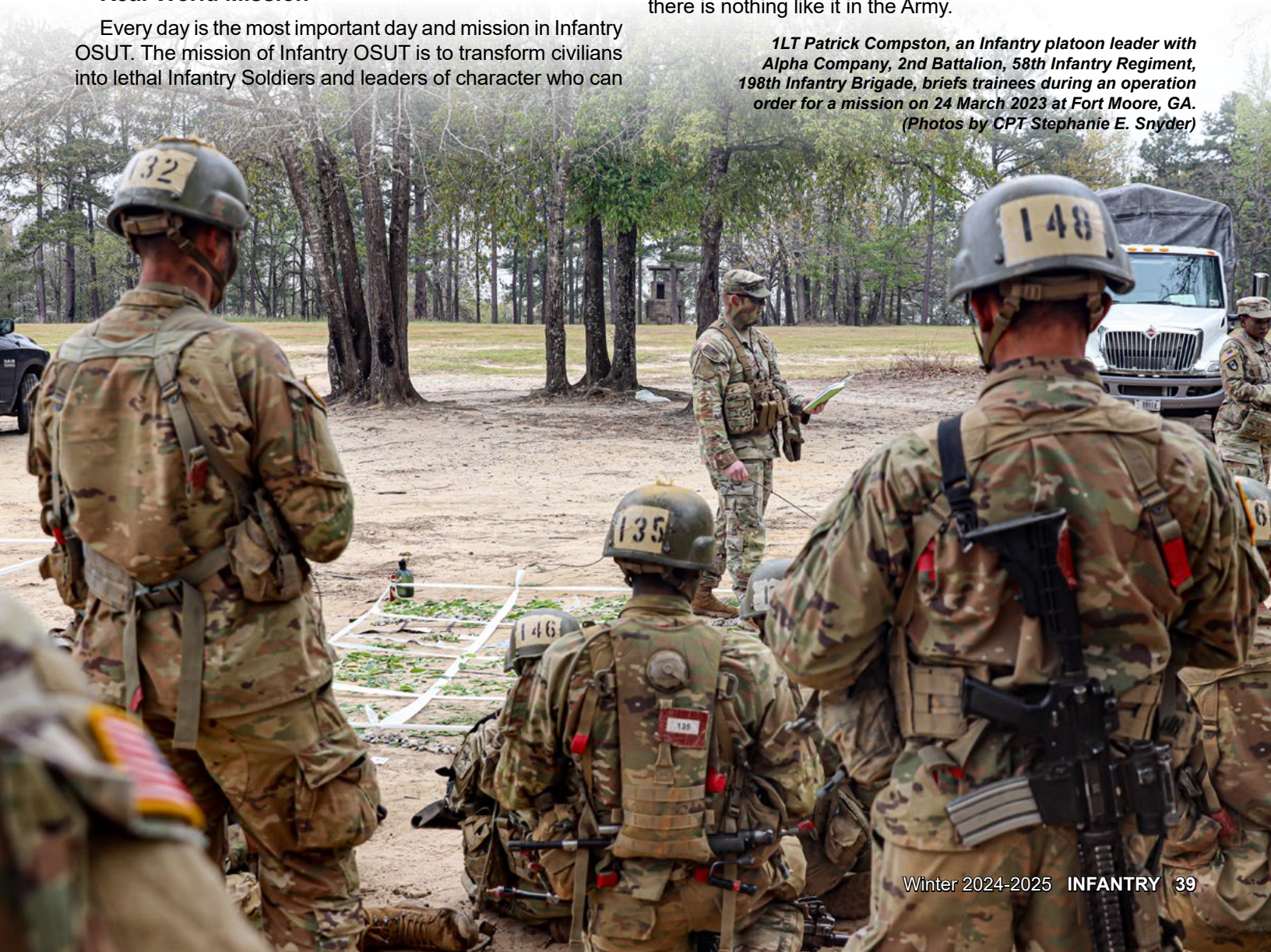
Leadership Opportunities at Infantry OSUT

LTC LARRY KAY

There is a continuous discussion centered on which force is more important, the operating force (U.S. Army Forces Command [FORSCOM]) or the generating force (U.S. Army Training and Doctrine Command [TRADOC]). Truth be told, they are equally critical to the U.S. Army's mission of winning the nation's wars. Both afford Soldiers and leaders incredible opportunities and experiences, and in every leader's career there is a time in which one may need to operate in one or the other. The aim of this article is to describe to Infantry officers, from second lieutenant to major, why they should actively consider assignment to an Infantry One Station Unit Training (OSUT) at Fort Moore, GA.

Real-World Mission

Every day is the most important day and mission in Infantry OSUT. The mission of Infantry OSUT is to transform civilians into lethal Infantry Soldiers and leaders of character who can fight and win the nation's wars. As cadre, leaders stand at the front door of the Army and affect the first impression that tens of thousands of Infantry Soldiers have of the profession. The culture leaders create directly impacts the competence, morale, pride, and diligence of Soldiers and leaders across the branch and Army. This responsibility is significant as leaders will also interact with families and friends of loved ones who've dedicated themselves to serving our nation. For many, completion of Infantry OSUT is and will remain their greatest accomplishment, and as cadre, leaders get to personally witness the pride families and friends have of their sons and daughters, and the gratitude they express to the drill sergeants and cadre for transforming them. It is exceptionally meaningful and formative to experience this firsthand, and there is nothing like it in the Army.



1LT Patrick Compston, an Infantry platoon leader with Alpha Company, 2nd Battalion, 58th Infantry Regiment, 198th Infantry Brigade, briefs trainees during an operation order for a mission on 24 March 2023 at Fort Moore, GA. (Photos by CPT Stephanie E. Snyder)

Brilliant at the Basics

During the 2023 Maneuver Warfighter Conference at Fort Moore, SMA Michael R. Weimer said our Soldiers need to be "brilliant at the basics." The basics originate in Infantry OSUT and at Fort Moore. All Infantry officers attend the Basic Officer Leader Course in 2nd Battalion, 11th Infantry Regiment at Fort Moore. The purpose of that curriculum is to produce Infantry platoon leaders who can lead platoons in brigade combat teams (BCTs) across FORSCOM. However, not all FORSCOM units have the same training trajectory or mission, and not all officers remain platoon leaders throughout the entire time in their first unit of assignment. It's more than likely that newly arriving Infantry officers serve on a staff before or after their platoon leader time — which distances them from the basics as it prepares them to become company commanders in a battalion. Truth be told, there is no greater way to become brilliant at the basics than by becoming a leader in an Infantry OSUT company. Every day, leaders are required to review the doctrine, understand the principles and standards of assigned tasks, and then supervise their proper execution. To do this takes extensive research of the lesson plan or critical task and the subsequent practice of it. Leaders get repetitions of infantry tasks executed to standard here in Infantry OSUT more than anywhere else in the Army. If leaders want to become brilliant at the basics, then they should want to be the one instructing and supervising the basics.

Preparing for Command

The make or break for any Infantry officer is success as a company commander. Company command is often referred to as the greatest job in the Infantry. For leaders, it is the first time a unit's success directly depends on their ability to lead it. Battalion and brigade commanders generally make their assessment on a leader's potential within the first three to six months of command. Put differently, their box check — whether leaders will receive a highly qualified or most qualified evaluation — will likely be determined in the first half of command. In other words, company commanders do not have too much time to figure out what the whole command thing is about — they must be prepared to command a company on day one.

Taking command or even assuming an executive officer position in Infantry OSUT will familiarize leaders on the basics of taking command in a FORSCOM unit. Leaders will learn about training management, the eight-step training model, how to run a company training meeting, command supply discipline, medical and personnel readiness, and how to administer non-judicial punishment and other administrative tools. It is better to learn these systems in Infantry OSUT when the stakes are low, than to learn it in FORSCOM, when the stakes are much higher and the evaluations bear a greater weight on a leader's file and future. Additionally, there is a myth that leaders who spend time in Infantry OSUT will be behind their peers who attend the Maneuver Captains Career Course (MCCC) and immediately return to FORSCOM. On the contrary, leaders will be ahead of them in real experience by having learned how to command a company — and can lead a company on day one of command. Therefore, come to Infantry OSUT to learn how to command a company in FORSCOM.

1LT Shaun Clifford, an Infantry OSUT platoon leader, leads a 10-mile ruck march on 13 January 2024 at Fort Moore.

Developing Leaders and Learning from Leaders

Before assignment to an Infantry OSUT unit, leaders must understand one thing: Drill sergeants train trainees. This central fact drives much of the effort and activity as a leader here in Infantry OSUT. An officer's time, then, is spent preparing the drill sergeants to plan, prepare, and execute the training; to supervise the proper execution of the training in accordance with lesson plans and TRADOC Regulation 350-6, *Enlisted Initial Entry Training Policies and Administration*; and to develop the NCOs in such a way as to prepare them to return to FORSCOM better than they arrived. Many of the drill sergeants will return to FORSCOM to become platoon sergeants. Developing NCOs to lead a FORSCOM platoon and execute large-scale combat operations is critically important, and it provides leaders the opportunity to develop their own leader development methodology while educating themselves on the requisite material. Having this in their "kit bag" before they become a company commander will be crucial to leaders' future success. Equally important is the chance to learn from NCOs, especially the first sergeants, who've recently come from FORSCOM units across the Army. Their observations,

experiences, and knowledge are invaluable, and will help leaders generate self-awareness — molding your personal, leader, and command identities.

Preparing Yourself

Fort Moore is home to more functional schooling than any other post in the military. If leaders are serious about warfighting, then they will take the time to attend one or two functional schools while assigned to an Infantry OSUT unit. I cannot think of any battalion or brigade commander who would not permit an officer to attend the Ranger Course or other schools while assigned here. If necessary, the brigade holistic health and fitness (H2F) team will even work with leaders to develop a physical training (PT) program to prepare them for the more physically demanding courses. Assignment to an Infantry OSUT unit on Fort Moore is an opportunity to "Be Moore" (as the former commanding general of the Maneuver Center of Excellence, LTG Curtis Buzzard, used to say). In addition, whether your assignment to Infantry OSUT occurs before or after MCCC, Columbus State University will work with you to pursue a master's degree in a variety of disciplines.

In sum, an assignment in an Infantry OSUT unit at Fort Moore is a rewarding opportunity for a variety of reasons. First, it is a real-world mission to transform civilians to Infantry Soldiers, and seeing the pride of families whose sons and daughters complete this transformation is unforgettable and fulfilling. Daily, leaders will observe and participate in basic combat training and infantry skills training and testing, after which they will naturally master the fundamentals. Furthermore, command in Infantry OSUT is a hefty responsibility, but it is also the best opportunity for leaders to cut their teeth and prepare for future commands in FORSCOM units. Leaders will have time to develop themselves and others while learning from incredibly professional and experienced NCOs. Finally, leaders will have a greater opportunity to attend functional schools during their assignment in an Infantry OSUT than likely any other time in your career — take the time to prepare for the future. An assignment in an Infantry OSUT is above all else a vital element of the Army's mission to win the nation's wars. However, whether in TRADOC or FORSCOM, it is also the greatest place for leaders to prepare to do this.

1LT Blake Walters, an Infantry OSUT platoon leader, mentors a trainee during the buddy team tactics live-fire exercise on 3 April 2024 at Fort Moore.

LTC Larry Kay currently commands 2nd Battalion, 54th Infantry Regiment, 198th Infantry Training Brigade, at Fort Moore, GA. He previously served as the deputy chief of staff and assistant chief of staff, G5 – Chief of Plans of the 3rd Infantry Division at Fort Stewart, GA. He is the author of "Lessons from Large-Scale Combat Operations, Parts I-III" on *From The Green Notebook*, and "Putting The Enemy Between a Rock and a Hard Place: Multi-Domain Operations in Practice" on *Modern War Institute*.

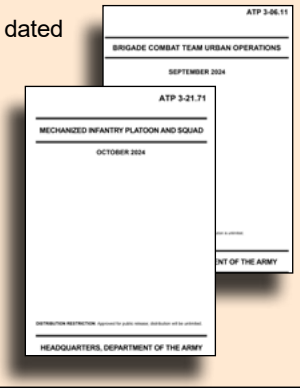
Updated Army Techniques Publications Released

The updated **Army Techniques Publication (ATP) 3-06.11**, *Brigade Combat Team Urban Operations,* is dated September 2024. The ATP provides doctrine on combined arms missions, tasks, and activities executed by brigade combat teams (BCTs), their subordinate and supporting elements, and associated enablers in the urban environment.

https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN42031-ATP_3-06.11-000-WEB-2.pdf

ATP 3-21.71, *Mechanized Infantry Platoon and Squad,* is dated October 2024. ATP 3-21.71 provides techniques, and procedures for the employment of the Bradley-equipped mechanized Infantry platoon and squads in multidomain operations.

https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN42245-3-21.71-000-WEB-2.pdf



Breaking through the Dragon's Teeth:

Greywolf Brigade's Lessons Learned at NTC during Rotation 24-06

COL EDWARD ARNTSON
MAJ EDWARD OLSON
MAJ ERIC YOST
MAJ JACOB DONALDSON

The 3rd Armored Brigade Combat Team (ABCT), 1st Cavalry Division (3/1 CD) conducted National Training Center (NTC) Rotation 24-06 from 30 March to 12 April 2024. The successful completion of the 14-day exercise included constant contact with opposing forces (OPFOR), extensive expansion of obstacle efforts to increase the complexity of OPFOR defenses, and engagements spanning more than 170 kilometers of offensive and defensive operations. This enabled the brigade to integrate enablers to effect in deep, close, and consolidation areas and validated the brigade's ability to execute its mission-essential task list (METL) in modern large-scale combat operations (LSCO). This article seeks to capture best practices and provide recommendations for organizational change across the realms of doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P).[1]

The Greywolf Brigade's Armored Cavalry Troop provides overwatch during offensive operations during National Training Center Rotation 24-06 on 1 April 2024 at Fort Irwin, CA.
(Photo by SGT Ryan Gosselin)

Introduction — Operational Environment at the NTC 24-06

Enemy: 3/1 CD "Greywolf" fought world-class OPFOR in the crucible of NTC's all-weather desert environment. The 11th Armored Cavalry Regiment (ACR) "Blackhorse" provided a simulated armored enemy threat, enabled by constant unmanned aerial system (UAS) collection and higher echelon information operations, Special Forces, and fires capabilities against the Greywolf Brigade from the start of reception, staging, onward movement, and integration (RSOI) through the completion of the rotation. Blackhorse elements probed and gathered information against 3/1 CD with constant air- and ground-based collection and electronic warfare capabilities. They fought to change the environment through obstacle efforts while 11th ACR layered fires and collection effects to augment direct fire engagement with indirect fire; chemical, biological, radiological, or nuclear (CBRN); and air-based capabilities.

Greywolf troopers assault through the dragon's teeth obstacle belt with a combined arms breach during NTC Rotation 24-06 (Photo by SGT Quincy Adams)

Friendly - Ground Combat-Focused Brigade Combat Team (BCT): 3/1 CD fought NTC 24-06 as a BCT closer to templated Army 2030-2040 design descriptions of a close combat force: equipped with an armored cavalry troop formation rather than an armored cavalry squadron and critical ground-force enablers from across the Total Army as part of the rotation. For information operations, this included Alpha Company, 490th Civil Affairs Battalion from the Texas National Guard and the 305th Psychological Operations Company from the Army Reserve. For protection, this included Delta Battery, 6th Battalion, 56th Air Defense Artillery (ADA) Regiment for short-range air defense (SHORAD) and counter-UAS (C-UAS). The 526th Engineer Construction Company from the 20th Engineer Brigade provided enhanced survivability and counter-mobility. The 510th Combat Engineer Company-Armored from the 36th Engineer Brigade provided enhanced mobility and counter-mobility. A platoon from the 401st Military Police Company, 89th Military Police Brigade provided additional flexibility to support traffic control as well as security during the brigade's ongoing rear area consolidation efforts.

Coordination for Critical Division Capabilities

In keeping with Army efforts to modernize, NTC's 52nd Infantry Division (ID) provided intelligence, fires, and Army Aviation at echelon above brigade levels that operated in a general support role for 3/1 CD. The 52nd ID operated with communications-discipline windows to reduce high-risk signatures to command-and-control (C2) nodes. This required 3/1 CD to drive a disciplined battle rhythm that focused on enabling operations with various targeting inputs to best set a permissive battlefield architecture: integrating effects from intelligence collection efforts and coverage for range or capability gaps in counter-fire radar, close air support, Multiple Launch Rocket System (MLRS) fires, and attacks by Army Aviation in and out of contact.

Adapting for Success in LSCO

Adapting to operational requirements for LSCO, 3/1 CD employed a distributed model to enhance survivability across brigade-level C2 and sustainment architectures. The brigade support battalion (BSB) included the brigade's reduced-size administrative and logistics center (ALOC) and employed a split-node concept of tactical command posts and forward logistics elements (FLEs). The brigade's C2 included a low-signature mobile command group (MCG), reduced-signature main command post (MCP), ALOC integrated with the BSB, and mission support site (MSS) operating from over the horizon. Key to the architecture was distribution for survivability paired with actioning elements. This provided the commander a flexible C2 architecture that increased survivability, enhanced connectivity, and provided the ability to use higher-level capabilities. It also afforded the brigade redundancy during transitions without a loss in analytical or targeting efforts.

The MCG — led by the brigade S3 — comprised three to four vehicles, using primarily Joint Battle Command-Platform (JBC-P) and frequency modulation (FM) and tying into existing command nodes if access to upper tactical internet (TI) was essential.

The MCP — led by the brigade executive officer, S-2, and fire support officer (FSO) — was built around a distributed

A dozer crew from 526th Engineer Construction Company enables survivability operations during defensive operations at NTC. (Photo by PFC Nathaniel W. Garrett)

Greywolf's 2nd Battalion, 82nd Field Artillery Regiment provides artillery fires in support of operations during NTC Rotation 24-06. (Photo by PFC Nathaniel W. Garrett)

site with sub nodes: strike cell-style current operations, fires, and intelligence center (COIC) and integrated plans cell with all warfighting functions present, plus enabling the brigade signal company communications hub. The MCP maintained upper TI, JBC-P, FM, and high frequency (HF) along with critical mission command information systems (MCIS) — the Advanced Field Artillery Tactical Data System (AFATDS), Air and Missile Defense Workstation (AMDWS), Tactical Airspace Integration System (TAIS), and Command Post Computing Environment (CPCE) — to enable rapid execution and direction of brigade-level effects. Constant coordination with the ALOC and sustainment architecture led to heightened endurance and flexibility to adapt to the evolving needs of the fight.

The MSS — led by the brigade fusion chief and manned by the brigade intelligence support element (BISE), battalion liaisons (LNOs), and field artillery intelligence officers (FAIOs) — supported constant connectivity and continuity, operating over the horizon and tying into the COIC and the rest of the brigade through upper TI and JBC-P. This provided constant access and distribution of reports and intelligence from the battalions and division. The MSS-layered intelligence collection capabilities combined with battlefield reporting to provide an accurate assessment of enemy composition, disposition, and strength. Critically, the team integrated intelligence layering to cross-cue assets such as UAS, ground moving target indication (GMTI), and signals intelligence (SIGINT) with the Joint Automated Deep Operations Coordination System (JADOCS) and AFATDS. This provided the MSS a 24-hour capability to engage high-payoff targets with brigade assets or coordinate for division support. These targeting efforts across command nodes, augmented by constant access to assets, resulted in the highest recent rotational accuracy of employment and rate of destruction of enemy critical capabilities.

Key Recommendations

The Greywolf Brigade offers the following recommendations to existing and future brigade combat team (BCT) structures to improve their ability to fight a lethal kill chain, keep pace planning with a division headquarters, sustain at the speed of LSCO, and enable the BCT to protect its critical capabilities.

Update doctrine to reflect distribution of critical C2 and sustainment nodes. The employment of an intelligence and fires-focused architecture, enabled by a flexible sustainment design, is critical to success in LSCO. Disciplined distribution of command and sustainment nodes is essential for success, and 3/1 CD took advantage of opportunities to iterate C2 designs and practices throughout its progression to NTC 24-06. Updates are essential to sustainment and C2 doctrine to communicate how BCTs can and would employ both the necessary structures and practices for success. Updates in C2 doctrine must include command post architecture — personnel and equipment lists of distributed command nodes that include current and projected upper and lower TI communications and MCIS placement. Sustainment doctrine must account for the threat of constant UAS observation and indirect threats. This must include methods for distribution and management of sustainment clusters for survivability. The need to set up distributed, redundant classes of supply requires updated methods and systems for predicting logistical requirements to build sustainment enterprises that can efficiently move essential supplies from sustainment clusters to points of need. Doctrine must reflect the need for mobile logistics nodes and communicate how coalescing events, such as establishing logistics resupply points, present significant risks to force and mission as they provide high impact opportunities for enemy fires and intelligence, surveillance, and reconnaissance (ISR).

The Greywolf Brigade utilized a terrain-masked, reduced signature command post during NTC Rotation 24-06. (Photo courtesy of authors)

Soldiers assigned to Greywolf's 215th Brigade Support Battalion conduct logistics package operations on 29 March 2024 to sustain the fight during NTC Rotation 24-06. (Photo by SPC Macaydan Hawkins)

Retain key operational integrators within the BCT; elevate the maneuver planner to major and intelligence collection manager to captain. As the Army shifts capabilities to the division level and higher, trained and experienced integrators of those capabilities become increasingly important. Division or higher staffs can quickly outpace the planning and coordination efforts of BCTs during LSCO, especially if BCTs have fewer and more junior personnel in critical integrator positions in intelligence, fires, and protection. Engagements at NTC often lasted as long as 15 hours, preventing traditional planning cycles at echelons below division. As BCTs disperse to increase survivability, key intellectual horsepower is essential to enabling success of a decentralized organization. Experts at key nodes are essential, and as such, BCTs at the brigade level need to have a major billet for a maneuver planner and add a position for a Military Intelligence captain with a Q7 additional skill identifier (ASI) — information collection planner. BCTs must retain key personnel with appropriate experience to integrate warfighting functions in LSCO: a major serving as the assistant brigade engineer (ABE), intelligence warrant officers of the BISE in the rank of chief warrant officer (CW) 2, air defense airspace management/brigade aviation element (ADAM/BAE) warrant officers in the rank of CW2, and brigade fire support element (FSE) warrant officers in the rank of CW3.

Elevate the BSB S-3 to major in ABCTs to better equip the BSB to fight distributed nodes. In the distributed sustainment architecture, sustainment battalions in BCTs have a limited number of senior leaders, compared to the complexity of their requirements, to effectively coordinate the sustainment of an ABCT. The Greywolf Brigade fought a distributed sustainment node architecture, employing a split-node concept of tactical command posts and forward logistics elements with distribution of its classes of supply to reduce signature and impact of loss due to persistent threats from drones, fires, and deep reconnaissance or disruption formations. 3/1 CD received logistic packages (LOGPACs) from the division sustainment support battalion once daily and drove to execute LOGPAC operations twice daily to all companies, troops, and batteries to enable the endurance of the brigade. Improving the BSB's survival increased management responsibilities for reception and distribution of supplies to internally distributed nodes from higher echelon sustainment. Simultaneously, the BSB operations team coordinated BCT support and protection operations against threats in the BCT sustainment footprint. BSBs and BCTs must have the flexibility to adapt their sustainment architecture to complex operational environments to increase survivability. To enable their success, they need experienced leadership to enable the BCT to have endurance in its C2 to be successful in LSCO.

Improve BCT protection capabilities and update our approach to suppress, obscure, secure, reduce, and assault (SOSRA) with capabilities across the dimensions and the electromagnetic spectrum. The modern battlefield's collection and observation environment has fundamentally increased in threat. The NTC OPFOR replicated conditions seen in Ukraine, Nagorno-Karabakh, and other modern conflicts — specifically, UAS proliferation and ubiquitous electronic warfare (EW) capabilities on the battlefield. The OPFOR tied these capabilities with surface- and air-based threats at what they considered critical moments in a battle — such as the conduct of the breach due to the exquisite nature of engineering platforms in a high-profile role on the battlefield. 3/1 CD lacked organic capabilities to apply a multi-spectral and multi-dimensional approach to protection operations or the execution of SOSRA. Greywolf proved BCTs own the maneuver and fires capabilities to employ smoke and suppression to prevent ground-based observation and interdiction of the breach site. However, BCTs lack the organic ability to provide three-dimensional depth to reduce overhead collection from manned and unmanned air threats or reduce electronic-based collection of signal traffic during C2 of the mission. The proliferation of effective and inexpensive EW and unmanned drones, such as those seen swarming on the battlefields of Ukraine, require protection capabilities down to the company level.

NTC is training our BCTs for what we can expect if the Army does not equip and train for protection efforts. As one leader asked, "When will the artillery stop?" "It doesn't," replied the battalion's senior observer-coach-trainer.

It is critical that passive protection measures, such as camouflage systems designed to support every platform, are basic issue items for every vehicle. 3/1 CD was able to augment its capabilities to conduct counter-air and drone operations with support from 6-56 ADA during the rotation, but this was not enough to fully enable battalions to protect all critical operations or command posts. Recent conflicts have shown failures to protect C2 nodes and breaches or bridging operations; the Army must update its SOSRA doctrine, equipment, and personnel capabilities within BCTs to include electronic protection, C-UAS, and anti-air capabilities. Every BCT formation down to the company level must have active protection capabilities to enable operations and the successful execution of a combined arms breach. These systems must be employable across organizational type using the tenets of SOSRA modernized to defeat a broad range of the threats, or we face developing a two-dimensionally focused force for a constant three-dimensional fight.

In Closing

Leaving the crucible experience of any combat training center rotation enables Soldiers to feel accomplished, capable, and prepared for the next major mission. The Greywolf Brigade is now ready, currently serving on a prepared-to-deploy status and looking forward to its NTC Rotation 25-06. It will be prepared for deployment having used the training year and next rotation to take advantage and build on hard-earned lessons. We implore Army senior leaders to consider these recommendations as we execute ongoing transformation efforts across the Army to fight and win in LSCO.

Notes

[1] The Department of Defense uses its definition in the Joint Capabilities Integration Development System process as the framework to design administrative changes and acquisition to efforts fill capability requirements to accomplish a mission.

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Troopers in the 3rd Armored Brigade Combat Team, 1st Cavalry Division conduct suppress, obscure, secure, reduce, and assault operations during a combined arms breach as part of NTC Rotation 24-06. (Photo by PFC Nathaniel W. Garrett)

Rate of Fire Against Men:

A Quantitative Assessment of Fire Team Lethality

MAJ TONY FORMICA
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Live-fire ranges must deliberately measure marksmanship if they are to achieve their purpose of training Soldiers and junior leaders in the skills needed to win close combat engagements. Training Circular 7-9, *Infantry Live-Fire Training*, describes marksmanship as "one of the most important" areas that live-fire exercises (LFXs) train; we argue that it is the most important, full stop.[1] Nothing else in an LFX matters — no other training objectives have any validity if the rounds Soldiers fire do not eliminate their intended targets.

A Soldier in the 5th Battalion, 20th Infantry Regiment aims his weapons during a training exercise. (Photo courtesy of the 1-2 Stryker Brigade Combat Team Facebook page)

Fire in All of Its Forms

Our view might be stated bluntly, but it should not be controversial. Seasoned company-grade leaders in the U.S. Army tend to embrace, either consciously or unconsciously, the concept best articulated by S.L.A. Marshall that "…fire in good volume, accurately delivered and steadily maintained" wins wars; the purpose of every other military line of effort in conflict is to allow a Soldier to place a well-aimed shot at his enemy.[2] One of the marks of effective infantry leaders is their ability to read a tactical scenario and direct rates of fire appropriately, deliberately prioritizing precision or volume as the situation dictates but always confident that bullets are landing where Soldiers are aiming.

And yet, how often do LFX after action reviews (AARs) focus on marksmanship in a manner that reflects its centrality to warfighting? How often does our assessment of leader performance during LFXs focus on their ability to truly, effectively control rates of fire? Our combined 35 years of infantry experience suggest the answer to these questions is "rarely." Picture the generic LFX AAR taking place on a berm at the end of a lane. Vague terms reflecting important training objectives that are hard to quantify, such as "violence of action" and "suppression," probably take top billing as discussion items but do not provide the executing unit with concrete, measurable feedback. If marksmanship is covered in this AAR, it is usually only in reference to how quickly movable targets went down after popping up; scant consideration is given to whether those targets received a shot to their vital organs or to their shoulders before going down.

Relocate this AAR so that it takes place not at the end of the lane but the beginning. The senior trainer starts the AAR by holding up the first target silhouette that the Soldiers engaged when they started the lane and asks a simple question: "Did you kill this target?" This question is easy to answer: the plurality of bullet holes either are or are not in the target's critical zone. Similarly, because marksmanship has now been made the first and most prominent focus item in the AAR, any follow-on conversation about violence of action, suppression, or other prioritized training objectives will revolve around the central, inescapable, quantifiable question of whether the executing unit won the first firefight.

We designed a controlled experiment in which we received standardized LFX feedback from our entire formation. The results were both harrowing and illuminating: One in eight rounds fired at a target hit that target's critical zone. The immediate conclusion we drew from our data was that we needed to double down on emphasizing marksmanship at every opportunity. However, the second, more subtle inference we were able to make and subsequently underscore is the distinction between volume of fire and precision of fire — and how, to return to our opening sentence, failing to

A paratrooper from 2nd Battalion, 503rd Infantry Regiment (Airborne) engages a target during a team live-fire exercise at the Rukla Training Area in Lithuania. (Photos courtesy of authors)

measure marksmanship in LFXs risks training the former at the expense of the latter, to the detriment of units' combat effectiveness.

Background and Assessment Methodology: Taking a Reasonably Accurate Measurement

Our unit ran a team leader academy as we entered a period in our operational tempo where we were absorbing new Soldiers and junior leaders. We made marksmanship — the ability to not just hit a target but to hit it in its critical zone, thereby eliminating the presented threat — the unifying theme of our academy. Our unit's definition of marksmanship was explicit and well-publicized: direct fires hitting the vital organs of a target (i.e., the critical zone). We intended to measure both our Soldiers' marksmanship and our team leaders' proficiency in employing their fire teams over the course of two iterations of team LFXs. Both iterations would occur on the same piece of terrain against the same enemy problem set.

This degree of control and centralization over something as routine as team LFXs might strike some readers as overkill. We agree in principle but not in practice: We wanted a clear-eyed assessment of our Soldiers' marksmanship under something approximating combat conditions well before we entered our next intensive training cycle. The team leader academy was our first and best opportunity outside of the staid, laboratory-like conditions of the flat range to accurately gauge this. Measuring marksmanship under combat-like conditions required that all fire teams were evaluated against the same standards on the same range. Moreover, we wanted to teach our most junior leaders early on that the first and last measure of their effectiveness was how well their Soldiers' aim placed rounds on a target's critical zone.

In both team live-fire iterations (hereafter referred to as TM LFX I and TM LFX II), a fire team faced five E-type silhouettes guarding a constructed bunker; each of the silhouettes had a paper plate stapled over the target's center of mass. Range rehabilitation teams recovered the plates at the end of every LFX iteration and submitted them to the range officer in charge (OIC). The OIC added up all the hits that were on all the plates, representing the total number of hits to the critical zone that the fire team achieved during its execution of the lane. The OIC then counted all the rounds the team turned in at the end of their iteration and subtracted this number from the total number of rounds the team had been issued. The resulting figure was the total number of rounds the team had fired. Dividing the total number of plate hits (i.e., lethal hits) by the total number of rounds fired produced a marksmanship percentage. This math is demonstrated below for a notional iteration:

- Rounds on plate: 16
- Rounds issued: 190
- Rounds turned in: 42
- Rounds issued - rounds turned in = rounds fired
    - 190 - 42 = 148 rounds fired in this iteration
- Rounds on plate/rounds fired = marksmanship percentage
    - 16/148 = 10.81 percent of rounds fired hit the critical zone

TM LFX I had fire teams moving from an assault position directly onto and executing the range described above during both day and night conditions. Teams were given a week to retrain on tasks identified and prioritized by their leadership before executing TM LFX II. TM LFX II occurred on the exact same range and under the exact same conditions as TM LFX I, with an important caveat: Fire teams first

executed an estimated 6-kilometer movement under load through the training area, during which they were assessed on land navigation techniques, their ability to react to indirect fire, and their ability to treat and evacuate a casualty en route to the LFX range. TM LFX II did not feature a night iteration due to limited land availability and competing unit priorities.

Results: Massing Fire Whenever Ordered

We compiled the results of 45 fire teams during the day iteration of TM LFX I. The average daytime marksmanship percentage across the formation was 10.15 percent.[3] The night iteration of TM LFX I halved these marksmanship percentages: The unit average at night was 5.52 percent.[4] Marksmanship percentages increased after TM LFX II, though not in a statistically significant fashion. Here, with a total of 39 logged fire teams, the battalion average for day iterations was 16.69 percent, with a maximum marksmanship percentage of 41 percent and a minimum of 2.31 percent.[5]

The net unit marksmanship percentage was 13.32 percent once we combined the daytime results from TM LFXs I and II. We are confident that these results were mathematically representative of our formation's marksmanship at the time as measured by total hits in the critical zone out of all rounds fired.[6] A scatter plot showing the relationship between team marksmanship percentages and the total number of rounds those teams expended, meanwhile, revealed an interesting pattern: the more rounds a fire team expended during their iteration, the lower their marksmanship percentage tended to be. This scatter plot is depicted in Figure 1.

A binomial regression indicated a statistically significant inverse relationship between rounds fired and resultant marksmanship percentages.[7] The firing of a single round reduced a team's marksmanship percentage by .02 percent on average, which becomes important once teams begin expending hundreds of rounds. Figure 1 shows this relationship graphically: The fire teams that achieved the highest marksmanship percentages expended 150 rounds on average. By comparison, fire teams which expended more than 300 rounds rarely achieved a marksmanship percentage higher than 15 percent.

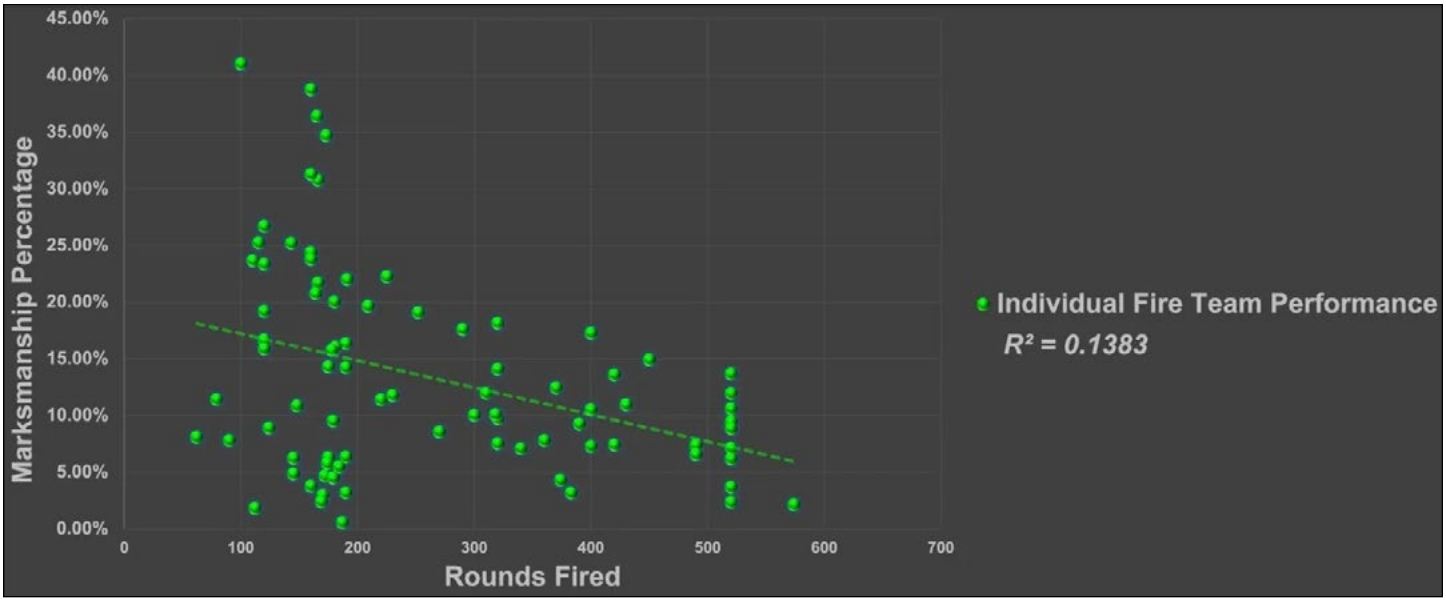
Finally, our model suggested we could predict 13.83 percent of a team's marksmanship percentage simply by knowing how many rounds they fired.[8] Simply put, a fire team which controlled its rates of fire such that they could accurately engage targets with each round returned a much higher marksmanship score in nearly every case. Fire teams with a common level of training and experience prior to the LFX returned strikingly similar marksmanship percentages, leading us to posit that the determining factor in their performance was their fire control as expressed by rounds expended.

Interpretation and Discussion: Fire in Good Volume, Accurately Delivered

It is important to remember that the percentages above reflect our fire teams' marksmanship as we defined it: a shot to the vital organs, not the shoulder. We wanted our team leaders to wonder if they truly would have made it to the bunker if the only thing their Soldiers reliably shot were non-vital points on enemy targets. It is also important to remember that our results represent the performance of a fire team, not an individual. Fire teams contain the M249 Squad Automatic Weapon (SAW), which is explicitly designed to increase the team's volume of fire.

Our results were still surprising. A unit marksmanship percentage of 13.32 percent means that one out of every eight rounds fired would kill its intended target. The immediate conclusion to draw was that we needed an increased focus on marksmanship — and indeed, the subsequent improvement in marksmanship percentages in TM LFX II, while not statistically significant, strongly suggests that having leaders

Figure 1 — Rounds Fired and Fire Team Marksmanship



ensure their Soldiers take the extra half-second to acquire a good sight picture has a marked effect on marksmanship performance on a LFX range. This is especially noteworthy because fire teams executed TM LFX II fundamentally more tired than they had been in TM LFX I, coming to the range after hours of dismounted movement at night through the wooded terrain of the training area.

But the more subtle inference to make from our data is the distinction and relationship between precision of fire and volume of fire. If, as our data strongly suggests, marksmanship is inversely proportional to the number of rounds fired, then the effectiveness of direct fire has more to do with precision than volume. These two aspects of fire control are not mutually exclusive: Both have their place in a gunfight, and one of the key roles of a tactical leader is knowing when to emphasize one over the other. However, we argue that both volume and precision are functions of relative skill, and that proficiency in the latter enables the former. A Soldier who has greater weapons training and experience can achieve precision with each shot faster than a less-trained peer, thus increasing his volume of fire.

The suggestion that precision is more important than and enables volume of fire is another viewpoint that should not be controversial, until one considers just how many Army leaders implicitly believe that fire superiority and suppression mean increasing the volume of fire without regard for precision. Our data indicates that this mentality is counterproductive if leaders are not supremely confident that every shot their Soldiers fire is aimed with the intent to kill. Absent this certainty, high volumes of fire — lots of loud noises in an engagement, the auditory cues which many team leaders are trained to use to understand the rhythm and progress of a fight — might signal that a maneuver element is wasting valuable resources and exposing their position to create only the impression of suppression.

Presume, however, that our emphasis on precision is not controversial. We are still left with the question we asked at the beginning of this article: How often do our LFXs, in both their design and assessment, allow us to evaluate unit marksmanship and junior leader fire control?

Conclusion: Field Maneuvers Cannot Approximate Combat… But You Should Still Try

Professionals with more than a handful of years of experience have all lived this reality: Our unit begins an intensive training cycle with a series of flat qualification ranges before beginning collective training gateways. We rapidly progress from fire team, to squad, to platoon live fires, usually culminating in a company LFX at a combat training center. Each step up the Integrated Weapons Training Strategy (IWTS) ladder brings more and increasingly complicated training objectives, and we tell ourselves that our formations are becoming better at warfighting because they are negotiating those IWTS wickets in a linear fashion that is easy to confuse with progress.

Rarely, if ever, do we circle back to reexamine the foundations of that IWTS ladder and validate that it remains on solid ground: Rarely do we assess our formations' marksmanship with the same rigor we applied on the flat range, even as our LFXs' increasing complexity brings them closer to simulating combat. There are a host of sources of this oversight, and most of them are benign if not well-intentioned. At base, however, our experience tells us that units which do not meaningfully inspect marksmanship in their LFXs do so for one main reason: They do not think they need to.

This is almost always an unconscious omission, bore on the unexamined assumption that a passing score on a day and night qualification table implies that a Soldier will deliver accurate and lethal fires to any target they aim at. It is also a classic case of the illusion of understanding, the flawed belief that we accurately comprehend the past — which most of us do not — and so we can meaningfully anticipate and control the future, which most of us cannot.[9] It manifests in the faulty logic which posits that because our unit just did marksmanship density, we do not need to assess marksmanship during team LFXs because our fire teams are all qualified.

Paratroopers from 2-503rd IN engage opposing forces during Exercise Iron Sword 16 in Pabrade Training Area, Lithuania.

The results from our team LFXs should cause professionals to reexamine that logic chain if they notice they have ever succumbed to it themselves. The risk of executing an LFX that does not involve an inspectable, measurable assessment of marksmanship proficiency is training volume of fire without precision — and the risk of training volume without precision is that Soldiers will not win the first firefight. Senior trainers should be constantly aiming to achieve both outcomes while understanding that precision enables effective volume.

Many readers will likely remember a number if they recall anything from this article: "one in eight," "13.32 percent," and so forth. We would like to emphasize two points here. The first is that our results reflected a thin slice of our formation at a specific time in its life cycle. They are specific and only apply to that unit at that time and have no bearing on either that unit today or, more generally, like units across the Army. The second is that the numbers and statistics were only useful to us in helping us truly understand ourselves — and that understanding was only possible because we decided that marksmanship was something worth measuring in concrete, quantifiable, incontestable terms.

There are no barriers to entry that would prevent a conventional Army unit from doing what we did. The backside support requirements that allowed us to make marksmanship the centerpiece of our team LFX series were minimal: a modest outlay for paper plates, a data collection table, and junior leaders — OICs and range safety officers — who understood the value of the data they were entrusted with collecting. The math that allowed us to see ourselves, arguably the most intimidating component of our study, took less than 20 minutes to execute, including both data entry and running a few lines of code in a statistical software package. Planning and forethought allowed us to ensure that marksmanship formed the base of all Soldier and leader assessment in our LFX series.

We would like to think that the benefits of our approach to our formation outlasted our tenure. Junior leaders have seen how easy it is to both set up and conduct an AAR of an LFX that measures marksmanship, and to leverage evidence in discussions about violence of action or the efficacy of suppression. Soldiers have seen that their marksmanship always matters and is always assessable, especially outside of the laboratory conditions of the flat range. More seasoned leaders have learned how to assess the unit's training glidepath and adjust it as necessary based on continual range feedback. A few staff officers were tortured to remember the basic statistics skills they acquired in their freshmen or sophomore years of undergraduate studies and apply those skills to their profession. Our experiment will have more than proved its worth if even one of these cohorts remembers these experiences as they progress through their careers.

Notes

[1] Training Circular 7-9, *Infantry Live-Fire Training*, April 2014, 1-2.

The risk of executing an LFX that does not involve an inspectable, measurable assessment of marksmanship proficiency is training volume of fire without precision — and the risk of training volume without precision is that Soldiers will not win the first firefight.

[2] S.L.A. Marshall, *Men Against Fire* (Norman, OK: University of Oklahoma Press, 2000), 66-67. Authors' Note: The section subheadings used throughout this article are all pulled from *Men Against Fire* as an homage to Marshall: His statistics might have been fabricated, along with much of his biography, but we thoroughly agree with his central premise that accurate direct fires are at the heart of warfare.

[3] The maximum marksmanship percentage of TM LFX I day was 36.36 percent, and the minimum was 1.79 percent; the median marksmanship percentage was 10.87 percent, and the mode was 7.8 percent. A single standard deviation was 9 percent.

[4] TM LFX I Night maximum = 15.52 percent; TM LFX I Night minimum = 0 percent.

[5] TM LFX II Day maximum = 41 percent; TM LFX II Day minimum = 2.31 percent.

[6] Our sample size of 84 fire teams is large enough that we can be confident it closely represents the performance of any of our fire teams on this range. A sample size of 30 is generally considered sufficient for standard statistical analysis and interpretation in social sciences, although it might not be large enough for precise inferences. This accepted standard derives from the Central Limit Theorem, which states that a large enough random sampling — usually containing at least 30 observations — will produce an approximately normal (i.e., bell-shaped) distribution, and the Law of Large Numbers, which states that larger and larger random samples tend to produce results that are closer and closer to the true population's descriptive statistics — in this case, the true marksmanship percentage of the unit. See Alan Agresti, *Statistical Methods for the Social Sciences* (Fifth Edition) (Boston: Pearson Education, Inc., 2018), 88-100.

[7] These results were significant at the .001 level, meaning that there is at least a 1-in-1000 chance of our results being due to random chance, i.e., that there was no relationship between rounds fired and marksmanship percentage. This result is as rigorous as statistical significance gets in the social sciences.

[8] R2 = 13.83; R2 measures how much of the proportion of all variation between the dependent variable (lethality percentage) is explained by the independent variable(s) (rounds fired). A simpler way of understanding this concept is to say that R2 allows us to see how much of a fire team's marksmanship can be explained just by how many rounds they fired. See Agresti, 317.

[9] Daniel Kahneman, *Thinking Fast and Slow* (NY: Farrar, Straus, and Giroux, 2011), 201.

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A paratrooper assigned to the 82nd Airborne Division directs supporting fire during a live-fire exercise at Fort Liberty, NC, on 7 May 2024. (Photo by MSG Ashley Huiras)

Boredom and Terror: Fighting at Night

MAJ LUCAS ZILLER

Nighttime operations introduce increased friction into an already confusing and frightening environment. To paraphrase the adage, operating at night means long periods of tedious boredom punctuated by moments of sheer terror. When coupled with long movements, scarce sustainment, and unreliable communication, tactical actions transform from easily executed, simple battle drills into difficult and complex endeavors. Soldiers must train and prepare for those long periods of boredom just as much as those moments of sheer terror; otherwise, the stress induced by night operations may render them combat ineffective. Equipment must enable units to reduce and overcome friction while imposing the same on the enemy. This article critically examines the challenges of night operations, drawing insights from Ukrainian and Russian experiences during their ongoing conflict. These experiences, when applied to the U.S. Army's training and materiel approaches, can significantly enhance understanding and effectiveness of operating at night in a large-scale combat operations (LSCO) environment.

Aspects of Ukrainian and Russian approaches to LSCO night operations exemplify John Boyd's four critical qualities for successful operations: initiative, harmony, variety, and rapidity. Their actions highlight the importance of harmony and initiative in fostering a cohesive and aggressive effort, which reduces operational friction. Conversely, although they also have the potential to amplify friction, the conditions of variety and rapidity are essential for deception, unpredictability, and managing changing or unforeseen circumstances. Without a balanced integration of all four qualities, operational effectiveness is compromised. Too much focus on variety and rapidity without sufficient harmony and initiative leads to confusion, disorder, and chaos, while prioritizing harmony and initiative without adequate variety and rapidity results in rigid uniformity, predictability, and a lack of adaptability.[1] These qualities are relevant at all levels of war, from the lower tactical through the strategic. Further, they are essential during night operations due to the environment's tendency to impose additional friction.

This article delves into Boyd's four critical qualities as well as other factors, such as the importance of competency gained through realistic night training and the significant role of emerging capabilities (e.g., massed drones). By examining these aspects, I hope to empower the U.S. Army's training and materiel approaches and enhance its capacity for night operations. Operating at night presents risks and opportunities, which can be overcome and taken advantage of using technological means and competencies. The goal is to view the night as a time of confidence and control, not confusion and fear. This is essential as we prepare the Army of 2030-2040, ensuring it is well equipped and trained to own the night.

Lessons from the Russian-Ukrainian War

The Russian-Ukrainian War, which can rightly be described as beginning in February 2014 with Russia's invasion and annexation of Crimea, provides a rich source of lessons for night operations. This article focuses on the actions after Russia's February 2022 full-scale invasion, discussing differing phases of the war from that point. The immediate activities associated with the invasion occurred from February to April 2022, when lines were fluid and Russia's likely overriding military objective was victory through the seizure of Ukraine's political capital, Kyiv. This phase presented many lessons regarding night operations within a fast-paced, maneuver-centric battlespace. Upon its failure to seize Kyiv, Russia shifted to an operational approach centered on seizing territory in Ukraine's southeast and found some success from April through August 2022. This continued until the first Ukrainian counteroffensive, which occurred from August to November 2022, regained portions of lost territory. Following this phase, and up to the present day, both sides have conducted a series of offensive and defensive operations, resulting in greater and greater battlefield stagnation. It is still too early to tell if the attritional warfare seen on the Ukrainian battlefields heralds a lasting change in the character of warfare. However, the lessons gained from this more stagnant mode of conflict offer valuable insights for U.S. Army night operations on par with those obtainable from the war's more dynamic moments.

Too much focus on variety and rapidity without sufficient harmony and initiative leads to confusion, disorder, and chaos, while prioritizing harmony and initiative without adequate variety and rapidity results in rigid uniformity, predictability, and a lack of adaptability.[1]

From February to April 2022, Ukrainian forces effectively employed agile tactics at night to disrupt Russian offensive operations. Mobile units conducted hit-and-run ambushes and raids behind enemy lines, significantly demoralizing Russian troops.[2] This approach to LSCO offers the benefit of reduced visibility, giving small units opportunities to employ infiltration tactics to maneuver without easy detection. Competent Ukrainian night attacks overcame friction by using variety and rapidity to surprise and confuse ineffective Russian forces, decrease morale, and accelerate disintegration.

In November 2023, amidst ongoing defensive operations, Ukrainian forces increased their use of night operations to enhance the effectiveness of their tactical maneuvers. They focused on small tactical gains, often involving nighttime drone strikes. Ukrainian night operations proved effective in critically contested areas by targeting vital operational-level sustainment infrastructure.[3] According to Russian reports, on the night of 23 November, Ukrainian forces conducted a significant drone attack on occupied Crimea. As described by a notable Russian military blogger, Ukrainian forces deployed a total of 13 drones in three separate waves from Kherson Oblast, targeting railway and military infrastructure in the region. Vladimir Saldo, the head of the occupation in Kherson Oblast, stated the Ukrainian air attack was one of the most significant on Crimea since the conflict began.[4] Their use of drones for nighttime targeting challenged Russia's sustainment and seriously reduced its agility, endurance, and ability to extend into the operational depth. This initiative proved effective, as Russian forces could not make operationally significant headway against Ukrainian defenses. This operational strike would have been impossible without first using night tactical maneuvers to enable its launch, and it underscores the potential of night operations to significantly influence the outcome of a conflict.

Grant Hammond summarized Boyd's view on harmony as "the ability to blend one's actions to fit time and circumstance, to co-evolve with the strategic landscape and the tactical realities."[5] Junior leaders must make quick, informed decisions to overcome the dramatic friction and confusion inherent in operating at night. Ukraine's successes are

attributable to competency only gained through consistent small-unit and junior leader tactical night training and shared experiences. This emphasis allowed small, agile lower tactical units to harmonize tactical action within a shared operational approach, outpacing their Russian counterparts and contributing to night battlefield success.[6]

In late March 2022, as the operational environment became clearer, Ukraine forces focused tactical night efforts on gaining terrain critical to bringing their integrated fires complex within range of Russian supply lines. Their maneuver-to-fire operational approach contributed to Ukraine's success in disrupting Russian actions and set the conditions for regaining lost territory.[7] In many cases, Ukraine used night itself to target critical Russian sustainment capabilities through artillery, and later long-range precision fires, maximizing concealment and surprise while exploiting Russian unpreparedness and limiting its operational agility. By striking essential targets such as supply areas, lines of communication, and command-and-control nodes under darkness, Ukrainian forces disrupted Russian agility and extended their operational reach, contributing to a Ukrainian tactical advantage. In response to tactical night operations against its logistics network, Russia withdrew its sustainment nodes to its operational and strategic rear in locations that newly acquired Ukrainian weapons, such as the Army Tactical Missile System (ATACMS) and F-16s, could target.[8] Repositioning sustainment had the added effect of extending Russia's lines of communication, decreasing its operational reach, and increasing the friction it faces. Ukraine showed operational harmony by following a maneuver-to-fire approach and generating and adhering to targeting priorities.

Russia struggled at night as its soldiers were not adequately equipped or trained. Their lack of night-vision devices and a pre-invasion focus on set-piece daytime training designed to impress senior officers made commanders uncomfortable employing their forces at night, significantly constraining tactical options. Conversely, by April 2022 the quality and quantity of night-vision devices on the Ukrainian side and advanced weaponry, such as anti-tank guided missiles (ATGMs), allowed them to maneuver at night to gain localized relative advantages over Russian forces.[9] Again, tactical night maneuvers and the creation of relative advantages enabled Ukrainians to deliver operationally significant indirect fire effects on Russian forces.

As Winter 2023 approached, however, Russia improved its employment of advanced night capabilities to maneuver into positions of tactical advantage and launch substantial strikes. In mid-November 2023, Russia used rapidity by directing several waves of drone attacks over consecutive nights against key Ukrainian areas and infrastructure to negate Ukraine's air defense systems. While Ukrainian systems were successful in destroying many of the drones, Russian use of night to provide concealment and their ability to mass their drones constrained Ukrainian responses. The result was significant; a single wave of attacks caused power outages in 400 towns and villages.[10] At little cost to Russian forces, this initiative significantly disrupted civilian infrastructure, severely increasing the logistical and operational friction Ukraine faced. This single attack highlights the effectiveness of nighttime drone operations to degrade the efficiency of counter-drone sensors and effectors while generating a sense of confusion, disorder, and chaos on the target.

The proliferation of drones at tactical echelons during the Russian-Ukrainian War has provided significant lessons to the U.S. Army. Both sides in the war use drones for nearly every aspect of night operations, but with increased use comes increased system losses. In the first half of 2023, Ukraine experienced losses of 5,000 to 10,000 drones a month due to simple and proliferated electronic warfare (EW) countermeasures such as radio jamming and Global Positioning System (GPS) decoys.[11] Effective countermeasures decreased the range of all types of drones, limiting their usefulness in looking into deep areas. In April 2023, a Ukrainian drone operator told *The Guardian* newspaper that in the south during the previous autumn, it was possible to cross six kilometers beyond the frontline. By December 2022, that number had dropped to three kilometers, and during Spring 2023 fighting in Bakhmut, EW systems were limiting them to one kilometer, which soon dropped to 500 meters.[12]

Agents from Ukraine's SBU intelligence force conduct operations with a drone. (Photo courtesy of Lycksele-Nord via Wikimedia Commons)

Ever-decreasing ranges suggest the increasing strength of defensive EW capabilities is making drone use obsolete. However, the correct lesson to draw is that combatants must push down massed drone use to the lowest possible tactical echelon to take advantage of

A Ranger fire team assigned to the 75th Ranger Regiment provides suppressive fire during training at Fort Johnson, LA. (Photo by SGT Paul Won)

limited ranges. These echelons must have large numbers of cheap and attritable drones to overwhelm defenses with mass. Ukrainian fighters understand the benefits of massing more affordable drones at lower tactical levels over more expensive drones like Gray Eagles. One Ukrainian air force officer told U.S. lawmakers and officials in June 2022, "My opinion is knowing the Russian air defense right now, and knowing that range of the missiles that Gray Eagle, I'll give you a 90 percent chance that it will be shot down."[13]

Changing the U.S. Army's Approaches

The Russian-Ukrainian War has underscored a critical lesson for the U.S. Army: Night operations during LSCO will be difficult, but they are crucial for success. Consequently, the U.S. Army must focus on developing training approaches specifically addressing and incorporating the unique characteristics of fighting at night. Training Circular (TC) 3-20.11, *Training to Proficiency Maneuver Company and Troop*, lays out a generic training pathway. It stipulates Table VI, the combined arms live-fire exercise (CALFEX), is the culminating event.[14] The culmination of what is often over a year of training, the CALFEX is to a company or troop what a combat training center (CTC) rotation is to a brigade. Therefore, it only makes sense when designing a small unit training progression to mirror what the CALFEX entails as closely as possible and, most importantly, the realistic operational conditions playing out in Ukraine.

Commanders consider a maneuver company or troop trained if it completes its CALFEX under the requisite conditions. However, when considering how units often execute CALFEXs, it is unreasonable to assume the unit is proficient when conducting night operations. The recommended minimum training pathway in TC 3-20.11 occurs over 13 days. Companies and troops have 10 days if one removes days in which only leadership is present or with optional virtual training. Due to daytime requirements, the two days given to CALFEXs offer minimal benefit to improving night operations proficiency. Consequently, this leaves eight days devoted to training with the goal of "owning the night" at lower tactical echelons. However, this time allocation overlooks important aspects like rest plans, patrol base activities, and the likelihood that most training, including rehearsals and troop leading procedures, occurs during the daytime, negatively affecting the feasibility of units gaining nighttime expertise.

In an attempt to maximize training value during CALFEXs, brigade commanders, as the primary trainers, often direct units to conduct the greatest number of possible iterations and increase throughput, an approach sometimes called "reps and sets." The thinking is simple: The more a unit performs a task, the more competent it will be. This guidance forces planners to begin the unit as far forward as possible, often with support-by-fire elements already in place and reconnaissance notionally completed. This forward-leaning starting position severely limits maneuver opportunities under live-fire conditions at night. As CALFEXs are a company or troop's only chance at a live-fire proficiency gate during a training progression, they lose an opportunity to build confidence and calmness at night with sensors active and munitions flying.

Still, maneuver companies and troops do not simply dive into CALFEX execution. TC 3-20.11 outlines a "crawl, walk, run" training pathway to build proficiency towards a successful CALFEX event. The first events on the training progressions are Table I - Tactical Exercise Without Troops (TEWT) and Table II - Situational Training Exercise-Virtual Training Environment (STX-V). Both events could enable competency at night operations but have fundamental limitations hampering their efficacy. First, TC 3-20.11 only allocates one day to each event. While this allows for one period of darkness for leadership to progress through a scenario, units rarely take advantage of this opportunity. Instead, a walk-through/talk-through is often conducted simultaneously with multiple lower tactical-level units. Second, as these events focus on leadership only, training audiences do not gain experience maneuvering their formations at night.

The next events on the TC 3-20.11 progression — and the most effective for enhancing skill in night operations — are Table III - Situational Training Exercises (STXs) and Table IV - Field Training Exercises (FTXs). The training circular stipulates a minimum of four days for STXs and five days for FTXs. This time allocation provides three and four nights, respectively, to train on night operations. Nighttime STXs and FTXs present unique challenges for maneuver companies and troops as they might meet various difficulties, such as getting lost, unintentionally entering surface danger zones, establishing positions in the wrong locations, or committing other mistakes. Embracing failure is a critical part of learning. Exercises should be deliberately designed to incorporate such challenges, fostering improvement through practical experience. It is crucial to incorporate realistic scenarios that challenge Soldiers' skills and abilities, such as simulating the effects of EW on communications and position, navigation, and timing devices or creating scenarios requiring Soldiers to navigate unfamiliar terrain in darkness.

Similar to CALFEXs, STXs and FTXs present an opportunity for maneuver companies and troops to practice night operations, but there is a risk of misuse by focusing too narrowly on short lanes and static objectives. Instead, training environments, particularly at lower tactical levels, should strive to replicate the complexity, fear-inducing elements, and exhausting nature of night operations as seen on Ukrainian battlefields. Training audiences should have a sense of a dynamic operating environment by being actively targeted by their adversary both during their approach and while conducting actions on the objective. In response, they should implement passive and active counter-sensing and protection measures at all stages of STXs and FTXs. This approach is essential to avoiding the overly simplistic and brief training scenarios commonly practiced. At all portions of the events and to the greatest extent possible, leaders should include training aids, devices, simulators, and simulations (TADSS) to familiarize themselves with multidomain capabilities and impose a more dynamic and less restrictive training environment than the more structured and limited CALFEX.

The only opportunity for a maneuver company or troop to build proficiency at night operations under live-fire conditions before a CALFEX is its Table V - Fire Coordination Exercise (FCX). However, this event is ill-suited to create expertise in night operations for several reasons. First, it often falls prey to the same "reps and sets" mentality as CALFEXs. Bringing together the multitude of multidomain capabilities and integrated warfighting functions is an enormous resource strain on the brigade responsible for planning and coordinating the event. This strain results in the familiar desire to maximize throughput by beginning the exercise with the executing unit as far forward as possible. Secondly, an FCX is leadership training, and subordinate Soldiers do not attend except for what is needed to replicate critical enabling elements. These Soldiers do not benefit from conducting an FCX at night, nor does the unit's leadership benefit from maneuvering its formation at night. Lastly, although the training circular authorizes live munitions, it also allows for sub-caliber ammunition and limits the number of authorized 9mm and 5.56mm rounds. In total, these considerations result in an unrealistically calm night environment, dissimilar from those faced by Ukrainians and Russians and unlikely to familiarize or normalize night operations' actual conditions.

From a training perspective, there are three approaches the U.S. Army should take to maximize the ability of its lower tactical-level units to perform night operations. First, this article dealt primarily with a maneuver company or troop training progression, but units must also consider their platoons, squads, and individual training opportunities. During LSCO, the company or troop commander will achieve the necessary breakthroughs for higher echelons to employ their integrated fires complex to produce operationally significant outcomes. Therefore, there is no substitute for training companies and troops in their entirety for night operations. Integrating and synchronizing capabilities while maneuvering a unit is no easy task, and it is even more complicated at night. Units below company and troop need to use training opportunities beyond those in TC 3-20.11. A prime example of such an opportunity is night land navigation training, ideally conducted with weight. This kind of training is not only readily accessible but also easy to resource, making it an excellent method for units looking to familiarize themselves with the challenges of nighttime operations.

Second, STXs and FTXs must revolve around night training opportunities. The preponderance of training during these events should occur at night, with rest cycles and other work priorities relegated to daylight periods. The scenarios in STXs should be sufficiently long to enable extended movement under night-vision devices while carrying weight. This design might mean prioritizing these aspects over the frequency of repetitions and actions on the objective. Similarly, units should structure FTXs to allow for the possibility of failure, such as getting lost, even if it means reducing the number of "reps and sets." These approaches emphasize realistic challenges over quantity of practice.

Third, the U.S. Army should reevaluate CALFEX designs. Just as basic rifle marksmanship has introduced some

combat-like conditions and stress shoots produce more dividends than static shoots, CALFEXs should include characteristics from LSCO conditions as seen in the Russian-Ukrainian War. Units should extend lanes to allow for longer movements before actions on the objective. Unique maneuver methods, such as airborne or rotary-wing insertions, are worthwhile inclusions, if even only during final live iterations or dry or blank iterations. Furthermore, additions such as enemy and friendly multidomain effects, layered defensive measures (including trenches, the purposeful use of drones, and restricted sustainment) dramatically improve CALFEXs, increase training value, and enrich the experience.

From a materiel perspective, the critical role of drones at lower tactical echelons in the Russian-Ukrainian War and demonstrated improvements in EW capabilities give three lessons for the U.S. Army as it changes its approach to equipping maneuver companies and troops. First, the U.S. Army must provide its lower tactical units with small, inexpensive, and multi-functional drones to allow them to impose a variety of tactical dilemmas on the enemy. Given the experiences of Ukrainians on the front, these echelons require more than 100 drones to sustain three days of large-scale combat operations. Therefore, the U.S. Army must treat these drones as expendable property or Class V rather than the non-expendable systems currently on modified tables of organization and equipment (MTOEs).[15] To enable company and troop commanders to employ a high number of drones, they must be provided with dedicated personnel. These Soldiers could take the form of a separate section at the company or troop level or as a wholesale replacement of motor sections with drone sections. While a significant organizational change, Ukraine and Russia have shown lower tactical echelons benefit far more with agilely employed and dedicated drone systems than organic small munition indirect fire weapons systems.

Second, drone use will increase and become more cost-effective, offering substantial returns on investment by providing early warnings and tactical and operational relative advantages. Currently, many U.S. military leaders' experiences and viewpoints force them into a risk-averse mindset that views drones as sensitive equipment that must never be lost and, if lost, must be retrieved at nearly any cost. Stories about companies or troops spending days searching for downed Ravens in Iraq or Afghanistan are not uncommon. However, accepting the loss of a relatively inexpensive drone over risking the lives of Soldiers is both a morally and economically prudent decision. Moreover, if a company or troop employs drones for precision strikes with smaller munitions, battalions and brigades can reserve more powerful and expensive indirect fire assets for higher-priority targets. To normalize this approach, the U.S. Army must adopt a mindset that considers drones expendable assets. This shift can be helped through changes in training and materiel approaches. Training events, such as those outlined in TC 3-20.11, should

Soldiers assigned to C Company, 2nd Battalion, 27th Infantry Regiment, search for opposing forces during a simulated assault as part of the Joint Pacific Multinational Readiness Center-Exportable exercise at Fort Magsaysay, Philippines, on 9 June 2024. (Photo by SSG Thomas Moeger)

Paratroopers assigned to 2nd Battalion, 505th Parachute Infantry Regiment conduct a live-fire exercise as a part of Panther Avalanche at Fort Liberty, NC, on 28 July 2024. (Photo by PFC Matthew Keegan)

integrate drone operations and emphasize their tactical significance. Materially, the Army should classify low-cost drones as expendable, normalizing their expenditure and loss during training and combat.

Third, the U.S. Army must consider how EW equipment fielding would benefit maneuver companies and troops. As littoral airspace becomes congested with drones, lower tactical units must be able to integrate their offensive and defensive capabilities through an efficient interplay of massed drones and EW countermeasures. This ability also means companies and troops must train against mass drone attacks during their training progression. As units can keep these opposing force (OPFOR) drones unarmed, they can introduce this emerging threat at all training gates well before CALFEXs, allowing lower tactical maneuver units to develop their tactics, techniques, and procedures. Further, companies and troops must also be able to control organic counter-drone capabilities with dedicated personnel. A dedicated drone section enables this requirement.

Night operations significantly compound the challenges faced by small units, turning simple tactical actions into complex endeavors. They highlight the importance of John Boyd's four qualities necessary to overcome and impose friction: initiative, harmony, variety, and rapidity. Drawing from Ukrainian and Russian experiences in LSCO, the U.S. Army can enhance its effectiveness and understanding of night operations. To overcome inherent friction, Soldiers, junior leaders, and maneuver companies and troops need thorough and challenging training and relevant emerging capabilities. The U.S. Army can do this by adapting its small unit training progression and fielding technological solutions such as massed drones to companies and troops. This approach will allow the future force to overcome friction, impose it on the enemy, and "own the night."

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The Relative Advantage of Tempo:

Fighting the Medium Brigade Combat Team Infantry Battalion at the National Training Center and Beyond

LTC LIAM WALSH
MAJ MATT BOSWORTH

The Stryker Brigade Combat Team's (SBCT's) Role in the Army of 2030

Our Army exists for one purpose — to defend the nation and protect our national interests as part of the joint force. One of the Army's strategic roles in support of the joint force is to prevail in large-scale combat operations (LSCO).[1] The division is the principal warfighting formation in LSCO and shapes the battlefield to enable brigades to win in close combat. Brigade combat teams are the Army's primary close combat force and designed to maneuver against, close with, and destroy enemy forces. The role of the Army's "medium" brigade — currently the SBCT — becomes an important case study as force design updates for the Army of 2030 and beyond begin to be implemented across the Army. Designed as an interim brigade almost three decades ago, the SBCT finds itself in a critical period of retaining relevance amid modernization and force design. It is unclear whether the SBCT will remain the medium brigade formation in the Army of 2030. What is clear is that the medium brigade — or "Regular Infantry" described by COL Huba Waas de Czege in his 1985 vision of the future of Infantry as "a mobile, infantry-centric formation that fights at the speed of an armored brigade but with the pace of a light brigade" — will remain a required capability in the Army's arsenal to enable the division as the primary tactical warfighting formation.[2-3]

Army doctrine defines four desirable tenets of operations — agility, convergence, endurance, and depth. Commanders use these tenets to continuously inform the operations process and as a tool to assess the probability of success in operations. Brigades, as the Army's primary close combat force, must focus on developing the tenant of agility — the

Stryker crews from the 4th Battalion, 9th Infantry Regiment, 1st Stryker Brigade Combat Team, 4th Infantry Division, conduct a field training exercise in March 2023. (Photo by CPL Tyler Brock)

Soldiers assigned to the 4th Battalion, 9th Infantry Regiment advance towards cover during National Training Center Rotation 23-10 on 14 September 2023. (Photo by SGT Quincy Adams)

ability to move forces and adjust their disposition and activities more rapidly than the enemy.[4-5] Tactical maneuver formations must use agility to influence tempo — the "relative speed and rhythm of military operations over time with respect to the enemy."[6] This is the current relative advantage of the SBCT of today's Army — and what the medium brigade of Army 2030 and beyond must develop capabilities towards. By investing in an infantry-centric, self-mobile fighting formation, the Army provides options for the joint force to dominate the land domain against the preeminent adversaries of the United States over the next 5-15 years — the Russian Federation and the People's Republic of China. The medium brigade provides the mass and tempo for sustained land power in LSCO that neither adversary can account for if employed properly.

The experience of Combined Task Force (CTF) Manchu during National Training Center (NTC) Rotation 23-10 in September 2023 provides a case study in the role of tempo in successfully fighting an infantry battalion in a medium brigade during LSCO. Comprising a battalion headquarters, a scout platoon, a mortar platoon, a sniper section, a medical platoon, two U.S. rifle companies, a rifle company from the Singapore Army, a support company, and an attached sapper company, CTF Manchu repeatedly used tempo and mass to overwhelm mechanized elements of NTC's opposing force (OPFOR) — particularly in urban terrain. The lessons CTF Manchu learned during NTC 23-10 — principally the need to prioritize tempo above all other considerations — are pertinent for future force design, modifying the fighting doctrine of medium formations, and how to employ those characteristics against potential adversaries.

Current Near-Peer Threats

NTC has more than 30 years of history of preparing our units, in training, for their worst days in combat. Although it cannot replicate every variable of every environment, NTC does an exceptional job of stressing units across all warfighting functions and great distances. What we can learn from our tactical fights there can also teach us about what to expect in a close fight with our two main threats — the ground forces of the Russian Federation and the People's Liberation Army (PLA).

The basic unit of the Russian Ground Forces, the mechanized rifle brigade, has several distinct advantages over its U.S. counterparts — mainly in its organic tank battalion, two artillery battalions (one self-propelled howitzer and one multiple launch rocket system [MLRS]), and two anti-aircraft battalions.[7] However, its main tactical unit, the motorized rifle battalion, faces a distinct disadvantage against its U.S. counterpart in its manning. The Russian squads are generally four to 11 personnel, but the most common variant includes just seven personnel (vehicle/squad commander, driver/mechanic, grenadier, assistant gunner, machine gunner, senior rifleman, and rifleman) and can only dismount six.[8] To pull the thread on this, a Russian motorized rifle company in the defense could field approximately 60 dismounted infantry soldiers and 10 fighting vehicles. On the other hand, a U.S. SBCT infantry battalion in the offense against it would field almost 300 dismounts. While a U.S. infantry BCT (IBCT) has the same advantages in dismounted infantry as the SBCT, it would struggle with the endurance needed for multiple offensive operations, and a U.S. armored BCT (ABCT) would have a distinct disadvantage in dismounted forces available (approximately 80-160 dismounts in an ABCT battalion, based on type). This makes the SBCT's mass of dismounted infantry a distinct advantage over contemporary Russian forces.

The PLA presents different challenges. First, the PLA's combined arms brigades possess four motorized, mechanized, or armored combined arms battalions (compared to three in most U.S. brigades), which are organic to the brigade based on the type of formation.[9] The PLA ground force combined arms brigades also possess reconnaissance battalions, an artillery battalion, and an air defense battalion. PLA task organization at the battalion and below is similar to that of U.S. BCTs. The PLA's ability at the brigade level to deny U.S. advantages in close air support or Army attack aviation, as well as its advantages in artillery, make the requirement for tempo in the close fight even more imperative. In any future fight against the PLA, the distinct advantage for U.S. forces would be in leadership; in the PLA's modernization efforts, they've realized that their battalion commanders (usually majors) do not have sufficient staff to command and control combined arms operations.[10] PLA efforts over the past decade aimed at addressing this have added more staff at

the battalion level; however, these leaders and systems are untested. A formation like the SBCT, utilizing large amounts of dismounted infantry and U.S. doctrinal concepts for maintaining tempo (such as using multiple routes, dispersion, highly mobile forces, and piecemeal destruction of isolated enemy forces) could prove to be too much for untested PLA leaders in the close fight and also mitigate the risk posed by the PLA's superiority in air defense artillery and fires.[11]

Tempo on the Transparent Battlefield

Current Army doctrine acknowledges the need for audacity and tempo as two of the four characteristics of the offense outlined in Field Manual 3-90, *Tactics*. The audacious commander dispels uncertainty by acting decisively and compensates for a lack of information by developing the situation aggressively to seize the initiative.[12] Doctrine for SBCTs notes that "while rapid tempo is often preferred, tempo should be adjusted to ensure synchronization" (or convergence at echelon) and adds that the combination of infantry squads and Stryker vehicles enable this.[13] This leads to a doctrinal template for a medium brigade where the formation travels in a mounted formation (generally traveling overwatch) until the probable line of contact; then dismounts its infantry to clear complex terrain before pulling its vehicles forward and continuing the process again and again. As COL Wass de Czege noted, "…to carry the array of heavy equipment it needs to do its job, regular infantry rides. But it fights dismounted — always."[14] It is considered a cardinal sin in the SBCT to have infantry killed riding in the back of a Stryker, and a generation of SBCT leaders have grown up under the adage of "we don't drive through engagement areas." The challenge for the SBCT on today's transparent battlefield is that it is always in one of the eight forms of contact, so the relative safety of utilizing micro-terrain to conceal vehicles while dismounted infantry attacks is no longer viable.

During NTC 23-10, CTF Manchu found that a rotational design required a much faster tempo than it had anticipated going into the rotation — this was exacerbated by the interoperability challenges that occur whenever U.S. forces work with allied or partner forces. Instead of being able to maneuver and dismount 5-7 kilometers away from an objective (maximum anti-tank weapon's range in open dessert at NTC), CTF Manchu quickly realized that based on a multitude of reasons — convergence windows from division, synchronization with adjacent battalions, or time-based triggers — the battalion had to move much more rapidly than anticipated. This resulted in a mindset shift for commanders in the battalion. Rather than infiltrate dismounted companies under cover of darkness or terrain, the unit would do its best to set conditions with external fires or Army attack aviation and then accept risk by aggressively bounding forward (our mantra during the rotation became "bum rush") while mounted in traveling overwatch — sometimes into engagement areas — until we made direct fire contact with the enemy. The unit would then dismount forces and rapidly conduct company- or battalion-level dismounted attacks, supported by consolidated mortars at the battalion level. This often overwhelmed the vehicle-centric OPFOR that struggled to defeat the sheer volume of dismounted infantry found in an SBCT infantry battalion.

A Stryker from the 4th Battalion, 9th Infantry Regiment sits in a defensive position during NTC Rotation 23-10. (Photo courtesy of 4-9 IN)

Counter to current SBCT doctrine and 20 years of global war on terrorism (GWOT) experience, the fight during NTC 23-10 prevented the effective integration of Strykers as a local support by fire in almost any operating environment, except urban terrain, without the use of heavy suppression or obscuration. The multiple arrays of anti-tank munitions employed by the OPFOR meant that any time a Stryker exposed itself, it was struck. What CTF Manchu found, however, was the necessity to continue the initial mounted attack in a bounding overwatch until the lead unit made direct fire contact. The additional 2-3 kilometers of mounted maneuver into the enemy's defense enabled the organization to maintain tempo. By pushing the tempo and making direct fire contact, and then overwhelming a predominantly mechanized enemy with dismounted infantry, CTF Manchu found success in the offense.

Three Lessons for Success in High-Tempo Operations

Factoring in the lessons CTF Manchu learned during NTC 23-10 and a relative analysis of the strengths and weaknesses of our Army's potential adversaries, here are a few key takeaways for SBCT leaders to enable successful high-tempo operations:

1. Make a Simple Plan Early. Given the time constraints placed on units at NTC to plan operations this is often forced on units, but it goes without saying that a simple plan executed boldly has a decent chance of success. Planners at the battalion and brigade levels must issue orders that include commander's intent, sub-unit objectives, and other graphic control measures (limited) as well as provide a synchronized timeline that allows subordinate commanders to plan their operations. In CTF Manchu, we learned that providing companies with a task and purpose, their objectives, direct fire control measures to deconflict operations in time and space, and our required triggers were effective in the rapidly changing environment. Additionally, the development and

use of a common set of graphics by the brigade's geospatial intelligence (GEOINT) cell (in our case, the "Raider Special" map that included checkpoints, battle positions, and other known pieces of terrain) are invaluable in adjusting plans while on the move to accommodate for actual terrain and enemy actions. This is important for enabling tempo.

2. The Role of Commander's Intent. Battalion commanders must personally visualize, describe, and direct the fight based on their own experience and education. They must relay this intent to subordinates in a simple method that is understandable at the platoon leader level. CTF Manchu was most successful when the battalion commander described how our mission nested with the brigade and division's missions in his expanded purpose and when he limited his key tasks to the three to five things we must do to accomplish the mission and why. For example, during our brigade attack into Jin-Dong (formerly Razish), the commander described the battalion end state as: "Friendly: One company of combat power remains available. Enemy: North Torbian forces defeated in Eastern Jin-Dong and unable to effect 1SBCT operations. Terrain: Objective Bulls seized and the battalion consolidated in a hasty defense on BP 60. Civilian: minimized loss of life and damage to infrastructure, postured to turn over to South Torbian government control." When we came out of that extremely intense fight, all those conditions were met — except for the hasty defense on BP 60, which in turn led to an ineffective hasty defense against the OPFOR's counterattack. By clearly defining intent, commanders allow subordinate commanders to have informed discussions about risk; in our case, we did not have this discussion and it led to disastrous results (but also lessons learned).

3. Command and Control. It is the mission of subordinate units to maintain communications with their higher headquarters. What CTF Manchu found during NTC 23-10 was that if we could not maintain reliable voice communications with the brigade commander, we could not effectively communicate risk, opportunities, and decisions with our higher headquarters — the same went for company command posts to the battalion. To combat this, the battalion did away with the idea of a tactical command post (CP) except for limited periods during main CP jumps and instead utilized a mobile command group consisting of the S-3 and battalion commander's Stryker. The battalion commander would find the spot on the battlefield where he could communicate with the brigade commander on frequency modulation (FM) voice (the battalion main CP was ideal), and the battalion S-3 would move his Stryker to a location where he could talk to the company commanders and the battalion commander. By bifurcating command and control in this manner, the battalion extended its operational reach and enabled tempo by allowing its tactical operations center to further extend distances while maintaining the critical commander-to-commander link from company to brigade that enabled shared understanding across the battlefield.

Conclusion

As the Army modernizes its force structure to maintain a relative tactical advantage against our adversaries on the battlefields of 2030 and beyond, strategists and senior leaders must seek to maintain the medium brigade as a close combat force capable of maneuvering at the speed of an armored formation with the ability to rapidly mass dismounted infantry. This type of formation provides division commanders with an array of options and a relative tactical advantage over the close combat forces of our two primary adversaries — the Russian Federation and the People's Republic of China. Lessons learned by CTF Manchu, fighting as part of an SBCT, provide important insights into the importance of tempo and agility as well as how the Army can adapt medium brigade doctrine to the challenges of a transparent battlefield.

Notes

[1] Army Doctrine Publication (ADP) 3-90, *Offense and Defense*, July 2019, v-vii.

[2] COL Huba Wass de Czege, "Three Kinds of Infantry," *Infantry*, July-August 1985, 11, https://www.moore.army.mil/infantry/magazine/issues/1985/JUL-AUG/pdfs/JUL-AUG1985.pdf#13.

[3] Kevin Hadley, Savannah Spencer, and Justin Martens, "How the Army 2030 Divisions Fight (Formerly Known as WayPoint 2028)," Version 3.5 (Fort Leavenworth, KS: U.S. Army Combined Arms Center, 2 February 2023), 6.

[4] Field Manual (FM) 3-0, *Operations*, October 2022, 2-19.

[5] Ibid., para 3-3.

[6] Ibid., para 3-8.

[7] Dr. Lester W Grau and Charles K. Bartles, *The Russian Way of War* (Fort Leavenworth, KS: Army University Press, 2016), 31.

[8] Ibid., 34.

[9] Army Techniques Publication (ATP) 7-100.3, *Chinese Tactics*, August 2021, para 2-22 to 2-24.

[10] Dennis J. Blasko, "The Biggest Loser in Chinese Military Reforms: The PLA Army," in Chairman Xi Remakes the PLA: Assessing Chinese Military Reforms, edited by Phillip C. Saunders, Arthur S. Ding, Andrew Scobell, Andrew N.D. Yang, and Joel Wuthnow (Washington, D.C.: National Defense University Press, February 2019) 363, https://ndupress.ndu.edu/Media/News/News-Article-View/Article/1748401/.

[11] FM 3-90, *Tactics*, May 2023, 3-3.

[12] ADP 3-90, para 3-4.

[13] ATP 3-21.21, *SBCT Infantry Battalion*, March 2016, para 4-5.

[14] COL Wass de Czege, "Three Kinds of Infantry," 12.

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CPT Taylor Graham assisted with editing this article.

A Data-Centric Approach to Increasing Crew Lethality:

Proposing 'Moneyball for Gunnery'

LTC JONATHAN D. BATE
1LT ETHAN BARANGAN
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When Billy Beane, general manager of the Oakland Athletics from 1997-2015, started using data analytics to build a winning baseball team on a budget, many in the baseball community were skeptical. However, the team's performance demonstrated that leveraging in-game data to identify undervalued players could provide an edge. During the 2002 season, the team won 20 games in a row on a budget less than a third of the league's most expensive teams. He accomplished this by applying a "sabermetrics" approach of collecting and analyzing in-game activity to build a cost-effective team, as described in the 2003 book *Moneyball: The Art of Winning an Unfair Game*.[1]

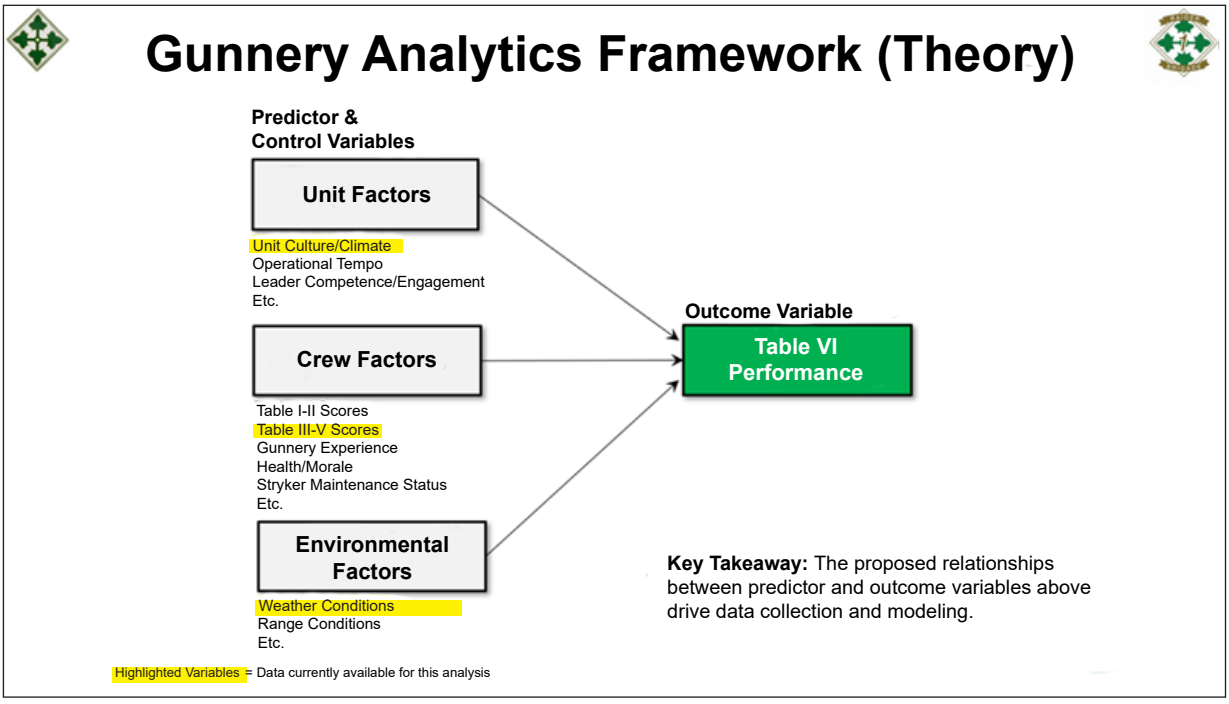
Inspired by Beane's approach, our data analytics team in the Ivy Raider Brigade (1st Stryker Brigade Combat Team, 4th Infantry Division) asked a similar question: Can data analytics help us improve crew performance during mounted machine gun (MMG) lethality? Similar to the Oakland A's, combat units are constrained in terms of time and ammunition. Producing better Table VI results more efficiently builds lethality.

We found that similar to baseball, in-game statistics during gunnery can identify factors that correlate with better crew performance. Our results, which suggest that Table III is an undervalued player, stem from only a single brigade's Stryker gunnery, but the project underscores the general approach's potential. Of note, we do not argue that analytics should replace leader experience or "gut instinct;" rather, the insights data provides can elevate intuition while reducing cognitive bias.

Applying Data Analytics to Mounted Machine Gunnery

For those unfamiliar with Stryker gunnery, it is designed to train and qualify Stryker crews by progressing them through

Figure 1 — Gunnery Analytics Framework



six tables. Tables I and II are designed to train vehicle identification, ammunition identification, and simulation training in garrison. Table III is a range that uses blank-fire iterations and Multiple Integrated Laser Engagement System (MILES) gear, giving crews a repetition to focus on calling swift and correct commands. Table IV is a static live-fire range that focuses on trigger time, and Tables V and VI are maneuver live-fire ranges. As Table VI is the qualifying table, it is our outcome variable and best indicator of a crew's lethality.

Applying a "Moneyball" approach to gunnery first required an open mind about what produces better performance on Table VI. Beane bucked conventional wisdom when he began measuring players using **on-base percentage** and **slugging percentage** rather than traditional metrics such as **stolen bases**, **runs batted in**, and **batting average**.[2] Using these new metrics, he was able to identify players whose contribution to winning was undervalued. This analysis identified opportunities for hiring high potential players at a discount.

Having posed our research question regarding what in-game statistics are predictive of performance, four steps remained: developing a framework, collecting data, modeling the data, and interpreting the results. Our framework is below. We proposed that unit, crew, and environmental factors are linked with Table VI performance.

We next collected data, measuring the factors that we could, which included prior table scores and weather data. Unfortunately, since we began the project after the conclusion of the brigade's gunnery, we were not able to gather data on all crews. We were, however, able to obtain information for approximately half of the brigade's Stryker crews; this data set was large enough to be valid since it included 126 crews from one infantry battalion, the cavalry squadron, and the engineer battalion.

Having compiled the data, we then built models to help explain relationships between factors of interest. These consisted of linear and nonlinear models relating prior table scores and Table VI, controlling for weapon system (M2 or MK-19), battalion/squadron, and Table VI weather conditions (wind, temperature, barometric pressure, and weather conditions). We conducted the analysis on government computers using the Army Resource Cloud.

The type of model that worked best was a logistic regression, a nonlinear model that estimates the probability of a binary outcome, which in this case was a Stryker crew achieving a first-time qualification on Table VI ("Q1").

Unexpected Results: Table III and Unit Culture Are "Undervalued Players"

Using the logistic regression model, we found a surprising result: Table III scores were correlated with a higher probability of achieving a Q1 on Table VI. This was not what we expected, since Table III uses MILES lasers rather than live ammunition. Each additional point a crew earned on Table III

A Stryker crew in the 1st Stryker Brigade Combat Team, 4th Infantry Division prepares to conduct Stryker gunnery during individual weapons training at Fort Carson, CO. (Photo courtesy of the 4th Battalion, 9th Infantry Regiment's Facebook page)

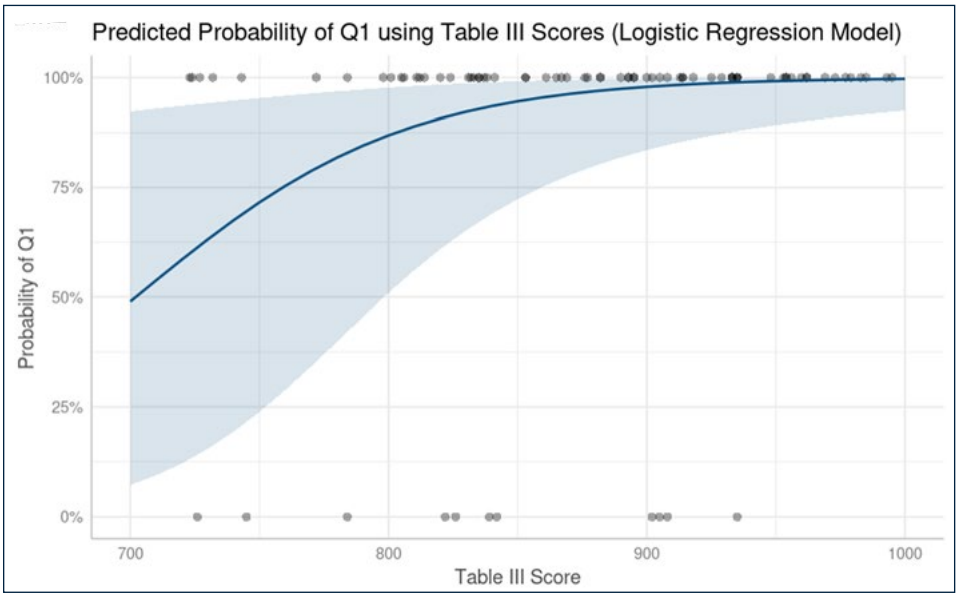


Figure 2 — Predicted Probability of Q1 Using Table III Scores

```
# Predicted probabilities of Q1_Binary

TBL3_Overall |  WPN | Predicted (95% CI)
-------------------------------------
         720 |   M2 |  0.81 (0.35, 0.97)
         770 |      |  0.87 (0.52, 0.98)
         810 |      |  0.91 (0.64, 0.98)
         860 |      |  0.94 (0.75, 0.99)
         910 |      |  0.96 (0.82, 0.99)
        1000 |      |  0.98 (0.88, 1.00)
         720 | MK19 |  0.71 (0.24, 0.95)
         770 |      |  0.80 (0.39, 0.96)
         810 |      |  0.86 (0.51, 0.97)
         860 |      |  0.91 (0.63, 0.98)
         910 |      |  0.94 (0.72, 0.99)
        1000 |      |  0.97 (0.81, 1.00)

Adjusted for:
* TBL4_Overall = 795.48
* TBL5_Overall = 695.39
*  TEMP_D_TBL6 =  48.53
*  TEMP_N_TBL6 =  33.03
*  BARO_D_TBL6 =  26.97
*  BARO_N_TBL6 =  26.80
*  WIND_N_TBL6 =   4.53
*  WIND_D_TBL6 =   6.07
```

Figure 3 — Example Data Table[3]

was correlated with an approximate one percent additional probability of achieving a Q1.

Additionally, we found that the type of weapon system matters. Stryker crews fire either an M2 machine gun or MK-19 grenade launcher, with the latter being more difficult due to the longer time of flight and curved trajectory of the rounds. The Table III results were far stronger for M2 crews, which was expected since MILES cannot simulate either MK-19 trajectory or flight time.

Controlling for weather conditions on Table VI improved the accuracy of the analysis. Including this factor was important since some crews faced more difficult conditions on Table VI. For example, higher barometric pressure on Table VI was correlated with a lower Q1 probability since denser air reduces accuracy.

We conducted numerous robustness checks to ensure that the statistical results did not occur due to chance. Modeling the data in multiple different ways produced relatively consistent results that increased confidence in the findings. During this process, we found that Table III had the strongest predictive power. Table IV was sometimes predictive, though Table V was generally not predictive. This result was valuable since it provided early indicators of crew success. Within Table III, we found that Table III Night had the strongest relationship with Table VI performance for both M2 and MK-19 crews.

We also found that unit culture was also positively correlated with higher probability of Q1. We used data from our February 2024 unit culture survey (administered the month prior to the brigade's gunnery window) to gauge seven "measurables" of unit culture, including perceptions of care for Soldiers, leader competence, and information flow. Adding up the seven 10-point Likert scale questions provided a "culture index," with a maximum score of 70. This index reflected the "strength" of company-troop culture. Our analysis suggested that unit culture was strongly related with a crew's chance of achieving a Q1 — companies/troops with stronger culture achieved more Q1s. In fact, the culture index was statistically more predictive than Table III results, which was a surprising finding.

So What? Using the Data to Increase Crew Lethality

Putting these results into practice required comparing them to our firsthand experiences, particularly those of seasoned NCOs, to conduct a common-sense check. Numerous discussions determined that Table III serves as a valuable indicator of crew preparation prior to deploying to the range. It assesses which crews are proficient in target acquisition and proper fire commands, among other skills. Skills such as rapid target acquisition and proper fire commands are apparent even when no rounds are going downrange. Unit culture likely reflects the level of Soldier commitment to excelling and the quality of their leadership.

The key implication of our results is that leaders can set a threshold on Table III before allowing them to advance to Table VI. Our analysis suggests that for crews to have a 90-percent chance of achieving a Q1, a score of approximately 800 should be the threshold for Table III for M2s. MK-19s require a higher threshold of approximately 850.

Way Ahead: Deliberate Data Collection and Machine Learning

Moving forward, we can improve this analysis by expanding data collection and refining the modeling. The data for this study was limited to about half of the brigade's Stryker crews. This gap highlights the need for more deliberate data collection in the future. There are also a range of additional variables we would like to measure, including crew experience, vehicle maintenance, Table I-II scores, and embedded trainer use, among many others.

It is important to note that the results could change with

more complete data, as well as by unit and with each gunnery. What is significant, however, is the approach. Taking the time to generate evidence about "what works," rather than leaving data sitting on the floor, has tremendous potential to increase readiness.

Collecting more qualitative and quantitative variables, as well as more data entries, will enable the opportunity to test additional machine learning models. These models utilize different methodologies compared to regression analysis. This may create stronger predictions in crew qualifications and become an on-hand tool commanders can use during gunnery to determine if crews are ready for Table VI.

With better data, we can both refine our base regression models and apply more sophisticated machine learning models to improve predictions that translate into greater lethality in pursuit of our goal of zero Q2s.

Notes

[1] Michael Lewis, *Moneyball: The Art of Winning an Unfair Game* (NY: W.W. Norton & Company, 2003).

[2] Explanations for on-base percentage, slugging percentage, stolen bases, runs batted in, and batting average terms can be found at https://en.wikipedia.org/wiki/On-base_percentage, https://en.wikipedia.org/wiki/Slugging_percentage, https://en.wikipedia.org/wiki/Stolen_base, https://en.wikipedia.org/wiki/Run_batted_in, and https://en.wikipedia.org/wiki/Batting_average_(baseball).

[3] To view the authors' complete data appendix, send an email to usarmy.moore.tradoc.mbx.infantry-magazine@army.mil.

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Soldiers from the 1st Stryker Brigade Combat Team, 4th Infantry Division conduct operations during Joint Readiness Training Center Rotation 25-02 at Fort Johnson, LA. (Photo by SPC Isaiah Mount)

Keys to a Good Officer and NCO Relationship:
A Perspective from a CSM

CSM JESSE J. CLARK

In my time as a battalion command sergeant major (CSM), I communicated consistently and often with my commanders and officers in my organization. The communication in most cases existed both ways and allowed for shared understanding. At the beginning of the relationship, I believe what helped most was conducting an initial counseling that clearly defined roles, responsibilities, and expectations. Once everything was clearly defined, I had the ability to operate inside of those areas freely; however, over time and in certain situations, this could change, especially when trust was built and maintained. Additionally, whenever I had the opportunity to advise my commanders on areas that I felt were critical for the success of the organization, I took it. This occurred in garrison, during training, and even while deployed. If I failed to speak up or advise my commander or junior officers, I was not being a relevant NCO in the organization. Having served at multiple echelons where I've had an officer counterpart, I have found that applying the areas I discuss below makes not only the relationship successful but also makes the organization successful.

In most organizations, officers and NCOs are paired together to lead those formations. These teams build, prepare, and train their organizations for the future and the unknown of what they could be asked to do. To be successful, they must be able to work together for one cause and one purpose — their organization. In my opinion, some areas that can help ensure this success include developing good communication with each other, understanding each other's roles and responsibilities, and having clear expectations. In addition, NCOs need to ensure that they are being good advisors to their officer counterparts. It is key to note that these teams will not always agree on everything; however, what comes out of those disagreements is important. Have arguments behind closed doors and never disagree in public; this can cause turmoil in the organization that will eventually produce a toxic climate and culture. Officers and NCOs should do the best they can to work together and know each other.

Communication

"Remember, teamwork begins by building trust. And the only way to do that is to overcome our need for invulnerability."

— Patrick Lencioni[1]

Communication is a critical piece of an officer and NCO team; they need it to lead the organizations they are responsible for. If there is a breakdown in communication between these two individuals, there will probably be one throughout the entire organization. This is not a great situation to be in. Communicate with each other consistently and often. Doing so will keep everyone informed and able to better perform their duties. Communication is expected throughout every organization and at each echelon of leadership. Building trust in these relationships can heavily weigh on the ability to communicate with each other. Talk to each other and subordinates constantly. Doing so will build better shared understanding in the organization.

Understanding Roles and Responsibilities

"Coming together is a beginning. Keeping together is progress. Working together is success."

— Henry Ford[2]

Leaders have duties and responsibilities they are either told they have or that they put on themselves to do. In the officer and NCO relationship, it is helpful to understand each other's roles and responsibilities. Doing so sets a clear picture on what each will take care of in the relationship. In some cases, do these roles and responsibilities cross paths? Absolutely! As stated before, these relationships should be working for one cause and one purpose — the organization that they are leading. If either is there for his/her own cause and purpose, the organization will feel these effects. Help each other be successful, and the organization will be successful.

Clear Expectations

"Always do everything you ask of those you command."

— GEN George S. Patton[3]

As a leader and a Soldier, it helps to have clear expectations of what to do. This is also important when it involves an officer and NCO team. As these leaders start building a relationship, it is key to address what is expected, which can also tie into their roles and responsibilities. A good way to do this is through initial counseling, or this could also occur for specific situations. Either way, verbally stating expectations to each other is a good way to feel more comfortable and be able to maintain a positive relationship. I feel that if the relationship is good enough, both the officer and NCO can give

each other expectations. It should not be a one-way street. Having no stated expectations, however, can cause confusion and frustration for all involved. Be clear on what is expected.

Being a Good Advisor

"True courage is being afraid, and going ahead and doing your job anyhow…"

— GEN Norman Schwarzkopf Jr.[4]

As NCOs, it is our responsibility to advise our officer counterparts. We should give them advice on the enlisted Soldiers in the organization, training, and anything else that we are asked for input on. Failing to do this means you have failed those officers and failed the NCO Corp. Will the officers always take the advice that is given? No, not always. That does not mean they do not trust your input; they are the ones that are responsible for what that organization does or fails to do, and they may see something else you do not. Do not let this discourage you; continue to be a good adviser to them, giving feedback they ask for or deserve to receive. It is our responsibility to do so. If officers and NCOs build a good relationship, advising will be easy. Just like senior NCOs mentor junior NCOs, senior NCOs should also advise and build a relationship with the junior officers in their organization. Doing so makes these officers better, especially when they advance to the level that NCO is at. Additionally, it will build more trust and confidence in the NCO Corps.

Conclusion

As NCOs, we must be participating members of these teams. If we sit back and do nothing, our roles are irrelevant. It may be frustrating at first, but once we start communicating and roles, responsibilities, and expectations are clearly defined, it will get easier. Additionally, it is important that NCOs advise their officer counterpart; it is our duty to do so. If we do not do these things, we cannot make these relationships work, the organization will notice, and it will have impacts that are sometimes hard to recover from. Building an officer and NCO team can be difficult, but applying these areas may help, and the time together will be rewarding.

Notes

[1] Patrick Lencioni, *The Five Dysfunctions of a Team: A Leadership Fable* (San Francisco: Jossey-Bass, 2002).

[2] John P. Munoz, "Coming Together, Keeping Together, Working Together," *Peoria Magazine*, 2010, https://www.peoriamagazine.com/archive/ibi_article/2010/coming-together-keeping-together-working-together/.

[3] Porter B. Williamson, *Patton's Principles: A Handbook for Managers Who Mean It!* (NY: Touchstone, 1982).

[4] GEN Norman Schwarzkopf, Academy of Achievement, https://achievement.org/achiever/general-h-norman-schwarzkopf/.

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Two Acronyms:

Tools to Apply to Home-Station Training

MAJ MICHAEL A. HANSON, U.S. MARINE CORPS

When I was a rifle company commander, I focused a lot of attention on my Marines' next live-fire event and all of the preparations for it. In the U.S. Marine Corps (USMC), we believe that live fire is the final confirmation of a unit's proficiency in a specific skill. When opening a new chapter in the training continuum, I like to begin with a reading assignment that introduces and details the theme we are training for. While searching for reference material on the topic of suppression, I came across the excellent article, "The Art of Support by Fire," by SFCs Carter Conrad and Johnny Tinsley in the April-June 2014 issue of this fine periodical.[1] I was so impressed with this article that rather than assigning it to just my medium machine-gun section, I disseminated it to the whole company. My Marines agreed that it was an outstanding collection of observed tactics, techniques, and procedures; and more importantly, they took much away from it for their own purposes.

This piece resonated with me because much of what I read in it reflected many of my own observations as an Infantry Instructor, or "Coyote," with the Tactical Training and Exercise Control Group (TTECG) at the Marine Corps Air Ground Combat Center (MCAGCC) in Twentynine Palms, CA. TTECG is the Marine Corps' equivalent to the Army's 11th Armored Cavalry Regiment at the National Training Center (NTC) at Fort Irwin, CA. TTECG facilitates the Corps' premier service-level training exercise, the Integrated Training Exercise (ITX), where multiple times a year Marines from all over the USMC test their skills in a highly dynamic live-fire training venue. The training and setting are quite similar to that of NTC. In fact, Twentynine Palms and Barstow are less than two hours apart.

"The Art of Support by Fire" was not the first article from *Infantry* that I shared with my Marines, nor will it be the last. Just as my company has benefited from institutional knowledge and experience from the Army, I realized that there may be Soldiers that would be interested in institutional knowledge and experience gained by Marines in similar circumstances. As such, I decided I would share some of my own observations on the performance of Infantry Marines during my time at TTECG from 2017 to 2020.

U.S. Marine Corps machine gunners assigned to Charlie Company, Battalion Landing Team 1/5, 15th Marine Expeditionary Unit, fire an M240B machine gun during training at Marine Corps Air Ground Combat Center, Twentynine Palms, CA, on 12 September 2023. (Photo by Cpl Aidan Hekker, USMC)

The Coyotes at TTECG are in a unique position to observe countless units train on some of the premier ranges in the Marine Corps. In a single year, they see Marines from every division; units from California, North Carolina, Hawaii, and the Reserves all come to train on the same ranges and events. This allows Coyotes to develop not only a personal mental database but an organizational collection of best practices that they use to teach, coach, and mentor Marines that come to ITX.

The Coyotes use debriefs to highlight both good and bad practices they observed in the conduct of a recently completed event to the exercise force, as well as provide recommendations on how to improve proficiency for future actions. To frame their debrief points, Coyotes often use easily memorable acronyms that highlight specific points, significant actions, or steps in a process. Viewing actions or processes through these acronyms can help Marines build on what they learned and perhaps improve their execution in an upcoming event. In the course of these debriefs, many Marines eagerly take notes and write down these acronyms and learning points so they can rehearse them on their own time. This has caused me to wonder if a unit preparing to go to ITX would want to know some of these acronyms beforehand? The purpose of this article is to offer a few of these acronyms to service members across the operating forces to give unit leaders tools to apply to their own home-station training. None of these acronyms are new or groundbreaking; in fact, they are already commonly known across the Marine Corps.

The first concept that Marines should understand is units of fire. Coyotes regard a unit of fire as a fire team or a medium machine gun. By quantifying units of fire as such, Marines can assess the relative combat power between them and the templated enemy force and focus their units of fire to overmatch the enemy with suppression. Effective suppression enables movement to close with an objective, so establishing effective suppression is the foundation to almost everything Coyotes will discuss in their debrief.

When assessing suppression, the Coyotes use the acronym **DRAW** to concentrate the efforts of Marine units of fire to maximize their potential. This is the number one acronym we preach from the beginning to the end of ITX. It stands for:

Distribution of fires
Rates of fire
Accuracy
Weaponeering (appropriate weapon to target match)

In combination with clear, timely, and accurate ADDRACs (alert, direction, description, range, assignment, and control), DRAW gives individual Marines, team leaders, squad leaders, platoon commanders, or company commanders a lot of direction as well as workspace for subordinate leaders to operate within. Because so much of the training at ITX is live fire, Marines can actually see the effects of their fires. This is what makes DRAW a tangible tool.

When shooting live rounds, it's very easy to see the distribution of fires. Oftentimes, exercise force Marines play "whack-a-mole" with the targets. All of their impacts are on one bunker with nothing hitting the other. For example, when told they don't have effective suppression on the left bunker, they put all their fires on that one and neglect the right bunker. Then, when they are told they have nothing on the right bunker, they put everything on that one and so on, back and forth. This is easily correctable and can be fixed by team leaders and squad leaders who understand that acronym and know what effects they need to achieve.

Properly controlling rates of fire is often essential to the success of the unit. Increasing rates of fire to suppress an enemy to enable a unit to move is just as important as using fire discipline to conserve ammunition when a high expenditure is not necessary. In many cases, a unit will have a hard time seizing a final objective because its Marines burned through too much ammunition earlier in the range. A unit acting as a support by fire is useless if it cannot support a maneuver unit with fires to achieve suppression. This happens quite often, and the maneuver element will be forced to seize its objective with its own combat power. Sometimes elements also run out of ammunition prematurely because they fired too much earlier in the attack. When this happens, units fail to secure their

Marines with the 2nd Marine Division provide suppressive fires while conducting platoon attacks during an integrated training exercise at the Marine Corps Air Ground Combat Center on 19 July 2024. (Photo by Lance Cpl Enge You, USMC)

final objective. Thus, controlling rates of fire is very important to the execution of an attack.

What this actually looks like on the ground is very simple; Marines just need to make the targets continuously bob. Units establish fire superiority by immediately knocking down the targets. They maintain fire superiority by keeping the targets bobbing. The Ivan targets should not stand freely for any more than about five seconds — about the time it would take an enemy shooter to pop up, acquire a target, and fire. Really, a unit doesn't even need a high rate of fire to achieve this. Accurate shots from a squad firing at a low rate of fire work better than large volumes of fire that don't hit anything. A slow rate of fire just ensures there will still be ammunition for a later objective.

Accuracy is self-explanatory. As USMC LtGen Lewis B. "Chesty" Puller famously said, "You don't hurt 'em if you don't hit 'em." Still, it is amazing how often Marines fail to hit their targets. Unsurprisingly, this boils down to them ignoring the fundamentals of marksmanship and using bad practices with their weapons. These include not extending their buttstocks all the way, not using their bipods, or not using a stable firing position (like the prone); but perhaps the worst of them all is firing on fully automatic while committing the aforementioned bad practices. Marines with Infantry Automatic Rifles (IARs) are often tempted to fire on full auto, but if they don't use their bipods or a stable firing position, it's almost worthless. Firing using this setting can also become a serious safety issue as Marines may shoot the ground right in front of them and cause ricochets. This is especially troublesome when other Marines are maneuvering in the ricochet fan.

Weaponeering, or appropriate weapon-to-target match, can be best described by the desired effect on a target. Most weapon systems organic to the infantry battalion will only provide suppression, while only a few can achieve destruction. Hitting an enemy machine-gun bunker with a Shoulder-launched Multipurpose Assault Weapon (SMAW) will destroy it, while direct hits with a 40mm grenade can only suppress it. Likewise, a Javelin or Saber missile will destroy a tank, while heavy machine guns and mortars will not. Marines must know their best options for employing scarce resources in limited windows of time, so as not to waste them for no effect and lose opportunities.

Units of fire are a handy way of quantifying and stratifying relative combat power. The unit's leader should achieve overmatch on the enemy with units of fire. Marines usually use three to every one of the enemy's (if able), but this means nothing if it's not controlled (i.e., if it's not effectively distributed, if the rates of fire are insufficient, if it's not accurate, or if the wrong weapon is being used for the target). This is the whole point of DRAW – to focus the unit's effects. Though Marines always want to achieve fire superiority during initial contact (whether initiating or returning fire), it doesn't matter how much fire a unit opens up with if it's ineffective. Let DRAW be the guideline.

Another acronym that Coyotes refer to in almost every event where Marines maneuver down range is the "Cycle of the Infantryman," also known by the acronym **SAMK**:

Suppress
Assess
Move
Kill

Accurate shots from a squad firing at a low rate of fire work better than large volumes of fire that don't hit anything. A slow rate of fire just ensures there will still be ammunition for a later objective.

Suppression has been sufficiently addressed thus far; however, covering a sector can be just as important as suppression. The only difference between these acts is that during suppression Marines are actively firing their weapons, but when covering an area of potential contact, they only have their weapons oriented to a threat and are not firing. They are, however, ready to fire if the situation presents itself. Coyotes will often lower targets for a while and suddenly raise them again to see whether stationary Marines are alert or complacent while another element is moving. If those stationary Marines are paying attention, they will notice when the targets pop up and immediately suppress them without the movement of the other unit being disrupted. It's amazing how often these targets stand upright without being shot because nobody notices them until the maneuver element gets pinned down. There are times when the Cycle of the Infantryman is better abbreviated as CAMK — cover, assess, move, kill.

Assess refers to recognizing when conditions are set and exploiting them. Sometimes, exercise force Marines will apply DRAW correctly to achieve effective suppression and then just sit there and do nothing to exploit it. They need to know when conditions are set and rapidly exploit them. However, sometimes they don't take a few seconds to actually assess conditions before committing to the next action. For example, Marines move across a danger area as soon as the first mortars impact but then immediately get pinned down because they just assumed the mortars would be on target. Now they have to adjust them while being pinned down and taking cherry pickers (simulated casualties) when they should have observed effects before moving to begin with.

Another part of assessing involves choosing a route before moving. Marines leading a movement must assess where to move to, what the enemy can and cannot affect between the current and intended locations, and what route gives them the best chance of getting there unmolested. There is rarely a straight line between points A and B, but Marines often do not use the micro-terrain to their advantage and indeed move in a straight line. This can be deadly. A point man holds the lives of those following in his hands. Too often, a point man

A Marine in the Infantry Officer Course fires an M27 Infantry Automatic Rifle during a live-fire training exercise on Range 410A at the Marine Corps Air-Ground Combat Center on 9 June 2018. (Photo by Lance Cpl William Chockey, USMC)

charges out into the open, completely exposed, without any regard to using the micro terrain to find a covered approach, and his fellow Marines follow behind like a string of ducklings only to be made cherry pickers. Point men need to assess not only the effects of friendly fires but also the route to their objective. If need be, fire team leaders can make the assessment, pass instructions, and send their team when the time is right. This is something that Marines routinely fumble. If they have performed the first two parts correctly, they've observed effective suppression and have identified their route — then conditions are set for them to move. That maneuver element must now exploit the conditions to their fullest and move before suppression is lost lest the support-by-fire element runs out of ammo.

This brings the Marines to the final step, which is kill. The previous three steps are a team effort that enable Marines to close with and get into a position to eliminate the enemy. The final step may be an individual or buddy-team affair, which will probably be the most unnerving and personal action of all. Marines may have to use their rifle, grenades, bayonet, or their hands to eliminate that enemy. Since hand-to-hand combat is out of the purview of Coyotes, who focus mostly on combined arms, preparing Marines for the final 5 yards of combat is something that is best done at home station.

DRAW and SAMK are two simple acronyms that Coyotes use to analyze performance and unpack debrief points to share after an event. These are by no means the only two lenses we view exercise force actions through and speak to afterwards, but they are the most elementary and most commonly referred to. One thing I've learned in countless discussions with Marines is that they do not often write down or retain everything said in a 20- or 30-minute debrief, but the things they do take with them are simple acronyms like DRAW and SAMK.

I do not know if these acronyms are common to the Army. If so, then hopefully this article will find use as a succinct statement on best practices that are already known. If not, then I offer them in the hope that they aid Army leaders to train their Soldiers to be more efficient, proficient, and ultimately more lethal in their next engagement. When that day comes, I hope we fight together. Semper Fidelis!

Notes

[1] SFC Carter Conrad and SFC Johnny Tinsley, "The Art of Support by Fire," *Infantry* (April-June 2014): 28-33, https://www.moore.army.mil/infantry/magazine/issues/2014/Apr-Jun/pdfs/ConradTinsley.pdf.

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The Army Combatives Program:

An Underutilized Tool for Commanders

CPT NORMAN CONLEY

Combatives training is a valuable tool for U.S. Army commanders because it improves unit cohesion and lethality. I believe hand-to-hand combat will also prove consequential in future armed conflict. All units should incorporate combatives into training and send Soldiers to the Basic and Tactical Combatives Courses (BCC and TCC, respectively). Service members know combatives as it is defined by Training Circular (TC) 3-22.150: "the art of hand-to-hand combat." As both a former collegiate wrestler and an active-duty Army officer with experience in armored and special operations units, I have a passion for ensuring all service members receive regular combatives instruction.

As a disclaimer, I acknowledge that every unit in the Army is busy, and the last thing many commanders and junior leaders are looking for is someone telling them about something more they should start doing. Nonetheless, here I am telling you… you need to be training on combatives. When done right, this training is a force multiplier that will improve unit culture and build more cohesive teams. And more importantly, a fighting Army must be composed of fighting Soldiers; anything less is a lack of preparation for the next conflict.

Relevance of Combatives: In Practicality and for the Warrior Ethos

The sell for combatives is twofold. First is the obvious need for Soldiers to have the technical ability, will, and confidence to engage in a hand-to-hand exchange with an enemy combatant. Second is the not-so-obvious — but still crucial — contribution of combatives training towards developing Warrior Ethos and unit cohesion.

In a landscape of increasingly competitive peer threats, do we want to be the Army that shifts focus away from hand-to-hand combat? As MSG Colton Smith — a U.S. Army Soldier, former The Ultimate Fighter champion, and UFC fighter — said, "The Russians are doing sambo. What are we doing?"[1] Army Special Forces LTC (Retired) Jason Abbott echoed MSG Smith's concerns: "Many of our global competitors have a standardized martial arts program within their combat arms. It's a requirement. Russia and China both have formidable and robust martial arts training."[2] While our Army does in fact have a respectable combatives program, peer threats and the future of large-scale combat operations (LSCO) demand more. The problem does not lie in the schoolhouse, but rather the onus is on warfighters throughout the force serving in operational units.

CPT Norman Conley competes in the semi finals of the 2022 Lacerda Cup. The semi finals are conducted using the intermediate ruleset: allowing open-handed strikes to the head, all submissions, kicks, and closed fist strikes below the shoulders. (Photo by Patrick A. Albright)

It is tempting to assert that given the increasing range and availability of direct fire weapons and advances in cyber warfare and unmanned aerial systems (UAS), to name just a few, the last skill we need to spend time on is combatives. Recent history suggests this is not the case. In his article "The Point of the Bayonet," John Stone wrote that it is the infantry's job to "finish proceedings as rapidly as possible… the most lethal weapons can be surprisingly ineffective against a well-concealed and protected enemy."[3] This was especially true during the global war on terrorism (GWOT), where Soldiers were required to seek out and kill a well-concealed enemy knowledgeable of his "home turf."

As I write this, there are more current examples of hand-to-hand fighting in conflicts around the world. Recent Sino-Indian border tension has led to skirmishes where

soldiers are being killed without any shots fired.[4] In March 2023, Russian and Ukrainian troops fought in trenches with shovels and fists.[5] As of January 2024, Israeli special forces were forced to resort to fighting Hamas's guerrilla-like tactics "hand to hand" and "chest to chest" in tunnels.[6] Despite some forces having massive advantages above ground, history tends to show that a capable enemy will find ways to level the playing field. Similarly, underground tunnels may take away nearly all a modern army's advantages, not dissimilar to the Vietcong's use of tunnels more than a half century ago. To stress the necessity of hand-to-hand combat in LSCO, MSG Smith simply stated, "When you take away our 'tools,' we are left with our hands."[7] He stressed the importance of skillfully continuing a fight when our primary weapons are taken away.

Abbott has a unique perspective on the utility of combatives due to his special operations forces (SOF) experience while deployed to semi-permissive (or even permissive) environments. "A large number of SOF deployments are Theater Security Cooperation Programs (TSCP) or Joint Combined Exchange Training (JCET)," he said. "These are generally extended TDY [temporary duty] trips to different countries to train and engage with partner forces... Business casual, daily dress, or business suits are the norm." He pointed to these circumstances as key to a Soldier's ability to navigate the "aggress vs. digress" dichotomy and states that Soldiers must have the ability to control hostile environments (though not necessarily while in official combat zones) by using a "pivot point." This "pivot point" enables the Soldier to either:

1. Continue a fight and neutralize or destroy an attacker, or

2. Create a favorable opportunity to break contact and get away.

Either one of the aforementioned scenarios requires "considerable martial arts training," according to Abbott. Without this, combatants may find themselves out of options. For example, an untrained martial artist may be compelled to use lethal force — even when not necessary. Equally as likely though is an untrained martial artist only having the option to run away — even if a non-lethal deterrent or defense would better suit the mission.

Regarding its contributions to the Warrior Ethos, combatives is a microcosm for warfare itself. Each "roll," round, or training session is both a test of intestinal fortitude and a strategic chess match. When conducted in accordance with TC 3-22.150, combatives directly contributes to unit cohesion. Dirk McComas, the lead civilian combatives instructor at the Maneuver Center of Excellence (MCoE) and a 17-year GWOT veteran, points out that humility is manifested in the "tap-out."[8] When one is caught in a submission, he "taps" to tell the other Soldier "stop, you won." First, he is trusting that training partner to stop; second, he must have the humility to admit defeat. His partner also has the humility to understand that he could be the next one to tap out. Individuals who have experience with martial arts will tend to agree with MSG Smith's assertion that combatives "is the battlefield of life."

The Problem Statement: What We Are Missing and Why

Generally speaking, the Army may be missing opportunities to nest combatives with training plans in operational units. It is important to recognize why, less I become victim to the "Chesterton's Fence" logical fallacy.[9] As technology has improved, warfighting has morphed into a long-distance affair.[10] Some of us may intuitively correlate longer ranges and newer distance-killing weapons systems with a lack of relevance for the opposite — close-distance fighting. From a surface level, this makes sense. Why would we waste time and money on tactics that some may see as archaic when we need to acquire, teach, and train on drones, Next Generation Squad Weapons, and other new technologies? This mindset is a slippery slope. Where do we draw the line? Is the Infantry itself going to become obsolete? Actually, isn't future warfare just going to be robots anyway?

Soldiers attending Infantry One Station Unit Training with Charlie Company, 2nd Battalion, 58th Infantry Regiment, learn combatives on 27 September 2023 on Fort Moore, GA. (Photo by CPT Stephanie Snyder)

Those questions sound a bit ridiculous (believe it or not, I have heard them asked before), but when they are said out loud, it makes us ponder… should we ever stop focusing on the basics? And isn't the ability to physically fight another combatant with one's own bare hands the most basic of all the basics?

There is no real forcing function for junior leaders to incorporate the training at their levels. It is highly commander dependent. There are no bubbles turning green to brief after commanders complete training their Soldiers to be lethal with their bare hands. The COVID-19 pandemic did not help as unit combatives centers temporarily closed and this type of training was paused.

Additionally, while the Modern Army Combatives Program (MACP) is an underutilized tool for force, it alone cannot address our lack of competency in combatives. Abbott opines, "Of all the inputs for MACP, Brazilian Jiu Jitsu is the backbone, which takes up to 10 years to earn a black belt. The length of time it takes a U.S. Soldier to gain the proper experience to train at that level, let alone teach, is far longer than the NCO Education System (NCOES) model; thus, it is never truly achieved at a rate that is efficient for both the training and delivery of the skillset."[11] I acknowledge that we should not try to create black belts through MACP; doing so would be a misallocation of time and resources.

Nonetheless, hand-to-hand fighting is a skill that deteriorates; and while sending Soldiers to the MACP is a great start, the real solution to this problem is ensuring a fighting culture in units at the tactical level. We iteratively update requirements and models for unit training management of mission-essential tasks; why would we overlook one of the most basic Soldier skills: combatives?

The How: Incorporating Combatives in your Unit

Culture is the number one contributor to the effective incorporation of combatives. The solution to many of the problems addressed here is to sustain, grow, and promote current initiatives that foster excellence in hand-to-hand fighting. The MCoE's annual Lacerda Cup is a phenomenal event that rewards excellence in a Soldier's ability to fight. There is an immense amount of pride in knowing that if you win there, you are the best fighter in the Army at that weight class. In my experience, this sense of accomplishment and healthy competition is present in the most elite units in our Army. Seeing command influence and promotion of this event from the MCoE over the past few years has made the entire combatives community proud. More importantly, I have seen firsthand examples of junior Soldiers who start training just to compete in future competitions; these Soldiers will then become NCOs and bring those skills back to their unit. The 75th Ranger Regiment — through their use of the Special Operations Combatives Program (SOCP) — instills this culture in all candidates during their selection process. Once they arrive at their battalion, junior Rangers then lead informal training with each other. My personal experience is that this is because junior leaders are supported in their endeavors to train combatives regularly. Perhaps this stems from the unit's role in GWOT operations, where 19 percent of Soldiers (not just SOF) from 2004 to 2008 reported using hand-to-hand fighting.[12] Most years, the regiment hosts command-sponsored combatives tournaments, culminating in the "advanced ruleset" for finals matches (a ruleset roughly equivalent to an amateur MMA fight). The 82nd Airborne Division and the 4th Infantry Division do the same during "All-American Week" and "Ivy Week," respectively. To help build this culture throughout the entire force, MSG Smith says that leaders should send Soldiers to BCC and TCC during the unit's red cycle. Both schools also produce promotion points for enlisted Soldiers.

...Hand-to-hand fighting is a skill that deteriorates; and while sending Soldiers to the MACP is a great start, the real solution to this problem is ensuring a fighting culture in units at the tactical level.

Common Pitfalls

Two common reasons for commanders not promoting or supporting combatives:

1. Lack of knowledge. A lack of knowledge or higher-level focus on this skill is a common reason for the absence of combatives in some units. We all have a bias towards training what we know, and the truth of the matter is that martial arts is just less popular than other activities in today's society.

The Solution: Reach out to the installation combatives NCOIC to schedule training with your unit. This can be done with informal training at the "fight house" on post (most installations have at least one of these facilities — fully equipped with mats and gloves, etc.) or by formally sending Soldiers to BCC (also known as Level 1 combatives). Once Soldiers are BCC qualified, they can bring that knowledge back to their battalion and exponentially increase the unit's skill level through routine training. When in doubt, reach out to MACP personnel to ask for guidance on how to incorporate the training.[13]

2. Pride. This pitfall does not necessarily stem from ego, but all leaders inherently dislike being seen as incompetent among their Soldiers. We all have similar stories that resonate with us. Some of the most common are the second lieutenant getting his platoon lost on his first field training exercise (a tale as old as time), the platoon leader or executive officer trying to find the battery on his Advanced Combat Optical Gunsight (ACOG) because one of his team leaders told him to (hint: it doesn't exist), or an officer not being able to talk on the radio because his microphone is not connected. If any of these scenarios are a fear of yours (don't lie to yourself), then what is worse than being physically manhandled by the

Soldiers compete in the 2024 Lacerda Cup Competition Championship Rounds on 13 April in Columbus, GA. The competition is named in honor of the late SSG Pedro Lacerda of the 75th Ranger Regiment, and recognizes the effectiveness of hand-to-hand fighting skills known as Modern Army Combatives. (U.S. Army photo by Patrick A. Albright)

men and women you are in charge of? Some may see this as embarrassing, or worse — unprofessional.

The Solution: Through conducting this training at three different installations, I have seen multiple beginner-level martial artists get on the mats to train with their Soldiers. Many of them were first sergeants, captains, sergeants major, and colonels. Any potential fear they have of being professionally embarrassed is answered with respect from the Soldiers grappling with them. Just like any warrior skill, an important first step is the willingness to learn, and the Soldiers see that. Generally, of the leaders who attend combatives training, the least experienced garner the most respect from the Soldiers there. Training how to fight with Soldiers does not erode trust, it builds trust.

In closing, the onus falls on junior leaders to communicate the value of combatives to their bosses: Combatives is an easily resourced team-building activity that will prove crucial to our lethality in the next armed conflict. While the maximum effective range of the M4 carbine is 500 meters, Soldiers in the 21st century still need to be able to engage the enemy at a range of 0 meters.

Notes

[1] MSG Colton Smith, personal interview with author, April 2024.

[2] LTC (Retired) Jason Abbott, personal interview with author, July 2024.

[3] John Stone, "The Point of the Bayonet," *Technology and Culture* 53/4 (October 2012), https://www.jstor.org/stable/41682745.

[4] *BBC News*, "India-China Clash: 20 Indian Troops Killed in Ladakh Fighting," 16 June 2020, https://www.bbc.com/news/world-asia-53061476.

[5] *VOA News*, "Russia-Ukraine Fighting Devolves into Hand-to-Hand Combat," 5 March 2023, https://www.voanews.com/a/russia-ukraine-fighting-devolves-into-hand-to-hand-combat-/6990568.html.

[6] Anshel Pfeffer, "The Gaza War Goes Deep Underground," *The Jewish Chronicle*, 11 January 2024, https://www.thejc.com/lets-talk/analysis/the-gaza-war-goes-deep-underground-k2e6btpf.

[7] MSG Smith, personal interview.

[8] Dirk McComas, personal interview with author, 2024.

[9] "The short version of the Fallacy of Chesterton's Fence is this: don't ever take down a fence until you know why it was put up." Alexander Ooms, "Commentary: The Fallacy of Chesterton's Fence." *Chalkbeat*, 4 January 2012, www.chalkbeat.org/colorado/2012/1/4/21096855/commentary-the-fallacy-of-chesterton-s-fence/.

[10] Stone, "The Point of the Bayonet."

[11] Abbott, personal interview.

[12] Peter R. Jensen, "Hand-to-Hand Combat and the Use of Combatives Skills: An Analysis of United States Army Post-Combat Surveys from 2004-2008," United States Military Academy's Center for Enhanced Performance, November 2014, https://apps.dtic.mil/sti/pdfs/ADA612103.pdf.

[13] "Modern Army Combatives," https://www.moore.army.mil/armor/316th-cav/Combatives/.

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IBOLC Mobilization POI: *A Historical Framework*

CPT KEVIN SHINNICK

During the Battle of Soissons in World War I, 60 percent of the U.S. Army's Infantry lieutenants involved were either killed or wounded in action.[1] In World War II, the 60-day drive from Salerno to Cassino resulted in Infantry lieutenant casualty rates of over 100 percent. After two months, there were no junior officers in the division who had taken part in the pre-deployment training cycle.[2] Throughout the first seven weeks of fighting in Normandy, the 90th Infantry Division lost an average of 123 officers and 48 percent of its Infantry platoon leaders per week.[3] In the Korean War, 80 percent of officer casualties were lieutenants.[4] More recently, during the Russian-Ukrainian War, the Ukrainian armed forces' ability to conduct synchronized offensive action has been complicated by the heavy attrition of its experienced junior officers, possibly losing 70 percent of its combat-experienced personnel since 2022.[5-6]

If the Army had to mobilize for large-scale combat operations (LSCO) today, how could the Infantry Basic Officer Leader Course (IBOLC) adapt to meet the manning and training requirements of Infantry lieutenants? Despite technological advances in weapons, sensors, mobility, and protection, the Infantry platoon leader remains at the tip of the arrow on the strategic map. The heavy cost paid by Infantry platoon leaders to advance the points of arrows is a stark reality of both historical and modern battlefields.

The intent of this article is to stimulate discussion by proposing a draft program of instruction (POI) for an IBOLC designed to meet the manning and training demands of LSCO — specifically, if a full mobilization is declared by Congress that authorizes a force expansion of up to one million personnel, a level of mobilization and force expansion not enacted since World War II. I will offer specific recommendations related to the length, curriculum, and assessment criteria of the course.

The recommendations presented are drawn from analyses of historical Infantry officer course POIs, after action reviews, correspondence, historical reports, LSCO-era Army studies, and other primary sources from past periods of high-intensity conflict. This research identified trends and insights related to the length, subject matter, and assessment criteria of Infantry basic officer training, which I then evaluated against examples and predictions of current and future conflicts. It must be noted that these recommendations are in no way a critique of or call to modify the existing IBOLC. They are solely to provide a baseline discussion of what IBOLC could look like in the event of a mass mobilization of junior officers in support of LSCO.

Student officers at the Infantry School at Fort Benning (now Fort Moore), GA, in 1941 move from one field problem to another. (U.S. Army Signal Corps photo)

Conflict	Commission	Initial	Adjusted to	Notes/Causes for Change
World War II	OCS	12 (1941)	17 (1943)	In 1943, junior officer manning needs were met and the course was extended to 17 weeks to improve the leadership and tactical shortcomings of graduates.
	USMA	12 (1941)	17 (1943)	
	ROTC	12 (1941)	17 (1943)	
Korea	OCS	-	22	OCS was discontinued at the end of WWII, and the Army lacked funding to restart it until 1951.
	USMA	OTJ	15 (1951), 11 (1953)	The Army lacked funds to run officer basic courses. Abbreviated basic courses restarted in 1951, and official basic courses began in 1953.
	ROTC	OTJ	15 (1951), 11 (1953)	
Vietnam	OCS	23	23	The 1966 Haines Board (review of officer education) found that USMA and ROTC did not adequately prepare new officers for their first assignment. In 1971, new officers from all commissioning sources began attending a branch officer basic course.
	USMA	OTJ	6 (1967), 9 (1971)	
	ROTC	6	9 (1965), 12 (1971)	

Acronyms: OCS: Officer Candidate School; USMA: U.S. Military Academy; ROTC: Reserve Officers' Training Corp; OTJ: on-the-job

Figure 1 – Infantry Officer Basic Leader Course Lengths in Weeks Before and Adjusted during Conflict
(Note: OTJ Training: Newly commissioned officers did not attend a basic course and instead reported directly to their gaining unit.)

Length

"[Training] should be as brief as practicable, and limited to sound basic training and technical and tactical training sufficient to enable the young officer to join a training unit and render reasonably effective service."

— GEN Leslie McNair
Commander of Army Ground Forces, in response to a G-1 proposal to extend Officer Candidate School (OCS) from four to six months, September 1943.[7]

"[In WWII] We trained a lot of lieutenants just to the point where it isn't a national disgrace to put them on the battlefield. I was one of them."

— GEN William DePuy
Founder of the U.S. Army Training and Doctrine Command, remarks at the Infantry School, April 1973.[8]

I propose a 14-week course after considering two critical-but-opposing variables required for any mobilization POI: manning requirements and tactical proficiencies. Sacrifices in either result in degraded combat performance for the gaining unit. A company lacking platoon leaders is a less effective fighting force, likely to sustain increased casualties, but so too is a company with platoon leaders who are ill-equipped for the harsh realities of the battlefield. During a large-scale war, manning requirements bind the length of the course, and required leader competencies drive the content of the course. From a training standpoint, should the length of the course limit the POI, or should the POI limit the length?

I crafted this POI in a manner in which the length determined the curriculum, and the length would be as brief as possible to support manning needs. An analysis of historical IBOLC lengths supports this decision. Historically, at the onset of conflict, manning requirements are prioritized over tactical competencies, resulting in shorter courses designed to expedite junior leaders' arrival to their fighting or training unit (see Figure 1). Only after manning requirements are met can basic courses be afforded the flexibility to increase in length and modify their curriculum based on new battlefield developments. The initial output of freshly trained junior officers is critical not only due to anticipated casualties but also to fill billets for new units, promotions to the next rank, lateral transfers, and rotations through schoolings as wars progress.[9]

Manning requirements are of considerable importance for the Infantry Branch, particularly its officers. In times of war, the Infantry incurs the highest casualty rates, and many of the most intelligent and physically fit officer candidates either may apply or be algorithmically assigned to other branches.[10] For some branches such as Medical, Signal, and Cyber, the Army can simplify the officer acquisition process by directly commissioning from the civilian sector to fill technical jobs.[11] During World War II, the Army learned there wasn't a civilian job equivalent to an Infantry platoon leader. Infantry officer mobilization is further complicated by the fact that active-duty and recalled Reserve Infantry officers will predominately be a rank that precludes them from serving in lieutenant billets, resulting in more senior positions being filled with gaps remaining at the company level. For example, the Army's end strength today (452,000) is smaller than the Army that entered the Korean War (592,000), an isolated conflict.[12] Despite four officer recalls, divisions were still 10-percent understrength in junior officers during the defeat of Task Force Smith.[13] If the nation mobilizes for war, an abbreviated pipeline will be necessary to meet the demands of a rapidly expanding Army. Should D-Day precede M-Day, procurement rates will have to contend with replacement rates as well.

My proposed 14-week POI requires a minimum of a six-day training week with a near-total focus on infantry tactics and leadership. The six-day training week over the course of 14 weeks equates to 84 training days, which is just 10 days fewer than the current five-day, 19-week training program. I also recommend the 14-week program include a nine-day field training exercise (FTX) which would add another training day for a total of 85. The mobilization course POI dedicates more time to infantry tactics and FTXs by reducing time spent on individual tasks such as basic rifle marksmanship, land navigation, and other subjects covered by pre-commissioning sources. The intent of the course is to arm students, in the

briefest time possible, with the skills necessary to arrive at their unit, lead effectively, survive first contact, and continue to learn.

Curriculum

"Battles and wars are frequently decided not by the doctrines that armies bring to war, nor by the technology that equips military forces, but by the human beings charged with making the crucial battlefield decisions that will lead to either victory or defeat."

— David Barno and Nora Bensahel
Adaptation under Fire: How Militaries Change in Wartime[14]

Modern rifle platoon leaders have more tools at their disposal than ever before. Advanced weaponry, communications systems, mobility platforms, and small unmanned aerial systems (sUAS) are increasingly wielded at the platoon level. However, modern battlefields illustrate that these gains are vulnerable to the convergence of cross-domain effects orchestrated by higher enemy echelons. In World War I, platoon leaders just needed a pocket watch and radio line to synchronize their attack with creeping artillery barrages, leaving little in the plan the enemy could directly disrupt. Today, the advanced radios, navigation devices, and vehicles available to the platoon may be as much of an asset as a vulnerability on a sensor-dominated battlefield.[15]

The proposed 14-week course aims to equip leaders with the temperament, knowledge, and responsibility required to fight their element on the modern battlefield, with or without the full array of tools at their disposal. To achieve this, students must be forced to contend with the 21st century problems of precision fires, drones, and communications jamming, as well as legacy obstacles like landmines, armor, logistical disruptions, fieldcraft, and hygiene. Students will be forced to consider these challenges as they plan and lead missions across various environments and, on the other side, dig in to simulate an isolated, prolonged defense against a ruthless aggressor. Throughout these scenarios, students will have to reckon with not just the enemy but logistics and the health and morale of their platoon as well.

This mobilization course's POI prioritizes the development and assessment of the leader's temperament to avoid the "hesitant, uncertain leadership" typically exhibited by platoon leaders at the initial outbreak of conflict.[16] Lieutenants cannot afford to be uncertain in front of their Soldiers or so mentally

Figure 2 — Proposed 14-Week IBOLC Mobilization POI

Week/Day	1	2	3	4	5	6	7
Week 1	In Briefs, Doctrinal Foundations, Fitness Assessments						
	In Briefs	In Briefs	Doctrinal Foundations	Doctrinal Foundations	Doctrinal Foundations/ Ruck	Recovery Class	Rest
Week 2	Basic Rifle Marksmanship						
	Table I	Table II/III	Table IV	Table V	Table VI	Exam 1, HPDT	Rest
Week 3	Land Navigation/ Automatic/AT						
	Academics/ Terrain Walk	PE (Day/ Night)	Test (Day/ Night)	MG Theory	MG Theory	MG/AT Re-Test	Rest
Week 4	AT/CFF/TLPs						
	AT Ambush	CFF, TLPs	TLPs	TLPs	OPORD	OPORD	Rest
Week 5	Squad FTX (Squad w/ Gun Team)						
	Squad Teach	Squad Teach w/UAS	Squad FTX	Squad FTX	Squad FTX	Squad FTX, Peers 1	Rest
Week 6	Team/Squad LFX						
	Team Teach	Team Blank	Team Live	Squad Teach	Squad Blank	Squad Live	Rest
Week 7	Introduction to Platoon Operations						
	Platoon Ops	FC/PH	Platoon Ops	Platoon Ops	Platoon Ops	Platoon Ops	Rest
Week 8	Platoon Operations						
	CSL 1	Platoon Ops	Platoon Ops	Platoon Ops	Platoon Ops	Platoon Ops	Rest
Week 9	Advanced TLPs						
	Academics	Academics	Mines, Obstacles	OPORD	OPORD	ROM/ Planning	Rest
Week 10	Urban and Defensive Operations						
	Urban Academics	Terrain Walk/ UAS	Defense/dig	Refine/Plan	Attack/ Defense	Attack/ Defense	CATK/ Retrograde
Week 11	Urban and Defensive Operations						
	Urban Orientation	Attack/ Defense	Attack/ Defense	Attack/ Defense (2:1)	RTB, Peers 2	Rest	Rest
Week 12	Platoon LFX						
	ROM, Set up, CSL 2	Platoon Blank	Platoon Live	Platoon Blank	Platoon Live	ACFT	Rest
Week 13	Mounted/Breach (Open and Urban Terrain)						
	Vehicle Familiarization/ Academics	Academics	Mounted Ops	Mounted Ops	Mounted Ops	12-Mile Foot March	Rest
Week 14	Graduation						
	Boards/Prep	Boards/Prep	Boards/Prep	Boards/Prep	Graduation		

Acronyms: ACFT- Army Combat Fitness Test; AT - anti-tank; CATK - counterattack; CFF - call for fire; CSL - cognitive stress lane, FC/PH - fieldcraft/personal hygiene; FTX - field training exercise; HPDT - High Physical Demands Test; MG - machine gun; OPORD - operation order; ROM - receipt of movement; RTB - return to base; TLPs - troop leading procedures; UAS - unmanned aerial system

overcome by battle that they can't determine which weapon, tactic, or battle drill to use in a dynamic situation. Second, it equips soon-to-be platoon leaders with the knowledge necessary to navigate the above mentioned challenges, with academic classes dedicated to subjects such as vehicle identification, anti-tank/crew-served battlefield geometry, sUAS, and more. These lessons are ultimately fed into extended field problems in offensive, defensive, and urban settings to challenge students not just as tactical leaders but as leaders with dutiful responsibilities for their Soldiers. The proposed draft instruction program is referenced in Figure 2, broken down by the weekly macro and day-by-day schedule.

Students in Infantry Officer Basic Leadership Course 02-23 execute the Night Infiltration Course during Training Week 21. (Photo courtesy of 2nd Battalion, 11th Infantry Regiment)

Temperament

"Individuals must be subjected in training to every feasible sight, sound and sensation of combat. They must be disciplined mentally to act calmly and with sound judgment, regardless of the noise, confusion, surprise, and the fog of war."

— MG W. B. Bradford

in a 1951 mobilization training directive extending the Army training week following the defeat of Task Force Smith[17]

An Army Ground Forces study conducted in 1943 determined that the length of the Infantry Basic Course should not be extended. The study, citing feedback from overseas commanders, found that while extending the course would provide further technical instruction, the additional time would not assist platoon leaders where they were struggling the most — leadership.[18] The first of what became an annual Infantry conference (1946), held at what was then Fort Benning, GA, had similar findings: Junior leaders lacked the confidence to brief their more experienced NCOs. The solution: "[G]iving him problems to perform, problems to present and critique before others before he ever gets a command."[19] After action reports (AARs) from the early U.S. defeats in Korea echoed these sentiments, stating that basic officer courses must provide junior officers "ample opportunity to exercise judgment, initiative, and resourcefulness" to develop the "aggressive leadership" necessary to react to one's surroundings and lead disciplined formations.[20]

IBOLC, as it exists today, provides an excellent tactical and technical program into which enhanced leadership instruction can be woven. Due to the abridged training length, this mobilization POI reduces time spent on individual Soldier tasks (rifle marksmanship, land navigation, etc.) to place a greater focus on individual leader tasks. The ability of a leader to plan and brief under pressure, monitor health and morale, and solve problems while physically and mentally fatigued is more important than various forms of rifle qualification. The course also includes deliberate events and blocks of instruction to further develop platoon leaders as confident decision-makers, one of which is the cognitive stress lane.

The cognitive stress lanes (CSL) would include two new events designed to develop the individual leader of Soldiers. These lanes challenge students' problem-solving and decision-making abilities while they are exposed to physical, mental, and other sensory stressors. The course builds upon the POI's performance psychology lessons, which teach students techniques for staying calm, thinking through problems, and recalling details during periods of high intensity. Each student would run the course twice, once near the beginning and once near the end of the course.

CSL 1: The first CSL bridges the troop leading procedures (TLPs) and squad FTX weeks by challenging students to directly apply their introductory classroom instruction while physically and mentally fatigued. CSL 1 would begin with a vehicle identification sheet which students would have to know/memorize and then move to conduct an obstacle course, burden carry, Stroop test, and call-for-fire lane (must recall vehicles identified earlier) before culminating with receipt of a fragmentary order (FRAGO) and generation of a concept sketch to brief their tactical officer or NCO.

CSL 2/Night Infiltration Course (NIC): The second CSL utilizes the NIC to set the stage prior to the platoon live fire. The NIC must utilize enemy weapon systems to provide the overhead gunfire to best indoctrinate lieutenants to the sounds and rhythm of the enemy's weapons. The course would similarly begin with vehicle and equipment identification/memorization, followed by insertion into the NIC, a team puzzle, call for fire (must recall vehicles identified), and hasty planning with concept sketch brief against an enemy situational template based on weapon systems and equipment encountered on the NIC.

The intent of these exercises is unchanged from the World War II and Korean War "Battle Indoctrination Courses" they draw inspiration from, with added cognitive elements to provide "mental conditioning of individuals in order that they

may become accustomed to, and capable of, withstanding the shock and rigors of battle."[21]

Knowledge

Vehicle and equipment identification were purposefully included in the combat stress lanes. Platoon leaders must be familiar with all friendly and enemy vehicles and equipment prior to reporting to their first unit. Task Force Smith was defeated in the initial phases of the Korean War because a platoon leader and his commander stood idle trying to determine if the tank column approaching their position was friendly or enemy. By the time they identified the armor column as enemy, the tanks opened fire on their position, and North Korean infantrymen closed in, forcing a U.S. retreat.[22] Reports from the war in Ukraine are replete with examples from both sides of fratricide on friendly vehicles. Junior officers must also be familiar with enemy systems to best match munition to target, achieve desired effects, and avoid target overkill. Similar considerations apply when calling fire missions absent a forward observer. The fog of war and pace of combat will leave little time to think and reference guidebooks to determine if (and how) you're engaging a BRDM-2, BTR-87, or BMP-3.

In addition to vehicle identification, a LSCO mobilization course should stress landmine identification and battle drills. The GWOT-era "5s and 25s" (meter checks) and practice of the five Cs (confirm, clear, check, cordon, control) has fallen mostly out of practice, although it has wisely been reincorporated into the enlisted Infantryman OSUT POI. Mines and other explosive ordnances are highly relevant to any mobilization POI given the prevalence of and variety of mines in Ukraine and the high likelihood of their use by the enemy in jungle or island environments. sUAS capabilities are taught early in the course.

Preparing a trench, digging a hasty fighting position, and setting up cover and concealment are just a few of the skills critical to survivability in LSCO that were not emphasized during the 20 years of counterinsurgency operations. The Army has already reemphasized these skills across curriculums and exercises, and basic officer courses must follow. Analyses and firsthand accounts of the war in Ukraine reflect the need for soldiers to be experts in camouflaging themselves and their equipment.[23] After a year of pitched fighting in Korea, the Army published Training Memorandum #1, which dictated the following unit training priorities in order: "defensive operations, hasty field fortifications, obstacles, and camouflage." A study conducted that same year found that Soldiers viewed "how to dig in and take cover" just as important as "how to maneuver in small groups" in regards to training they wished they had received more of.[24] Videos from Ukraine depicting modern trench assaults certainly explain why.

Responsibility

"Whether he looks out for his men regardless of his physical comfort, whether he demands of them, and whether he sees that the demands are met, those are practical problems he had to learn from his senior officers, even from noncommissioned officers in some cases."

— GEN James Gavin
1946 Infantry Conference, discussing improvements needed in junior officer leadership instruction[25]

Classroom academics must be combined with extensive field training exercises to match theory to practice while leaders are tired, hungry, and having to contend with not just the enemy but also weather conditions and the health and morale of their unit. The course must instill in future platoon leaders a sense of duty and care for the Soldiers they will lead through intense offensives or monotonous, isolated defenses. The urban and defensive operations block is a nine-day FTX, immersing the students in an operation that consists of an assault of a trench system, defense, retrograde to dense urban terrain (DUT), and an urban attack and defense. Besides the obvious benefits in tactical proficiencies, the FTX is designed to ensure lieutenants are taught to perform their duties as they relate to three critical components of leadership in LSCO: fieldcraft, health and hygiene, and morale.

Cover and concealment is no longer just a ground-based consideration. sUAS swarm above the battlefield en masse to find, fix, and organically finish or call for fire on tactical-level targets. Proper camouflage and position preparation remain effective means of preventing detection from red air. The camouflage techniques that blur silhouettes to the naked eye have the same effects on the feed of a drone by distorting shapes, making people and positions harder to identify on

Infantry Basic Officer Leader Course students encounter an enemy drone during a recent platoon live-fire exercise at Fort Moore. (Photo courtesy of 2nd Battalion, 11th Infantry Regiment)

screen. Experienced leaders know that the priorities of work are not always adhered to when Soldiers are tired, hungry, fearful, or distracted. Future platoon leaders cannot afford to learn this during combat. Throughout the FTXs, students must learn that they alone are ultimately responsible for validating the fieldcraft and preparation of their subordinates.

Non-battle casualties related to health and hygiene remain a persistent threat to manpower and morale. A 1969 operational report from Vietnam warns that "Malaria continues to be a serious problem in the Division," disproportionately affecting forward units.[26] A platoon leader captured similar thoughts in his official "lessons learned" report, writing: "The platoon leader must be concerned with the many diseases [which] are capable of rendering a unit inoperative." His solution: supervision of personal hygiene and adherence to basic preventative measures such as ensuring periodic medical checks.[27]

These were lessons which remained unlearned from World War II and Korea. The Infantry School's 1954 Korean War AAR found a basic weakness of junior officers was their failure to "know their men and look after their welfare," resulting in many man-hours lost due to preventable disease.[28] The concept of dutiful responsibility was so absent from officer curriculum that it was not until the war was more than a year old that U.S. Army Forces Command (FORSCOM — then known as Office of the Chief of Army Field Forces or OCAFF) formally mandated that officers conduct periodic foot checks, drastically reducing the number of cold-weather injuries.[29]

Platoon leaders must be taught to recognize the effects that the environment will have on their Soldiers. Whether it be the cold, rain, disease, or isolation, the health and morale of Soldiers will be determined by the actions their leaders take to care for them. One Soldier said it best, commenting on his leaders during a harsh Korean winter: "It is not the enduring of hardships but rather the enduring of hardships that could have been prevented that ruins morale."[30] Soldiers can persist in the cold when they are confident their leadership is making efforts to clothe them. Will platoon leaders use their movement to the rear to just eat and receive orders, or will they use it as an opportunity to wield their rank and ensure their Soldiers are fed and clothed?

Some may argue that the above are NCO responsibilities, but large-scale combat operations will, by necessity, blend "officer business" and "NCO business" into "leader business." At the onset of conflict, units will likely have to give up NCOs to serve as cadre for schoolhouses and leaders for newly created units. Throughout the war, units will sustain casualties, requiring the promotion of less-experienced Soldiers into NCO billets. Whereas the current force typically comprises staff sergeants and sergeants first class who are older and more experienced than the platoon leader, that should not be the assumption for the next fight. One example is the "shake-and-bake" NCO program the Army implemented during the Vietnam War to overcome its NCO manpower needs. The program sent privates to an NCO course immediately after basic training and graduated them as E-5s to fill NCO ranks.[31] During mobilization, the NCO Corps may not be plentiful or mature enough to sufficiently and solely own the above responsibilities. Fieldcraft, hygiene, and morale remain core NCO responsibilities, but it is ultimately on the platoon leader to ensure said tasks are seen through.

Training and Selection

"We must remember that one man is much the same as another, and that he is best who is trained in the severest school."

— Thucydides

The qualities and aptitudes required for platoon leadership in ground combat are not inherently present in every citizen or Soldier. The proposed 14-week course, due to its necessary short length, can only unleash and build upon these qualities if they are already present in the student to some extent. This article provides a proposed draft POI for a Congressional mobilization not enacted since World War II — meaning there must be sacrifices in the contemporary developmental models to ensure America's sons and daughters are led by the most competent young Infantry leaders. The abridged training pipeline will come at a trade-off in output quality, so the course must identify individuals who can't adapt and learn at the rate required to survive and learn from the foundations the course provides post-graduation. Time, schoolhouse capacities, and needs for lieutenants in other branch billets are also factors worth considering. The training and selection of Infantry platoon leaders for LSCO is not a process that everyone can or should succeed in.

World War II-era Infantry basic courses had an average failure rate of 25 percent, with some classes nearing 40 percent.[32] Of the three causes for failure (academics, leadership, and conduct), 49.6 percent failed for academic insufficiencies and 48.4 percent for lack of leadership.[33] The academic criteria were relatively straightforward by use of objective written tests. Leadership, however, was never formally defined, and no official measures were developed. Fortunately, there was one study conducted which evaluated 9,000 failures from 200 Infantry basic courses. The study identified the following as principal causes of relief:[34]

1. Power of self-expression (lack of personal force, colorless personality);
2. Self-assurance (lack of self-confidence, lack of initiative, inability to make quick decisions, unwillingness to assume responsibility, timidity, lack of poise under stress);
3. Attitude (lack of effort, indifference, lack of perseverance);
4. Teamwork;
5. Military appearance (untidiness, lack of cleanliness, lack of coordination, stamina, and endurance); and
6. Speech (crudeness of speech, lack of volume and authoritative tone).

The above criteria are captured in IBOLC's current assessments of character, competence, and confidence. As such, this mobilization POI proposes performance evaluations similar to the existing IBOLC assessments with a few

adjustments based on course length, new course events, and assumptions on follow-on schooling (see Figure 3).

Student performance would be screened by a cadre board three times throughout the course, an interval similar to World War II and Vietnam-era courses (applicable information from Korean War could not be found).[35-36] There are numerous benefits to conducting frequent cadre evaluations. They provide the students actionable feedback on their performance and allow tactical officers to tailor their instruction to the individual student's needs (e.g., assigning different roles during FTXs). Early screenings enable those deemed unsuited for the Infantry to re-branch without wasting excessive time, freeing resources and attention for other students. Later screenings allow the cadre to identify underperforming students who may yet become Infantry leaders through reinsertion into a later class for additional training. The three cadre boards would evaluate the following:

Cadre Board 1 (Week 6): Exam 1, Army Combat Fitness Test (ACFT), CSL 1, TLP 1 operation order (OPORD), Peers 1

Cadre Board 2 (Week 9): Cadre Evaluation 1, TLP 2 OPORD, Peers 2, Squad/Platoon Operations

Cadre Board 3 (Week 14): Cadre Evaluation 1 & 2, CSL 2, Exam 2, Course Critical Patrols, Peers 3

The capacity for combat leadership of Soldiers is a difficult trait to quantify, requiring some form of subjectivity in the form of an experienced cadre board to ensure the right lieutenant does or does not lead Infantrymen. The cadre boards would focus primarily on students who fail a course-critical event and determine if the student should be maintained, dropped from the course, or reinserted into the next. The cadre would make their recommendations based on an analysis of the student's records, their own observations of the student, and peer evaluations. The first board is oriented towards dropping students early who fail multiple critical events or recommending reinsertion or probation for students who display potential. The second board would re-evaluate students on probation and any students who had failed a critical event to make a recommendation on drop, reinsertion, or probation for the third board. The third board would assess students placed on probation from the second board, new critical event failures, and any negative patterns identified through peers.

Strong leadership potential can compensate for weaker academics, but the inverse is typically not true. For example, students who marginally fail Exam 1 but score high on their first OPORD and peers would likely be maintained on probation. However, students who score high on Exam 1 but perform poorly on their OPORD and peers would likely be dropped or reinserted. The risk inherent with subjectivity is reduced through limits on critical events students can fail before automatically being dropped or reinserted (failing two events is, at best, an automatic reinsert). If students are reinserted and fail the same or two other events, they will automatically be dropped. Students who are dropped will be re-branched for continued service based on the needs of the Army.

The decision to drop or reinsert students will no doubt be influenced by the supply and demand for new Infantry officers. Reinserting a student into a subsequent class adds one student with an at-risk record and removes one new student who is potentially fully qualified. The reinserted student is also additional time and resources the Army spends for a lower chance of successful commission. Three classes in World War II were comprised solely of turnbacks and had an average graduation rate of 44 percent.[37] Even so, if each class comprised 250 students (the average at the time), the result would be 330 new Infantry officers for the force. If qualified candidates are plentiful and manning needs lower, then this course recommends fewer reinsertions. If there are fewer qualified candidates and manning needs are higher, then this course recommends higher rates of reinsertion.

Figure 3 — Suggested Performance Evaluations

Event	Week	Standard	Course Critical	Re-Rest	Assessment
HT/WT	1	Go/No Go	Yes	Yes	AR 600-9
Exam 1	2	70%	No	No	Scoring %
ACFT	2/13	60 pts per event	Yes	Yes	DA 705 Scale
M4 Qual	2	23/40	Yes	Yes	1 pt/hit
Land Nav	3	4/7 pts in 4 hours, Day into Night	Yes	Yes	Point Scale
HPDTs	1	Go/No Go	Yes	Yes	Go/No Go
TLP 1 OPORD	4	70%	Yes	Yes	Rubric
TLP 2 OPORD	9	70%	Yes	Yes	Rubric
Field Patrol	10/11/14	70%	Yes	Yes	Rubric
12-Mile FM	12	3 hours or less	Yes	Yes	Scale
CSL 1	5	Go/No Go	No	No	Rubric
CSL 2	10	Go/No Go	No	No	Rubric
Peers	5/8/14	Go/No Go	Yes	N/A	Rubric
Exam 2	12	70%	Yes	N/A	Scoring %

Conclusion

Open-source wargames against the Army's pacing threats have repeatedly produced casualty rates that could exhaust the existing force structure in a matter of weeks.[38] We cannot assume that the next war will be short, isolated, or produce few casualties. Regional conflicts are intensifying across the globe while Russia's deadly war in Ukraine continues with no end in sight. History has proven war is a phenomenon that risks spiraling out of control at unforeseen and calamitous rates. If the military and political conditions are met to trigger a mobilization, IBOLC will have a short amount of time to produce lieutenants who are inexperienced yet tactically competent, untested in combat yet unnerved by fear, and judged by their Soldiers to be a leader on day one.

Students in the Infantry Officer Basic Leader Course conduct platoon live-fire training on Fort Moore's Galloway Range on 9 October 2024. (Photo by Joey Rhodes II)

Should this hypothetical one day become a reality, the above proposed POI could serve as a historical baseline and reference point for the next Mobilization Infantry Basic Officer Leader Course.

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[35] *Infantry Officer Candidate Program Manual* (Fort Benning, GA: U.S. Army Infantry School,1964).

[36] Palmer, Wiley and Keast, *The Procurement and Training of Ground Combat Troops*, 337.

[37] Keast, "Training of Officer Candidates in Army Ground Forces Special Service Schools," 21.

[38] Kent Park and John Nagl, "Was 50 Years Long Enough? The All-Volunteer Force in an Era of Large-Scale Combat Operations," *Joint Force Quarterly* 114 (3rd Quarter 2024), https://digitalcommons.ndu.edu/cgi/viewcontent.cgi?article=1049&context=joint-force-quarterly.

CPT Kevin Shinnick currently serves as the executive officer of the Regimental Reconnaissance Company, Regimental Special Troops Battalion, 75th Ranger Regiment, Fort Moore, GA. He previously served as a platoon leader in 1st Squadron, 2nd Cavalry Regiment, Vilseck, Germany, and as an NCO in 3rd Battalion, 75th Ranger Regiment, Fort Moore. CPT Shinnick enlisted in the Army in 2011 and graduated from the United States Military Academy in 2020 with a bachelor's degree in international relations.

The Role of the CTCP in a LSCO Environment

CPT THOMAS HINKLE

According to Army Techniques Publication 6-0.5, *Command Post [CP] Organization and Operations*, the combat trains command post (CTCP) "controls and coordinates administrative and logistical support. It consists of members from the S-1 (battalion or brigade personnel staff officer) and S-4 staff sections. The battalion S-4 leads this CP [command post]. The battalion's field support company normally co-locates with the CTCP."[1] The CTCP's tasks include monitoring current operations and preparing to assume the functions of the main CP; coordinating sustainment for the battalion; providing sustainment representation to the main CP for planning and integration; monitoring main supply routes and controlling sustainment traffic within the battalion's area of operations; and coordinating the evacuation of casualties, equipment, and detainees.

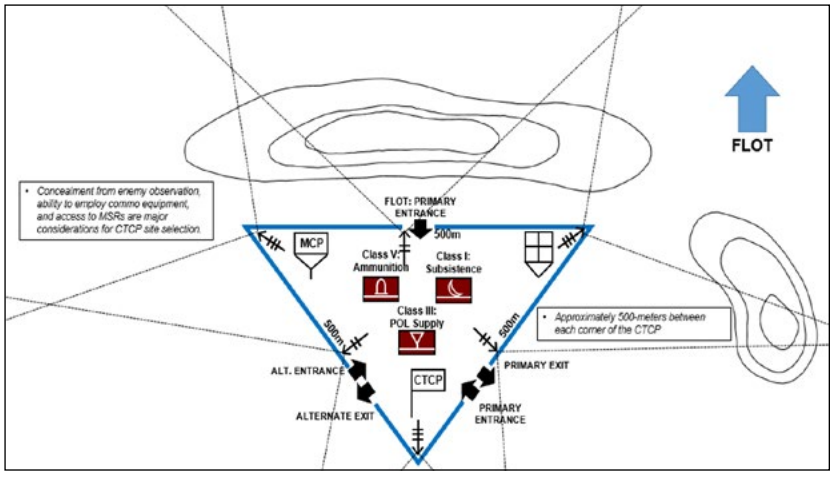
As doctrine provides the framework for everything we do in the Army, this publication serves as the basis for all Army CP operations. During National Training Center (NTC) Rotation 24-04, the 1st Battalion, 36th Infantry Regiment, 1st Armored Brigade Combat Team, 1st Armored Division, achieved success in the logistics fight because our Forward Support Company (FSC) seamlessly integrated the CTCP into the planning process, providing the battalion with both a logistics center and backup CP. This article shares some of the lessons we learned during this rotation.

While the ATP states that the S-1 and S-4 are required at the CTCP, additional resources are needed for this important node to fill the role as the battalion's backup CP in a large-scale combat operations (LSCO) environment. To fill all the required roles, 1-36 IN's CTCP standard operating procedure (SOP) varied a bit from doctrine, but the base points remained the same. Our SOP stated, "The CTCP is the coordination center for sustainment of the combat aviation brigade (CAB). Usually, the Headquarters and Headquarters Company (HHC) commander is responsible for operations, movement, and security of the CTCP and the combat trains. Often, the FSC has a representative, such as the executive officer [XO], at the CTCP. The CTCP also monitors the current tactical situation on the command net to assume its function as the alternate main CP."

Having the HHC commander run the node is one of the main ways our SOP differed from doctrine. Our CTCP's layout had been largely modeled for a stationary fight with the CTCP, Role 1, and unit maintenance collection point (UMCP) all co-located within the CTCP footprint with the HHC commander specifically maintaining overall command of the node. While a stationary CTCP with all three nodes co-located may have made sense in a counterinsurgency fight, the doctrine is highly contradictive in a LSCO fight. The Role 1 should be located 5-7 kilometers from the forward line of own troops (FLOT) for expedited care.[2] However, the maintenance enterprise needs to be static to be able to conduct maintenance, and it also requires more time to complete a move. Both nodes are included with the CTCP by doctrine, but we ultimately found it best to have the three elements disperse and become their own independent nodes. Although this dispersion came with increased risk due to security vulnerabilities, it also meant we would produce a lower electromagnetic signature for enemy recon assets to detect.

Communication issues proved to be the greatest challenge we faced during NTC Rotation 24-04. The CTCP had the majority of the node's communication assets (we only used lower tactical internet during the rotation). We primarily used the Joint Battle Command-Platform (JBC-P), but the UMCP did not have that asset organically. It did have FM radios to communicate with the CTCP, which then used JBC-P messages to help amplify and reach a further audience. When vehicles were waiting for repairs, the UMCP would be able to use the JBC-Ps in those systems, but only if these systems were not also in need of maintenance. This was one of the driving factors in the placement of the main CTCP node: It had to be close enough to the main CP to serve its role as the backup CP yet far enough away from the FLOT to keep communication with the UMCP. After the first couple of days

Figure 1 – Example CTCP Layout



in the box, we decided to operate the Role 1 independently, as it had all necessary communication platforms, and the CTCP would remain close enough to the UMCP to maintain communication.

The CTCP's lack of high frequency (HF) radios hindered our ability to operate as the backup CP for the battalion. At the start the rotation, we were fighting through the Alpine Pass and unable to get many of the frequency modulation (FM) transmissions through to other parts of the pass, let alone back to a higher headquarters that was outside of the pass. The primary method for communicating with dismounted units was through HF rather than JBC-P. The scout platoon and the snipers that were attached to the British First Fusiliers both had positive HF communication with the main CP and were able to talk freely in the pass. We would have had an issue though if the main CP had gone down and the CTCP needed to take the fight for an extended period. We would not have been able to control any of the fighting due to the difficulty communicating with our subordinate units.

Going back to the placement and layout of the nodes within the CTCP, it was also early in the rotation that we quickly learned our original SOP could not be sustained during operations. Having a light infantry background, the FSC XO's and my instinctive reaction to indirect fire anywhere close to our area meant picking up and moving the entire CTCP. Our maintenance chief, however, quickly informed me that the UMCP needed to stay in place for at least 48 hours if we wanted things to get fixed. We made the decision to accept the risk and have the UMCP also operate independently and secure itself. The UMCP was far enough away from the FLOT that it had no real issues. Additionally, having Abrams tanks and Bradley Fighting Vehicles with working turrets helped increase its security.

The security of the Role 1 presented the bigger risk. At that time, the modified table of organization and equipment limited the medics to only small arms (M4s and M17s). Rather than take combat power out of the fight, we allowed them to continually move, making them a smaller target for the opposing forces (OPFOR). (After we returned from NTC, the modified table of organization and equipment changed, adding M249 Squad Automatic Weapons to better secure the Role 1 and manned ambulance exchange points).

As for the CTCP itself, the prepositioned stock we pulled at NTC greatly impaired our security. Due to a miscommunication, we could not use all our crew-served weapons. Both of our S-1's and S-4's Light Medium Tactical Vehicles (LMTVs) at home station have ring mounts, allowing them to mount these weapons and provide security for the node; the prepositioned NTC vehicles, however, did not have this feature. We did not communicate clearly enough or have enough tripods ready to employ the MK19 and M2 machine guns, which would have greatly improved our security. Our ability to camouflage ourselves though did help with this.

The CTCP's main node boiled down to the S-4's M1068 and the HHC commander's Joint Light Tactical Vehicle (JLTV) which both had JBC-P capabilities to talk across the battlefield. After the CTCP jumped locations, all other vehicles had the ability to spread out, tuck into the terrain, and put up camo nets. This meant only two vehicles had to be hidden while maintaining the ability to communicate. The rest of the vehicles just had to hide in whatever terrain best suited the vehicles. We only used one OE-254 and the quick erect antenna mast (QEAM) mounted on the back of the M1068, which greatly reduced our aerial signature. This technique proved effective, and the CTCP only received contact once in the form of indirect fire. Based on the amount of munitions sent to our position, however, it is likely that the OPFOR mistook our CP for a battalion or brigade tactical command post (TAC) element. Although this was not good for us, it ensured that the battalion or brigade TAC did not receive those fires.

Our experiences at NTC were a start, but to maintain an advantage the Army must adapt to the reality of the LSCO environment; this starts at the command post. One rotation is not going to solve all the issues with our CPs, but if we learn from our failures and success, as well as share our experiences so others can learn, we can slowly start to change the way we operate. Our overall takeaways include that CTCPs need to be a small element, have internal security, and have the ability to communicate up and down the chain of command across the battlefield on multiple platforms. Something that I think we need to get away from is the idea that we are going to have multiple nodes of command in one footprint. Every time we had all the nodes in close location during our rotation, we became a large, easily identifiable target and were constantly being probed or under some type of surveillance. When the CTCP was a small package by itself, we were almost never attacked (except for our one indirect fire incident where we had very little terrain to tuck into at that point).

Overall, the lessons we learned at NTC are not for us to keep to ourselves; they should be shared throughout the force so we as an Army can improve before we are involved in the next conflict. We don't want to have to learn these lessons again like we did in Operation Torch in North Africa. For those current or future HHC commanders, S-1s, or S-4s, I hope you can learn from both our successes and failures. Make yourself a small target but don't compromise your ability to be the command post that your battalion or squadron may need.

Notes

[1] Army Techniques Publication (ATP) 6-0.5, *Command Post Organization and Operations*, March 2017, 1-7.

[2] ATP 4-02.4, *Medical Platoon*, May 2021, 1-9.

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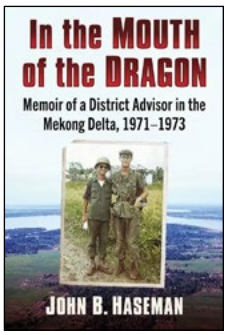
Book Reviews

In the Mouth of the Dragon: Memoir of a District Advisor in the Mekong Delta, 1971-1973

By John B. Haseman

Jefferson, NC: McFarland & Company, Inc., 277 pages, 2022

Reviewed by LTC (Retired) Rick Baillergeon



All authors have their own personal reasons on why they decide to begin the challenge of writing a book. For John Haseman, the spark was ignited during his induction into the Defense Attache Service Hall of Fame in 2011. During the ceremony, there was much discussion on Haseman's achievements which contributed to this honor. At the reception, family members in attendance began needling Haseman. Specifically, they wanted to know why he hadn't shared any details with them regarding his service.

Elaborating on this occasion, Haseman states, "My family surrounded me at the reception afterwards and claimed forcefully, 'You never told us about any of this.' That morphed into, 'Start writing before you forget everything, and by the way, you can start with Vietnam because you never told us anything about that either.'" Family members can be incredibly persuasive, and clearly the seed had been planted.

The final push to begin the book occurred later while Haseman was back home. He states, "My personal library of books about Vietnam War history and memoirs reached more than 500 volumes. I was struck by the fact that, in all my bookcases, there were fewer than a dozen books written by advisors who had lived and fought out in the districts with the Vietnamese RF/PF [Regional Forces/Popular Forces] soldier. That's why I sat down and wrote this book."

Haseman began crafting his experiences as an advisor during the end of the Vietnam War and the result is *In the Mouth of the Dragon*. Within this outstanding volume, Haseman describes his experience as a district advisor in Vietnam from July 1971 to February 1973. During that period, he served in two districts in the Mekong Delta (Ham Long and Mo Cay). These districts were in Kien Hoa Province, and each had their own unique characteristics and operational environment.

I believe Haseman achieves several things in his memoir. First, he provides readers with an excellent overview of the roles of an advisor during the final years of the Vietnam War. He summarizes these roles and duties in the following: "But I can recall no time in which I actually advised any of the Vietnamese officers on tactical operations. We were there to support them with air support and sometimes financial support for development projects (we had Assistance In Kind — AIK — funds for that) and — perhaps most valuable — to be a bucker-upper, morale-boosting friend."

Haseman's discussion of the above friendship is another area he emphasizes throughout the volume. The author goes into significant detail on the relationship between advisor and counterpart. He includes the many ways he strived to gain his counterparts' confidence and trust. These actions, along with Haseman sharing the day-to-day hardships with his counterparts, forged an incredible bond. It is truly a bond only Soldiers can share with each other.

Memoirs always contain their fair share of "war stories," and Haseman certainly provides readers with many. These run the gamut of emotions and touch on a wide array of topics. He clearly has a knack for telling these stories in a written form. Many can tell a story verbally but then often have challenges putting it in written form with the same clarity. Haseman can undoubtedly articulate these stories to readers and not lose anything in translation.

There are several strengths displayed within Haseman's volume which greatly contribute to one's reading experience. First, this is a superbly written book. It is crafted in a highly conversant style and in military speak. He states the reason for this style in his introduction: "I write in military-ese because the story flows better using military terminology and acronyms, considering that is how I thought of those events or experiences at the time, and it is more natural to tell the story that way." The author's prior writing experience assists in this readability as he has four additional books and more than 250 published articles in his body of work.

Another strength of the volume are the "extras" Haseman has provided readers to assist in telling his story. This includes more than 50 photographs and five maps which are inserted throughout the book to tie-in with the related text. Additionally, he has included sections which provide definitions for military terminology and one in which he details the post-1973 life experiences of those he served with as an advisor. In total, these additions add clarity and truly personalize the volume.

The last strength I would like to address is another Haseman addition. Throughout the book, he begins many discussion topics with a bold, italicized partial sentence beginning "Happiness Is..." I found this to be an outstanding transition technique and relates to many subjects which perhaps only a Soldier would find happiness in. Examples include: "Happiness Is Going on an Operation and Not Getting Shot," "Happiness Is a Drink of Fresh Coconut Water After a Tromp through the Jungle;" "Happiness Is Payday on

Pay Day;" "Happiness Is the Generator Starting on the First Crank;" and "Happiness Is Translating the Monopoly Game into Vietnamese and Not Losing Your Shirt in Vietnamese Poker Games."

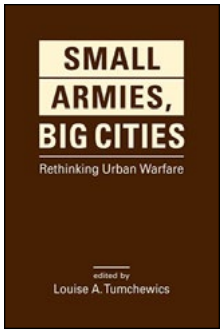
In conclusion, *In the Mouth of the Dragon* is a valuable addition to the Vietnam War body of knowledge. The role of advisors, especially at the end of the war has not seen a great deal of scholarship, and Haseman has assisted in filling the void. This is a volume which is superbly written and organized, containing several valuable features. I have no question readers will be thankful for the publishing of this outstanding volume... however, perhaps not as thankful as Haseman's family members!

Small Armies, Big Cities: Rethinking Urban Warfare

Edited by Louise A. Tumchewics

Boulder, CO: Lynne Rienner Publishers, 329 pages, 2022

Reviewed by LTC (Retired) Jesse McIntyre III



Urban warfare is today and tomorrow's war. Recent events in the ongoing Russia-Ukraine War, Second Nagorno-Karabakh War, and now in Gaza following the Hamas-led 7 October attack on Israel are occurring in urban settings. Since the Industrial Revolution, trends in urban demographics indicate urbanization is rapidly expanding. The population living in cities has more than doubled over the past 40 years and is projected to reach 55 percent of the world's population by 2050. Future conflicts — whether counterinsurgencies, peer confrontations, or near-peer confrontations — will likely incorporate urban warfare.

Louise Tumchewics and 12 other authors — who are all recognized researchers in the field of strategic studies, intelligence, defense, and urban conflicts research — produced a timely study that aims to inform and stimulate thinking on how small armies have fought in cities, reflecting on the enduring nature and changing character of urban warfare through a number of case studies. *Small Armies, Big Cities* is broken into three key themes: urban warfare, operational art, and conclusion.

Among the authors' many significant observations and reflections, four stand out. First, the perils and pitfalls for urban warfare have been recognized for millennia. Military theorists from Sun Tzu onwards have warned against operating in urban areas. Urban fighting favors the defender while leveling the playing field against a superior military force. In "The Totemic Value of Cities," Alex Neads informs readers that urban warfare doctrine requires a concentration of eight attackers for every one defender in urban environments. This environment impedes movement, command and control, and communication; channels attacking forces into kill zones; constrains employment of weapons; and places the safety and welfare of non-combatants on attacking forces.

Second, understanding and training for urban environments are paramount for militaries today and in the future. Steve Tatham notes that taking a simplistic view of the population is a precursor to failure. Urban areas are usually not homogeneous in nature but may be dissimilar in regards to socio-economic status, language, ethnicity, and religion. There are formal and informal leaders within urban areas who can assist with intelligence, force protection, humanitarian, and post-military operations planning. Furthermore, there is a need to understand how even distant locations can be socially connected and how security force action in one area can have consequences elsewhere. Training for urban operations will assist in protecting the force, reducing civilian interference and promoting legitimacy of security forces.

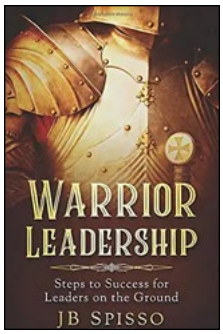
Third, Tatham also underscores the role and importance of influence operations in urban warfare. Both sides are engaged in influencing and persuading the legitimacy of their cause. Tatham describes how influence operations are more than tailoring messages for an intended audience; they are about nudging, shoving, and shaping behaviors through a variety of means. These operations require a detailed and quantifiable understanding of behavior, psychology, and social environment. Commanders and their staffs must know the physical and social urban environments if they expect to dominate the information battle for the urban environment.

Fourth, Andrew Graham's "Conducting Urban Warfare in the Twenty-First Century" is the centerpiece of this excellent work. It builds on previous chapters and lays out the potential future directions of hostile intent and counterterrorism research. Graham provides four framework principles:

1) Strategic direction, alignment, and integration of effort;
2) Winning in the cities;
3) An unconventional, polydimensional, and multiagency mindset; and
4) Understanding along with strategic and operational considerations for military commanders and their staffs in planning future urban military operations.

Small Armies, Big Cities illustrates the challenges and unique reality that future armies will face during urban warfare. This work is highly readable and provides a comprehensive discussion on the topic. This work is a must read for policymakers, strategists, and others in planning for future conflicts. In addition, it will provide a valuable resource to security stakeholders at policy and practitioner levels.

Warrior Leadership: Steps to Success for Leaders on the Ground



By J.B. Spisso

Henderson, NV: JBS Leadership Consultants, LLC, 126 pages, 2019

Reviewed by LTC (Retired) John D. Nawoichyk

In his book *Warrior Leadership: Steps to Success for Leaders on the Ground*, J.B. Spisso provides authentic and heartfelt lessons on leadership that makes it a must read for every leader. In his introduction, he states that everything in the book leads back to "hard work, staying positive, and leadership is a learning process," and he clearly lays out those threads in spades on every page. He goes on to say that everyone is a "warrior" in their own right, defining the term as someone who "is working hard to be the best at whatever you do and doing it with honor, personal courage and character." Unlike so many recent books written by veterans, Spisso seamlessly integrates his own military experiences with those of countless professional athletes, business executives, and leaders across all industries; you will find yourself pulling your well-worn and written-in copy off the shelf to continuously review as you face challenges and strive for continued growth. He achieves this through an easy-to-follow structure, outstanding examples, and actionable lessons learned. This book is an easily digestible treasure trove on being a "warrior."

Spisso structures the book into categories that result in bite-size chunks of leadership lessons. The lessons are broken down into 12 chapters, each covering critical topics such as finding your leadership style, engaging every role you are in, being a force multiplier, and enhancing group dynamics and team chemistry. Every chapter provides a series of examples that are case studies from his lifelong drive to be the best he can be and associate with those same people. Within each of the examples, Spisso provides actionable items for leaders to use. Uniquely, each chapter ends with "The Takeaways," which are three to five quick hits that the reader can immediately use and easily refer back to. His stories make the structure flow and have the reader wanting more.

Throughout the book, there are a range of examples of both success and failure from leaders in every community, including military, C-suite executives, and professional athletes. These examples, truly stories, allow readers to easily grasp the lessons because they may feel like "hey, that could be me" on every page. For example in the chapter "Finding Your Leadership Style," Spisso talks about how his first squad leader, SSG Hugh Roberts, taught him through personal example that every person could have a leadership style as long as they are consistent, clearly driving his point home in a simple understandable way. While two chapters later, he uses the actions of a professional hockey player talking to an 11-year-old boy to exemplify the ability to easily fill multiple roles based on the scenario. It is through these examples, that the author highlights easily digestible actions any leader can take.

As a direct follow up to the examples, Spisso uses his skills honed within the special operations community and countless years of teaching to provide the reader with actionable tools. For example, in the "Transformation" chapter, he addresses how you can stay focused and achieve more by sectionalizing activities in your life; while doing your workout cut out distractions like emails and texts, but when in the office focus on work. A poignant example that really hit home for me is the idea of "being home for dinner by 6 p.m. every night" often results in working at home all night, losing the desired effect of family time where it could be better to come home 45 minutes later but leave work at work — being deliberate and present in all you do. Other great lessons include how to quell the natural fears of your new subordinates as you move into a new leadership position in the chapter "Be Yourself" and how to adapt to your people in the chapter "Leaders Must Be Adaptable." By using clear examples and immediately following them up with actionable lessons learned, readers can naturally feel empowered to transform their personal and professional lives.

Warrior Leadership is a must read. As you read the book, you will want more and find yourself taking notes on how you can become the best "warrior" you can be. Not only will you enjoy the first read, but you may continually come back to it as a reference for your growth and to solve challenging problems.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