

ARMOR

Mounted Maneuver Journal
Fall 2023

Scouts Out!
Refining Reconnaissance, Security, and
Surveillance for the Future Battlefield



HARMON

ARMOR

The Professional Bulletin of the Armor Branch, Headquarters, Department of the Army, PB 17-23-4

COMMANDANT
BG MICHAEL J. SIMMERING
EDITOR IN CHIEF
LISA ALLEY

ARMOR (ISSN 0004-2420) is published quarterly by the U.S. Army Armor School, McGinnis-Wickam Hall (Bldg. 4), Suite W142, 1 Karker Street, Fort Moore, GA 31905.

Disclaimers: The information contained in **ARMOR** represents the professional opinions of the authors and does not necessarily reflect the official Army, U.S. Army Training and Doctrine Command or U.S. Army Armor School position, nor does it change or supersede any information presented in other official Army publications.

Manuscripts and their accompanying figures become government property and public domain upon receipt in **ARMOR** editorial offices. (The ideas within the manuscript remain the author's intellectual property and may be reused by the author, but the work itself — the particular expression of the ideas — passes to public domain upon receipt of the manuscript.) **ARMOR** staff will make necessary grammar, syntax and style corrections on the text to meet publication standards and will redesign illustrations and charts for clarity and to standards as necessary. **ARMOR** staff may coordinate changes with authors in the interest of ensuring that content remains accurate and professionally developmental. As a non-copyrighted government publication, no copyright is granted if a work is published in **ARMOR**, and in general, no copyrighted works should be submitted for consideration to publish. On occasion, however, **ARMOR** may wish to publish copyrighted material, and in that instance, individual authors' copyrights will be protected by special arrangement.

As the primary purpose of **ARMOR** content is the professional development of Armor Branch soldiers, **ARMOR** focuses on materials for which the Armor School has proponentcy: armored, direct-fire ground combat systems not serving primarily as infantry carriers; weapons used exclusively in these systems or by CMF 19-series enlisted Soldiers; miscellaneous items of equipment which armored and armored cavalry organizations use exclusively; training for all 19-series officers and CMF 19-series enlisted Soldiers; and information concerning the training, logistics, history and leadership of armor and armored cavalry units at a brigade/regiment level and below, to include threat units at those levels.

Distribution: Approved for public release. Distribution is unlimited. Official distribution is made as one copy for each armored brigade headquarters; armored cavalry regiment headquarters; armor battalion headquarters; armored cavalry squadron headquarters; reconnaissance squadron headquarters; or armored cavalry troop, armor company and motorized brigade headquarters of the U.S. Army. In addition, Army libraries, Army and DoD schools, HQDA and Army Command staff agencies with responsibility for armored, direct fire, ground combat systems, organizations and training of the personnel for such organizations may request two copies by sending a request to the editor in chief.

Reprints: **ARMOR** is published by the authority of the Chief of Staff, U.S. Army, and is in the public domain except where copyright is indicated. **ARMOR** requests that reprinted material carry credit given to **ARMOR** and the author. Direct inquiries to Editor in Chief, **ARMOR**, McGinnis-Wickam Hall (Bldg. 4), Suite W142, 1 Karker Street, Fort Moore, GA 31905.

Features

- 8 **To Fight or Not to Fight? The Saga Continues**
Robert S. Cameron, Ph.D.
- 16 **The Division Cross-Domain Task Force**
Re-imagining Division Reconnaissance & Security for 2030
MG John B. Richardson IV and MAJ John T. Pelham IV
- 20 **Tanks Need the Infantry to Lead the Way**
1LT Brandon Akuszewski and CPT Larry D. Tran
- 25 **Peaking at LD: A Way to Achieve Maintenance Excellence**
LTC Jay Ireland
- 29 **Controlling Chaos: The Cavalry Troop Command Post**
CPT Ryan F. McGovern
- 36 **Cavalry Operations in Arctic Conditions**
1LT Tristan Meadows
- 40 **Junior Leaders in the Age of Experimentation**
MAJ Adam Nodin
- 44 **Training Individuals and Units to Fight and Win in LSCO**
LTC Mitchell Payne and LTC John Thomas
- 52 **Maximizing Operational Readiness in the Baltics**
1LT Darren Pitts
- 56 **Manning the Next Generation Main Battle Tank**
CPT Larry D. Tran

Departments

- 1 **Contacts**
- 4 **Chief of Armor's Hatch: Ready Today/Preparing for Tomorrow**
- 3 **Gunner's Seat: Brilliant at the Basics**
- 61 **Featured Unit: 66th Armor Regiment**



By Order of the Secretary of the Army:

Official:


MARK F. AVERILL
Administrative Assistant
to the Secretary of the Army
2334103

RANDY A. GEORGE
General, United States Army
Chief of Staff

Armor School Points of Contact

ARTICLE SUBMISSIONS: Articles can be submitted as email attachments to usarmy.moore.tradoc.mbx.armor-magazine@mail.mil. For all submissions, please include a complete mailing address and daytime phone number.

SUBMISSION POLICY NOTE: Due to the limited space per issue, we will not print articles that have been submitted to, and accepted for publication by, other Army professional bulletins. Please submit your article to only one Army professional bulletin at a time.

GRAPHICS AND PHOTOS: We will accept conventional photo prints or electronic graphic and photo files in no less than 300 dpi TIF or JPG format. (Please do not send photos embedded in PowerPoint and Word.) If you use PowerPoint for illustrations, please try to avoid the use of excessive color and shading. If you have any questions concerning electronic art or photo submissions, contact the Editor in Chief.

UNIT DISTRIBUTION: To report unit free distribution delivery problems or changes of unit address, email usarmy.moore.tradoc.mbx.armor-magazine@mail.mil; phone DSN 835-2698 or commercial (706) 545-2698. Requests to be added to the official distribution list should be in the form of a letter or email to the Editor in Chief.

EDITORIAL MAILING ADDRESS: U.S. Army Armor School, ATTN: *ARMOR*, McGinnis-Wickam Hall (Bldg.4), Suite W142, 1 Karker Street, Fort Moore, GA 31905.

REPRINTS: *ARMOR* is published by authority of the Chief of Staff, U.S. Army. Material may be reprinted, provided credit is given to *ARMOR* and to the author, except where copyright is indicated. Request all organizations not affiliated with the Department of the Army contact *ARMOR* for reproduction/reprinting permission. Inquiries may be directed to Editor in Chief, ATTN: *ARMOR*, McGinnis-Wickam Hall (Bldg. 4), Suite W142, 1 Karker Street, Fort Moore, GA 31905.

ARMOR MAGAZINE ON-LINE: Visit the *ARMOR* magazine Website at www.moore.army.mil/armor/eARMOR/.

ARMOR HOTLINE — (706) 626-TANK (8265)/DSN 620: The Armor Hotline is a 24-hour service to provide assistance with questions concerning doctrine, training, organizations and equipment of the armor force.

ARMOR Editorial Office

Editor in Chief
Lisa Alley (706) 545-9503
Email: lisa.a.alley8.civ@army.mil DSN 835

Deputy Editor
Gary A. Jones (706) 545-8701
Email: gary.a.jones33.civ@army.mil DSN 835

Covers, Art Support, Tanks of the World Feature
Jody Harmon (706) 545-5754
Email: jody.a.harmon.civ@army.mil DSN 835

U.S. Army Armor School

Commandant (ATZK-DF)
BG Michael J. Simmering (706) 545-2029
Email: michael.j.simmering.mil@army.mil DSN 835

Deputy Commandant (ATZK-DF)
COL James M. Modlin (706) 545-2029
Email: james.m.modlin3.mil@army.mil DSN 835

Armor School Command Sergeant Major (ATZK-CSM)
CSM Waylon D. Petty (706) 545-3815
Email: waylon.d.petty.mil@army.mil DSN 835

194th Armored Brigade (ATZK-BAZ)
COL Gregory W. McLean (706) 626-5899
Email: scott.t.allen10.mil@mail.mil DSN 620

316th Cavalry Brigade (ATZK-SBZ)
COL Ryan T. Kranc (706) 626-8111
Email: ryan.t.kranc.mil@army.mil DSN 620

Office, Chief of Armor (ATZK-AR)
George DeSario (706) 545-1352
Email: george.desario.civ@army.mil DSN 835

Army Capability Manager-Armored Brigade Combat Team and Reconnaissance (FCFC-CM-ABC)
COL Jason T. Kidder (706) 545-2208
Email: jason.t.kidder.mil@army.mil DSN 835

Army Capability Manager-Security Force Assistance Brigade (FCFC-CM-SFA)
COL Paul R. Davis (706) 626-5054
Email: paul.r.davis8.mil@army.mil DSN 835

Army Capability Manager-Infantry Brigade Combat Team (FCFC-CMA-I)
COL David Sandoval (706) 545-3911
Email: david.r.sandoval.mil@army.mil DSN 835

Army Capability Manager-Stryker Brigade Combat Team (FCFC-CMA-S)
COL Jerome Parker (706) 545-7751
Email: jerome.a.parker.mil@army.mil DSN 835

CHIEF OF ARMOR'S HATCH

BG Michael J. Simmering
Chief of Armor/Commandant
U.S. Army Armor School



Ready Today/Preparing for Tomorrow

In November, the Armor School published our Armor 2030 strategy and program of instruction (POI) guidance to the Armor School and Maneuver Center of Excellence stakeholders to drive the efforts of the branch as we re-balance the force to account for the incorporation of the 19C military occupational specialty as well as possible future force structure changes. These foundational documents will guide the transformation of the branch during not only the next year, but it will also create a framework to adjust and guide the branch to ensure we remain always ready today while preparing for tomorrow.

One of the Armor School's foundational tasks is the training of Armor and Cavalry Soldiers and leaders. From the transition of civilians to tankers and scouts to the refinement of our professional Noncommissioned Officers, Armor School POIs shape the force of today and tomorrow. This fall we collectively worked through a comprehensive POI review to ensure all courses are integrating lessons of the modern battlefield and are resourced to produce Armor and Cavalry Soldiers who are proficient on the tactical employment of their close combat platforms and all the associated readiness tasks required to bring these lethal machines to bear against an enemy. We will ensure we integrate dispersion,

camouflage, react to air attack, management of electronic warfare signatures, counter-unmanned aircraft system tactics, techniques, and procedures (both passive and active) and related actions into lesson plans by the end of fiscal year 2024. We will ensure our Soldiers and leaders understand maintenance procedures, from the basics of preventative maintenance services and checks through troubleshooting minor faults. We are committed to providing trained Soldiers to the operational armor force who are ready to operate on the modern multi-domain battlefield today through 2030 and beyond.

This approach to training and leader development is critical as we look at the more lethal, unpredictable operational environment combined with our Army's focus on warfighting against peer threats. Armor 2030 captures the non-negotiable requirement to maximize the branch's ability to field ready forces ... not simply a few units at a time. Our formations must be capable of immediately responding to crises and sustaining our efforts over time. Armor and Cavalry formations must continue to operate with the lethality, speed, audacity, and tempo that maximizes the cost imposition potential on our enemies through the rapid application of combined arms approaches. Therefore, our collective challenge in

a phrase is - Ready Today/Preparing for Tomorrow. The imperatives of maximizing immediate warfighting readiness and the sustained delivery of ready combat power over time describe our present challenge. While we must remain ready for combat at any given moment, we must also transform our formations to set the conditions for future operations and to integrate emerging technologies at a more rapid pace. These imperatives – ready today/preparing for tomorrow – create the balance that our efforts as the Armor branch must achieve to ensure our consistent warfighting readiness.

At the 2023 Association of the U.S. Army (AUSA) Annual Meeting and Exposition in Washington, D.C., GEN Randy George, Chief of Staff of the U.S. Army, expressed we could be over-servicing our equipment, placing a load on formations that have very little time.¹ On Nov. 8 and 9, the Armor School hosted a services review for the M1 Abrams and M2 Bradley fleets, to ensure the continued readiness and lethality of these platforms and formations. The Armor School partnered with representatives from Program Executive Office Ground Combat Systems (PEO-GCS), the Abrams and Bradley Product Managers (PdM), U.S. Army Tank-Automotive & Armaments Command, and senior subject matter experts from across the Army's armored

brigade combat teams (ABCTs) to critically review our fleets' maintenance requirements. The major recommendation out of this group of experts was to align service intervals to the Army's Force Generation Model by shifting current Abrams semi-annual service tasks to eight months, current annual tasks to 16 months, keep current bi-annual tasks at 24 months and merge the M2 Bradley's current semi-annual and 12-month annual service tasks. These changes will provide commanders and units greater flexibility and time to balance services with unscheduled maintenance requirements without appreciably increasing risk to Soldiers or the platforms. As a proof of principle, the Armor School will test this concept starting in January 2024 to start providing feedback to Army senior leaders without incurring additional risk to our high demand U.S. Army Forces Command ABCTs. We expect all to go well and anticipate laying the groundwork for a widespread opportunity for the operational force to become masters of maintenance.

There are 16 manned ABCTs equipment sets in the active component and the Army National Guard. Based on the Armor School's current picture of M1A2 SEPv3 Abrams fielding and production projections, we will continue to have M1A2 SEPv2 in service well beyond 2030. This fact, paired with the fact that the Abrams was anticipated to have depot-level maintenance every 10 years led us to partner with PEO-GCS and the Abrams PdM to develop a course of action to restore and extend the life of our M1A2 SEPv2s to ensure the readiness and lethality of these formations throughout the platform's lifecycle.

Efforts to start the restoration of the M1 Abrams fleets and critically examining services are just a couple of the ways we are changing how we think about transformation. As part of the Armor Branch's efforts to increase lethality and expertise in ABCTs, the Office of the Chief of Armor is submitting a proposal for Master Gunner (MG) Special Duty Assignment Pay (SDAP). This request is for qualified Abrams and Bradley master gunners serving as a master gunner or operating within the scope of a master gunner in modified table of organization and equipment/ table of distribution and allowances assignments. We believe approval of MG SDAP is an investment in talent and will provide one of the crucial incentives to sustain expertise and lethality as the branch continues to transform for 2030 and beyond.

As we look at 2030 and beyond, one of the major conceptual challenges is thinking about the impact robotic, unmanned, and artificial intelligence assisted systems will have on the future battlefield. At the Armor School, we agree that while the tools of the battlefield may change, the purpose of the Armor force will remain its ability to crew and employ mobile protected firepower. The focus of the Armor School will remain first on ensuring the Armor force is manned with the most proficient Armor and Cavalry Soldiers in the world. With this purpose in mind, we are working diligently in partnership with the Maneuver Capabilities Development and Integration Directorate to design formations that excel at fighting as all-weather close combat, combined arms forces that defeat enemy forces. And as technology matures, we will create formations

that will allow commanders to make first contact with an unmanned robotic platform or sensor. In October, the Armor School participated in the second Human Machine Integration Summit. With this summit and moving forward, the Armor School will participate in the design and persistence experimentation of formations that execute machine-enabled maneuver and operate and excel at multi-domain operations.

As I continue to engage with the Soldiers and leaders from our Armor and Cavalry formations throughout the Army, I remain amazed by the work you continue to do in support of our nation. There is nothing more transformative than the strong, cohesive teams our Armor and Cavalry Soldiers and leaders are building every day in the operational force. At the Armor School, we will continue to do all we can to provide the trained Soldiers and leaders who will ensure you can be ready today, while preparing for tomorrow.

Forge the Thunderbolt!

Notes

¹ GEN Randy A. George, The Association of the U.S. Army Annual Meeting and Exposition 2023: Army Senior Leader Press Conference, Washington D.C., Oct. 10, 2023.

ACRONYM QUICK-SCAN
ABCT – armored brigade combat team
MG – master gunner
PEO-GCS – Program Executive Office Ground Combat Systems
PdM – Product Manager
POI – program of instruction
SDAP – Special Duty Assignment Pay

CSM Waylon D. Petty
Command Sergeant Major
U.S. Army Armor School



Brilliant at the Basics

During the 2023 Maneuver Warfighter Conference at Fort Moore, GA, SMA Michael R. Weimer said our Soldiers need to be, “brilliant at the basics.” This statement is not a new idea. Many Army leaders, during the last decade at least, expressed similar concerns that Soldiers’ competencies have atrophied. There are various reasons as to why this has happened, from an Army focused on the Global War on Terror to the impact of rotational deployments across the globe. Regardless of the reasons or opinions, the growing lethality and uncertainty of the modern battlefield during multi-domain operations will require noncommissioned officers (NCOs) who are experts on their platform.

We are working with our U.S. Army Forces Command and U.S. Army Training and Doctrine Command partners to regain platform expertise, acknowledging the current processes as they exist now may not achieve all the outcomes we need as an Army to provide formations that fight effectively at echelon in multi-domain operations.

At the U.S. Army Armor School, we are looking at the military occupational specialty (MOS) 19K Advanced Leader Course (ALC) and asking the hard question – does our NCO Professional Development System (NCOPDS) produce staff sergeants who understand their role and responsibility as a leader and warfighter? Bottom line, an MOS 19K staff sergeant should graduate ALC

knowing how to be a tank commander and an MOS 19D staff sergeant should be ready to be a section leader/squad leader.

As the Armor proponent, the U.S. Army Armor School is responsible for the programs of instruction (POI) for our Professional Military Education to include the ALC portion of the NCOPDS. Feedback from leaders in the force, National Training Center rotations, maintenance trends, and gunnery scores all point to a decline in competency levels for our armored crewmembers. To address this feedback, during the past five months the Armor School has focused on how to rebuild the platform expertise required for armored crewmembers starting with 19K ALC. Our 19K NCOs need to go back to their respective units upon graduating ALC with a warfighting focus that hones their tactical skills and what is expected of a tank commander. Within the POI, we expect a tactical focus under the shoot-move-communicate-maintain umbrella, an increase in rigor on the things required to drive readiness and lethality, and some risk acceptance in lessons that can be removed that do not necessarily apply to a tank commander.

With that focus in mind, 19K ALC will incorporate lessons from the Tank Commander Course to include weapons training, boresight, plumb and synch, armament accuracy checks, administering the Gunnery Skills Test and

Common Remotely Operated Weapon Station training. To correct a trend of decreasing readiness, 19K ALC will also re-introduce a maintenance focus. We are working with the Ordinance School to develop a POI that will highlight the tank commander’s responsibility in the maintenance process. This will include preventive maintenance checks and services, proper fault recording and hanging parts. The goal is to instill ownership of the tank and crew into the tank commander.

During the next several years, we will increase rigor in the course by progressively incorporating testing on critical tasks as we get data through internal pilots. An easy example, that is a hot topic across the force, is land navigation. We will incorporate graded individual land navigation into the POI. A tank commander needs to be able to train the crew on land navigation, especially if it is graded in the Basic Leader Course. These changes will ensure the appropriate amount of accountability is in the course by testing and measuring what matters for warfighting and leadership. Rubrics and tests will reflect the tasks our NCOs must master, and multiple failures during the course will result in ALC students going home without graduating.

To focus more on the competencies of a tank commander, we need to be willing to remove some lesson plans that are of a lesser priority. We intend to move any critical NCO core

competencies from the virtual learning requirements (Phase 1 of ALC) into the resident portion of the course, while removing the rest. For example, effective counseling, preparing an evaluation report for a sergeant, and standards and discipline will become resident requirements.

Through all our piloted efforts to inform the 19-series ALC portion of NCOPDS, we will remain nested with The Army School System, especially the potential effects on our Component 2

teammates, when it comes to pay, entitlements and the total length of the course. It is still too early to tell the overall effect this investment in platform expertise will have. However, it is possible we will determine with our partners that the course will increase in length. Despite the current aversion to growth, the trend since 1998 shows that the 19K ALC POI has lost more than 100 academic hours.

As the old saying goes, we need to train to standard and not to time. If we

ACRONYM QUICK-SCAN

ALC – Advance Leader Course
MOS – military occupational specialty
NCO – noncommissioned officer
NCOPDS – NCO Professional Development System
POI – program of instruction

want an Armored Force that is “brilliant at the basics,” then we need to invest the time into our NCO Corps.

Forge the Thunderbolt!



Secretary of the Army Christine E. Wormuth, Chief of Staff of the Army Gen. Randy A. George (middle) and SMA Michael R. Weimer address the audience during the Army Senior Leader Press Conference at the Walter E. Washington Convention Center in Washington, D.C., Oct. 9, 2023. The event was in support of the AUSA 2023 Annual Meeting and Exposition. (U.S. Army photo by Staff. Sgt. Derek Hamilton)

To Fight or Not to Fight? The Saga Continues

by Robert S. Cameron, Ph.D.

In 1996 I started my civil service career in the Armor Center. While documenting and observing key Armor Branch activities, it soon became clear that a recurring point of debate lay in the nature, organization, and operation of cavalry. In the post-Cold War era, longstanding beliefs associated with the importance and role of reconnaissance and security organizations were sometimes tossed aside in favor of new technology-based concepts. Novelty garnered attention and funding, while Old School concepts enshrined in Field Manual 17-95, *Cavalry* faded.

Yet these trends marked only the latest development in this recurring debate that often fixated upon the scout's need for combat power at the platform and organizational level. This issue sooner or later emerged in doctrine, training development, and force design. The inability to resolve it stymied efforts to articulate the role of reconnaissance, security, and surveillance assets at echelon. No definitive and timeless framework of ideas existed to guide the incorporation of new technology or adaptation to an evolving operational environment. Hence, cavalry development boomeranged between the extremes of maximized versatility based upon organic combat power and aversion to hostile contact. Force structure decisions, senior leader ideas, deployment experience, or new technology often triggered the shift from one extreme toward the other.

The absence of an overarching set of principles left reconnaissance, security, and surveillance assets stranded "in the moment," continuously reacting to rather than managing changes that threatened their very existence.

Great reconnaissance schism

In 1938, the *Cavalry Journal* published an article advocating unarmored reconnaissance vehicles. In the author's view armor increased the tendency to use the platform for combat, raised its



Figure 1. Mechanized cavalry column in France, August 1944. (Photo from the U.S. Army Armor and Cavalry Collection)

silhouette, reduced mobility, decreased visibility, and complicated maintenance. Freed from an armored shell, the scout would not be emboldened to forgo information collection and engage in combat. Therefore, an unarmored platform was preferable to either the scout or armored cars then in service.¹

This view contradicted the reconnaissance principles developed by the 7th Cavalry Brigade (Mechanized), the Army's only mechanized cavalry unit. It emphasized rapid information collection to enable a high maneuver tempo. Its leaders believed that scouts operating near the enemy required the means to survive sudden contact situations and when necessary, engage in combat to complete their mission. Therefore, scouts relied upon turreted, armored cars. COL Charles L. Scott considered advocacy of an unarmored reconnaissance platform "... the most inane, asinine proposal that's ever been submitted. To take such action would be the most backward step the Cavalry could possibly take."² He wrote a rebuttal article outlining the principles governing mechanized cavalry reconnaissance and associated

them with more traditional and historical employment of the mounted branch. He accepted the possibility that scouts might have to fight to accomplish their mission and should be so trained, equipped and organized. After all, "a scout who is not trained and equipped to fight but, on the contrary, told to avoid combat under all conditions will always be a spineless adjunct to the regiment."³ These two viewpoints became the range fans governing the debate over the nature and purpose of cavalry.

Vacillating force structure decisions, confusion

World War II marked the creation of division cavalry organizations with infantry formations receiving a mechanized cavalry troop and armored formations including a cavalry reconnaissance squadron. Army and corps commands relied upon cavalry groups of at least two squadrons. The initial design of these units anticipated the broad range of missions traditionally associated with cavalry. However, when Army Ground Forces became responsible for training, doctrine, and force design, it reduced the size of

these units and narrowed their focus to reconnaissance. The mechanized cavalry's unofficial motto became "sneak, peak and retreat."⁴

When the mechanized cavalry went to war, it found few opportunities for the singular mission of reconnaissance. Field commanders needed old-fashioned cavalry more than just information collectors. The mechanized cavalry thus abandoned their one-trick pony status and performed the full range of missions originally intended—even though they were no longer configured and equipped to do so. At corps and army levels, combat and security operations predominated, while security missions constituted frequent actions at division level.⁵

The maneuver battalion scout platoons deployed in jeeps, prepared to conduct stealthy reconnaissance without combat. These platoons experienced considerable success when they could establish a dismounted observation point without detection, but such an accomplishment proved difficult in the face of hostile combined arms, counter reconnaissance teams. Jeep scouts found their ability to collect

information impaired by even a minimal enemy presence. Armored battalions attempted to resolve this issue by integrating light tanks with their jeep scouts to provide both security and the means to overcome light resistance.

After the war a restructuring of cavalry organizations occurred that reflected the wartime preference for a more versatile unit with increased organic combat power. The basic building block became the combined arms reconnaissance platoon with light tanks, scouts, a mortar team, and a rifle squad. It constituted the smallest combined arms team in the Army and the basis for the infantry division's reconnaissance company and the armored division's armored reconnaissance battalion. At the corps level, the armored cavalry regiment replaced the wartime cavalry group. The new regiment included three armored reconnaissance battalions bolstered by tanks and assault guns. In this manner, the Army recrafted its tiered reconnaissance structure around a common platoon organization.

In the Korean War the mobility

differential among the tracked and wheeled vehicles of this unit hampered its employment and complicated command and control. The jeep's lack of survivability triggered improvised armor protection, unofficial guidance to dismount immediately when fired upon, and personnel transfers into tank units. Nevertheless, jeep supporters highlighted the vehicle's small size, lightness, quietness, and ease of maintenance — characteristics that encouraged stealth.

Following the war, the maneuver battalion scout platoon alternated between the wartime combined arms configuration and a scout platoon with only jeep-mounted scouts. These shifts generated confusion, disrupted training, and ensured the dissatisfaction of both those who favored versatility and combat power as well as the advocates of stealth and greater reconnaissance coverage. The scout platoon lacked survivability and combat power, but nor did it possess the complexity of the combined arms platoon with its four vehicle types and eight different weapons.⁶ This complexity constituted a significant drawback in an era in which "a unit commander is fortunate indeed to receive a scout who is able to find himself on a map." Similarly, platoon leaders possessed little preparation other than the tank training received in the Armor Officer Basic Course.⁷

More generally the advent of the atomic battlefield in the 1950s resulted in the Army's embracement of mobile, dispersed operations and recognition of the related importance of reconnaissance, security, and surveillance.

The increased dimensions of the battlefield and accompanying demands for intensified intelligence effort, target acquisition and surveillance of the enemy — emphasize reconnaissance. To meet this demand we must have reconnaissance, which is improved in penetrating ability, protection, and possesses the facility for fighting for information in all conditions of terrain and weather. This means armored reconnaissance ground elements in close coordination with air-transported reconnaissance and battle surveillance units.⁸



Figure 2. Jeep scouts practicing stealthy observation. (U.S. Army photo)

This characterization suited the versatility and combat power of the division cavalry squadron and the armored cavalry regiment, which gained a further boost in capability through the addition of helicopter-based air cavalry.

‘Find the bastards, then pile on!’

In Vietnam the overriding role of cavalry lay in finding and fixing an elusive enemy. Cavalry organizations often lacked the luxury of simply locating enemy forces and leaving their destruction to friendly maneuver units. Such an approach ensured that the enemy simply withdrew before they could be engaged. Hence, reconnaissance in force missions sought to locate and engage the enemy long enough for other friendly forces to attack and destroy them. Similarly, when contact occurred during a reconnaissance sweep, every unit in the area received notification. They raced to the point of contact, effectively piling on combat power to ensure the hostile force’s destruction. This concept found expression on the vehicles of the 11th Armored Cavalry Regiment, with each one carrying the carefully stenciled note “Find the bastards, then pile on!”

Reconnaissance in force and pile-on tactics encouraged cavalry organizations at all echelons to adopt a combative approach, leaving stealth to long range reconnaissance patrols. In cavalry organizations, the M113 transformed into the armored cavalry assault vehicle (ACAV) through the addition of more machine guns and gun shields. In the 11th Armored Cavalry Regiment and the division cavalry squadrons, the combination of air cavalry, fires, tanks, and ACAVs provided a powerful hammer with which to destroy enemy combatants. Moreover, it enabled the development of sophisticated counter-ambush tactics that necessitated surviving first contact and carrying the fight to the enemy. The organic combat power of the armored cavalry regiment also permitted its employment in more conventional combat operations, exemplified by the prominent role given the 11th Armored Cavalry Regiment during the 1970 Cambodian incursion. Such



Figure 3. ACAVs in a herringbone formation in Vietnam. (U.S. Army photo)

combat prowess raised concerns within the broader cavalry community. Were cavalry organizations specially crafted organizations with unique reconnaissance, security, and surveillance capabilities or just another maneuver unit with a different name?

After Vietnam the Army refocused upon its principal Cold War adversary — the heavily armored Warsaw Pact in Central Europe. Senior leaders proved much less concerned about the finer points of a scout’s role at echelon than in maximizing combat power on the battlefield.

The forward posture of the cavalry organizations made them ideally suited to delay and attrit attacking armored columns. Hence, cavalry units in Europe experienced an increase in combat power, particularly in anti-armor capabilities.

By decade’s end the division cavalry squadron of an armored or mechanized infantry division included 36 main battle tanks, 18 improved tube-launched optically tracked wire-guided missile (TOW) vehicles, and 18 M113s armored personnel carriers carrying Dragon anti-tank guided missile (ATGM) teams—in addition to air cavalry troops equipped with attack helicopters carrying still more anti-armor weaponry.⁹

Battalion scouts also acquired more combat power and ATGMs at the expense of specially trained information collectors. Collectively, these trends called into question the very essence

of and need for cavalry.

No tanks, no recon

The emergence of AirLand Battle, the Army of Excellence, and the fielding of the Big 5 in the 1980s intensified the debate and confusion surrounding the purpose and structure of cavalry. The armored cavalry regiment remained a powerful capability at the corps level. The division cavalry squadron underwent significant redesign. The three ground cavalry and one air cavalry troop configuration of the preceding decades gave way to a curious mix of two ground cavalry and two air cavalry troops aligned under the division aviation brigade. Moreover, the squadron lost its tanks, and its principal mission became reconnaissance. For the light infantry divisions, this focus suited their one ground and two air cavalry troop configurations.

In the heavier formations, the loss of tanks generated concerns about their ability to operate on a battlespace populated by Warsaw Pact armor. A suite of sensors was originally intended to enhance information collection and surveillance capabilities of these units, but it was never fielded. Similarly, a planned brigade reconnaissance element failed to materialize. The fielding of the Bradley Fighting Vehicle offered some mitigation with its mix of armor protection, 25-mm Bushmaster gun, TOW missile launcher, and coax machine gun. In the heavy division cavalry squadrons, the armored cavalry platoons abandoned their

combined arms flavor for a pure Bradley configuration. However, far from resolving issues, the nature of this vehicle created new ones. With a large silhouette, heavy firepower, and loud noise signature, it represented everything a scout platform should not be for most professional cavalymen. Indeed, Armor Center Commander MG Thomas Tait quipped that “Reconnaissance in a Bradley is like doing reconnaissance in a Winnebago,” a reference to a popular recreational vehicle.¹⁰

The controversy and debate surrounding the division cavalry squadron also affected the maneuver battalion scout platoon. The central issue at this echelon lay in identifying the proper role of the scout and the optimal tools needed, but it became more confused when heavy divisions adopted the pure Bradley configuration for their battalion scouts. Trend assessments at the newly opened National Training Center noted the tendency of battalion scouts to become engaged and destroyed. These observations and the dislike of the Bradley Fighting Vehicle encouraged the adoption of a pure high-mobility multi-purpose wheeled vehicle (HMMWV) scout platoon. Supporters of this new organization echoed the 1938 advocate of unarmored reconnaissance vehicles and argued that minimal armament would further encourage scouts to avoid combat and rely upon stealth for their own safety.

In 1991 Operation Desert Storm showcased the Army of Excellence’s new set of reconnaissance, security, and surveillance organizations. Unsurprisingly the armored cavalry regiment proved the most successful with its array of combat power further enhanced by corps and army attachments. Armored and mechanized division commanders attached tanks to their cavalry squadrons, noting a resultant increase in their operational tempo. Battalion commanders generally marginalized their HMMWV scout platoons out of concern for their survivability on an open battlefield.

The overall success of the Army, and armored units in particular, helped the Armor community to restore tanks to the heavy division cavalry squadrons



Figure 4. The Bradley Fighting Vehicle, aka the “Arsenal of Democracy.” (U.S. Army photo)



Figure 5. HMMWV scout patrol prepares next move. (U.S. Army photo)

which also regained a ground cavalry troop. Consequently, these units ended the 1990s in a greatly enhanced state. The pure HMMWV scout platoon, however, emerged from the war heavily criticized, but it remained in the force structure since it suited stealthy information collection and there was no funding for a new vehicle.

New technology, new contact paradigm

In the 1990s the rise of computer networks to manage, coordinate, and share data encouraged the Army’s embracement of Network-centric warfare. A belief in the ability to attain

near perfect situational awareness in turn stimulated expectation of precision employment of maneuver units. Network-centric concepts offered scouts a different way of conducting reconnaissance, security, and surveillance. The standoff capability of the Long-Range Advanced Scout Surveillance Systems (LRAS3) enabled them to gain contact with an enemy force, maintain contact, and develop the situation without ever entering the direct fire engagement range of hostile forces. Moreover, a scout could use the network to orchestrate the destruction of a hostile force. He could focus upon watching and observing, relying upon the network and standoff

capabilities for force protection. Against an aggressive enemy reconnaissance force, he could use the same capabilities to alert maneuver commanders, monitor the enemy, and move aside when combat became imminent.

This new contact paradigm altered traditional views of cavalry operations and organization. Light, digitized, and information-oriented scouts offered the allure of executing reconnaissance, security, and surveillance without the iron fist of combat power. The brigade reconnaissance troop with its handful of HMMWVs and LRAS3 constituted the first step in this direction, but it was truly embodied in the reconnaissance, surveillance, and target acquisition (RSTA) squadron of the Stryker brigade combat team. This new brigade type emerged as part of Army Transformation and reflected the need for an organization optimized to conduct small-scale contingency operations.

The RSTA squadron provided situational awareness for its parent brigade, relying upon scouts, sensors, radars, and signal detection systems while avoiding combat. Despite its specialized nature, the related doctrinal concepts quickly spread and eclipsed cavalry



Figure 6. The HMMWV-LRAS3 combination — the essence of a new contact paradigm. (Photo from the U.S. Army Armor Branch archives)

doctrine and force design.

The March to Baghdad in March-April 2003 paused the proliferation of RSTA concepts, albeit briefly. In the confused series of movements to contact that characterized the advance to and into the Iraqi capital, it was the lethality, survivability, and versatility of the division cavalry squadron, represented by the 3rd Squadron, 7th Cavalry

Regiment, that met commander's needs. Expectations of perfect situational awareness faded amid a surprise Iraqi counterattack upon Objective Peach and the unexpected tenacity of the *Fedayeen Saddam*.¹¹ By the time Saddam Hussein's regime collapsed, RSTA concepts had lost their luster amid calls from the theater of operation to reevaluate their validity and utility. Cavalry versatility and



Figure 7. The air-ground muscle of 3rd Squadron, 7th Cavalry Regiment on display during Operation Iraqi Freedom 1. (U.S. Army Photo)

combat power was in and the technology-based assumptions of RSTA were out.

Had the war ended at that point, the path of reconnaissance, security, and surveillance development would have taken a different path. But it did not. It transformed into a counterinsurgency (COIN) that lasted another eight years. In this period units remained in assigned areas of responsibility for months at a time, focused upon area security and bolstering local communities and government, while periodically engaging in combat operations to clear enemy safe havens. Similarly, the war in Afghanistan focused upon counterinsurgency, and the importance of surveillance and information collection predominated. Protracted counterinsurgency breathed new life into RSTA concepts.

Trooper Down! Impact of modularity

The announcement of a Cavalry Soldier in distress is never desirable, especially when the causation stems from friendly fire. To sustain its deployment operational tempo for the wars in Iraq and Afghanistan, the Army opted to increase the number of brigades at the expense of division assets. Division cavalry thus became a casualty of Army Modularity, soon

followed by the elimination of the armored cavalry regiment.

With these actions the Army decapitated its tiered reconnaissance, security and surveillance structure. Moreover, division cavalry squadrons and armored cavalry regiments had served as finishing schools where skills were honed over a career and a reservoir of talent in cavalry operations established. Institutional training remained, but it became increasingly skewed toward COIN information collection and surveillance needs rather than more general cavalry operations. A growing number of cavalry leaders passed through the ranks knowing much about COIN but little about integrated air-ground reconnaissance and security or combined arms maneuver.

The new brigade combat teams benefited from the acquisition of a reconnaissance squadron, but these units lacked the capabilities of the prior division cavalry squadron. Without organic aviation, their doctrine bore the imprint of RSTA concepts, and the small size of the early modular brigades often forced commanders to use the squadron as a third maneuver element. Over time the brigade combat teams increased in size, permitting the squadron to be employed more frequently in reconnaissance.

Nevertheless, a capability gap existed above the brigade. No organization bore responsibility for reconnaissance, security, and surveillance outside brigade areas of operation. Therefore, the Army created the battlefield surveillance brigade (BfSB) to collect information, refine it into actionable intelligence, and share it with other units. The BfSB possessed a range of sensors and technology to facilitate its information collection and surveillance mission, but it lacked the organic combat power to act upon the intelligence it generated. In essence, it mirrored the RSTA squadron on a larger scale, reflected in its original designation as a RSTA brigade. Still, the BfSB suited a COIN environment, remaining in place for a sustained period, gathering information on enemy dispositions and networks. Once operations began to move over time and space, however, it quickly became marginalized.

By the end of the 2000s, a state of confusion blanketed reconnaissance and security. Sustained COIN operations in which units spent long periods monitoring civilian activity to detect signs of hostile action and better understand the human terrain upon which they operated eroded the traditional emphasis given to screen, guard, and cover missions. Surveillance trumped security, particularly when doctrine reduced security to the force protection, area or route security, and convoy escort missions expected of all units. Little need existed for an organization capable of a broad mission set that might entail combat when static information collection and activity monitoring constituted the principal activities.

The term “cavalry” fell into disfavor, with too many leaders preferring the acronym “R&S” (reconnaissance and surveillance), in which the second letter denoted surveillance.

Reinventing the wheel, modifying the wheel, or building something new?

In the 2010s the prevailing emphasis upon reconnaissance and surveillance began to change in response to the Army’s emphasis upon large-scale



Figure 8. Soldiers of the 6th Squadron, 4th Cavalry Regiment prepare to search a village in Afghanistan’s Khowst Province in 2011. (U.S. Army Photo by Joint Combat Camera Afghanistan)

combat operations against a peer or near peer threat. In 2012, formation commanders reached a consensus concerning dissatisfaction with the BfSB and a preference for a combined arms organization capable of gaining information through direct interaction with a threat, fighting for it as necessary. Similarly, they wanted such a unit to provide early warning to its parent formation and prevent its premature deployment.¹² Cavalry was back.

A growing interest emerged in reestablishing reconnaissance, security, and surveillance units at echelon, but their composition remained uncertain. Funding constraints ensured that their creation would necessitate force structure cuts elsewhere. Hence the issue of cavalry at echelon blossomed into broader questions of force design, personnel manning, and materiel. Emerging concepts centered upon a resurrected armored cavalry regiment, a cavalry group with a mix of old and new capabilities, or the task organization of an existing brigade combat team. A campaign of learning ensued initially focused upon the corps, informed by the 2017 National Training Center deployment of 1st Brigade (Stryker), 4th Infantry Division, reconfigured and trained as a reconnaissance and security brigade.

Further analysis failed to offer a viable solution, and the Army's focus shifted to division cavalry, using the



Figure 9. Ukrainian drone targets Russian combat vehicles moments before striking. (Photo courtesy of the Ukrainian Armed Forces)

pre-Modularity organization as an analytical start point. Through experimentation and analysis, a course of action emerged for the creation of a division cavalry unit through the reduction of subordinate brigade squadrons to troops. This approach solved much of the billpayer question, but it did not resolve the purpose and composition of the division organization. Rebuilding an armored cavalry organization with tanks, Bradleys, and aviation constituted a popular yet very retro approach. It remained unclear whether such an organization would possess the same operational versatility as its predecessors in a changing operational environment.

Rebuilding reconnaissance, security, and surveillance at echelon became still more complicated with the Army's adoption of multi-domain operations as its overarching warfighting concept. How would such units operate upon a battlespace subject to air, sea, land, cyber, and space threats? What multi-domain capabilities should they possess, and what constituted the optimal means of ensuring the satisfaction of commander priority information requirements? In a resource environment constrained by investments in new programs and technologies deemed vital to modernization, clearly reconnaissance, security, and surveillance units could not be all things to all people. New ideas proliferated, including cross-domain maneuver organizations with a mix of sensors, unmanned systems, and cyber and electromagnetic capabilities.

Warfighter exercises introduced new threats and capabilities, and the 1st Cavalry Division became the vehicle for the Army Reconnaissance and Security Pilot, but determination of what reconnaissance, security, and surveillance should be at corps, division, and brigade levels remained an elusive objective.

The outbreak of the Nagorno-Karabakh war in 2020 showcased the potential impact of drones on the battlefield. Russia's 2022 invasion of Ukraine also provided a sensing of how new technologies might be employed and the challenges they posed. The conflict introduced a transparent battlefield in which drones monitored

all activity and precision weapons — or loitering munitions — attacked targets identified by drones or their own electromagnetic signature. In such an environment the notion of relying upon unmanned air and ground systems to make initial contact gained traction. Nevertheless, force design solutions that embraced technology at the expense of more traditional means did not address those aspects of the Ukraine war that had more in common with World War I than the push-button warfare oft projected for the future.

Collectively, these developments create an imperative to rethink reconnaissance, security, and surveillance at echelon rather than resurrect past concepts or reintroduce them with slight modification. Even if it were possible to rebuild the armored cavalry regiments and division cavalry squadrons of the post-Desert Storm era, combat training center experience suggests that the related skill sets have atrophied. Ironically, Modularity's legacy lies in robust brigade cavalry squadrons that have no parallel since the emergence of the mechanized cavalry. Perhaps these units should mark the concentration of capabilities oriented upon the close fight, leaving the division cavalry squadron with more unmanned systems and cross domain maneuver tools for initial contact and shaping operations that are in turn informed by sophisticated information collection abilities at corps and higher levels.

Such an approach builds upon current efforts to improve brigade proficiency while aligning new skills and capabilities at higher echelons already in flux due to Army 2030 modernization objectives and the transition to a division-centric force.

Past as prologue

"You can't understand where you're going until you understand where you've been." This expression underscores the importance of understanding how cavalry arrived at its current state before attempting to chart its future course of development. The variables of field commander need, force structure decisions, combat

experience, and tech-based capability assumptions that shaped the historical evolution remain in play today alongside personnel shortfalls and an adaptive threat array. Army leaders need to start managing change by articulating a set of analytically based framing principles to recraft the missions, force design, and tools for reconnaissance, security, and surveillance units at echelon. We instinctively know that consistent, all-weather reconnaissance, surveillance, and security capabilities constitute a critical requirement at echelon on the future battlefield. Regardless, absent such a conceptual framework, these organizations will continue meandering – subject to the latest perceived technological offset, shortage of resources, or theoretical debate about the future of warfare.

Dr. Robert Cameron is the Armor Branch Historian, U.S. Army Armor School, Fort Moore, GA. He has held this position since 1996. Dr. Cameron is an honorary graduate of Armor Office Basic Course, Armor School, Fort Knox, KY, 1996. He has a bachelor's of arts degree in history from SUNY Binghamton (now Binghamton University); a bachelor's of arts degree in economics from SUNY Binghamton (now Binghamton University) and a doctorate degree (Ph.D.) in modern military history from Temple University. Dr.

*Cameron is the author of several articles and books, including **To Fight or Not to Fight?: Organizational and Doctrinal Trends in Mounted Maneuver Reconnaissance from the Interwar Years to Operation IRAQI FREEDOM** (Fort Leavenworth, KS: Combat Studies Institute Press, 2010).*

Notes

¹ MAJ Clinton A. Pierce, "Armor for Horse Cavalry Reconnaissance Vehicles?" *Cavalry Journal*, XLVII, 4 (July-August 1938).

² Quoted in Matthew Darlington Morton, "Horses for 'Iron Ponies': The Interwar Development of Mechanized Ground Reconnaissance" (Master of Arts Thesis, Florida State University, 2001).

³ COL Charles L. Scott, "Armor for Cavalry Reconnaissance Vehicles is Essential," *Cavalry Journal*, XLVII, 5 (September-October 1938).

⁴ CPT Stuart J. Seborer, "Modern Cavalry Organization," *Cavalry Journal*, LVI, 2 (March-April 1947).

⁵ "United States Forces, European Theater," *Mechanized Cavalry Units*, General Board, Study Number 49.

⁶ LTC Charles S. Johnson Jr., "One of Our Units is Missing," *ARMOR*, LXXI, (September-October 1962).

⁷ CPT Joseph D. Posz, "To Train a Cavalryman," *ARMOR*, LXXIII, 4 (September-October 1962).

⁸ "Armor—Where Are We Going?" *ARMOR*, LXVI, 6 (November-December 1957).

⁹ CPT Randy D. Tatum, "Cavalry's Traditional Role Endangered," *ARMOR*, XC, 1 (January-February 1981).

¹⁰ John Cranston, "Assessment by Major General Thomas H. Tait of his Tenure as Commanding General, U.S. Army Armor Center and Fort Knox, June 1986-August 1988," End of tour interview, Aug. 18, 1989.

¹¹ David Talbot, "How Technology Failed in Iraq," *MIT Technology Review*, Nov. 1, 2004. Online article accessed on Oct. 10, 2023 at: <https://www.technologyreview.com/2004/11/01/232152/how-technology-failed-in-iraq/>.

¹² Information paper, Subj: seizing the Initiative: Meeting corps and Division Reconnaissance and Security Requirements, draft 9 November 2012, p. 3, Armor Branch Archives, electronic: **2012 Annual Command History/BCT**.

ACRONYM QUICK-SCAN

ACAV – armored cavalry assault vehicle
ATGM – anti-tank guided missile
BfSB – the battlefield surveillance brigade
COIN – counterinsurgency
HMMWV – high-mobility multi-purpose wheeled vehicle
LRAS3 – Long-Range Advanced Scout Surveillance Systems
RSTA – reconnaissance, surveillance, and target acquisition
TOW – tube-launched optically tracked wire-guided missile

The Division Cross-Domain Task Force

Re-imagining Division Reconnaissance & Security for 2030

By MG John B. Richardson IV and
MAJ John T. Pelham IV

The division cross-domain task force (D-CDTF), a division reconnaissance and security formation, is the pivotal formation translating convergence at the operational level of war into mass at the tactical level by enabling armored divisions to seek, sense, shape and secure. It is a division-level, cross-domain maneuver element that combines arms in the division close area under the division commander's command and control. The D-CDTF develops the situation, providing reaction time and maneuver space, while maintaining constant pressure on the enemy across four domains simultaneously. This allows the division to seize the initiative and unleash the brigade combat teams (BCTs) at maximum combat potential at the decisive point.

Anchored on, and commanded by, the armored division cavalry squadron (ADCS), the CDTF integrates the capabilities of the ADCS, intelligence and electronic warfare (IEW) battalion, and air cavalry squadron (ACS), allowing division commanders to make enemy contact with the smallest friendly element possible, presenting the enemy multiple simultaneous dilemmas, applying constant pressure in multiple domains, and facilitating transitions. In doing so, the Commander is better able to see the organization, see the enemy, and understand the operating environment in accordance with the imperatives of multidomain operations (MDO). In May of 2022, Headquarters, Department of the Army published Execution Order 148-22, directing U.S. Army Forces Command to "conduct limited implementation of armored division cavalry designs" within a designated division "to assess and refine organizations," commonly known as the Division Cavalry Pilot.¹ Specifically, Execution Order 148-22 sought organizational refinement addressing the key capability gap created by lack of designated reconnaissance and security (R&S) formations within divisions, the U.S. Army's primary

"By 2035, the Army will transform the way we fight in order to: Sustain the Fight, Expand the Battlespace, Strike in Depth Across Domains, Gain and Maintain Decision Dominance, Create Overmatch, and Prevail in Large-Scale Combat at speed and scale."

GEN James C. McConville, 40th Chief of Staff, U.S. Army

tactical unit of action (Combined Arms Center's (CAC's) large-scale combat operations (LSCO) Gap 9). The habitual relationship of a standing task force also enhances the effective synchronization of air, ground, EW assets to produce a cross-domain effect maintaining constant pressure and presenting the enemy with multiple dilemmas. As the Army transitions to the division as the decisive tactical echelon during LSCO, it must be resourced as such.

What problem does D-CDTF solve?

As previously stated, during CAC's LSCO gap analysis, the Army identified a significant capability gap in the lack of designated reconnaissance and security (R&S) formations at corps and division echelons informed by multiple warfighter exercises (WFX) and CAC assessments between 2012 and 2022. During that period, multiple exercise after action reviews and modeling denoted that the lack of designated R&S capability forced corps and divisions to either task subordinate units to answer higher headquarters (HHQ) priority intelligence requirements (PIR) in addition to their previously assigned tasks or reduce the capability of subordinate units by detaching combat power to form ad hoc R&S formations.

Both approaches traded one problem for another; tasking subordinate units to answer HHQ PIR and provide security for the division exceeded their collection capabilities and detaching combat power from subordinate units to create ad hoc R&S formations degraded subordinate abilities to accomplish their assigned missions. In either case, the lack of designated security forces to provide reaction time and

maneuver space degraded corps and division performance in (simulated) combat.

The R&S Pilot has already shaped the division's new operating concept. The division integrates the D-CDTF early in military decision-making process, and then deploys it to answer PIR and shape the operating environment. As discussed, IEW battalions can provide critical intelligence and warning, but they cannot provide security. The division augments the D-CDTF with attack aviation support (Grey Eagle, Shadows, and AH-64s) and artillery to enable the D-CDTF's fight through the disruption zone and into the battle zone. Finally, if the Army Collection Enterprise intends to continue employing a "seek, sense, destroy" methodology in the future operating environment, then recent WFX experimentation suggests that ADCS is complementary to the intelligence and electronic warfare battalion (IEW) battalion vice diametrically opposed or an evolutionary ancestor: also charged with providing the commander with situational awareness and understanding.

IEW battalions of the future will possess a single comprehensive sensor package, the Terrestrial Layer System (TLS). What they will lack in organic sensors, they will make up for with access to Joint data and direct feeds from national sensors (space layer). With that said, the type of data being collected in support of MDO is not weather restricted. The IEW battalion is rich with sensors, but cannot hold terrain, fight for information, or typically operate in adverse weather, which was a major lesson learned during the employment of the battlefield surveillance brigades a decade ago.

The ADCS' primary reconnaissance and security assets are its Troopers and vehicles, which are ground-domain centric, but have limited range because of the limitations of terrain and line-of-sight optics, which is mitigated by the ACS and IEW battalion capabilities. The synergistic effect of having the ADCS, ACS, and the IEW battalion working in concert paints the picture for the commander and enables him to shape the battlefield with less risk or signature than leading with the chin and employing an ABCT out front to make first direct fire contact. The complementary effects of the D-CDTF allow the division to shape deep with fires, while protecting and preserving the combat power of the BCTs. In essence, the D-CDTF allows the commanding general to seize the initiative at the decisive point, then unleash the full potential of the BCTs to penetrate, exploit, pursue and win.

Capabilities

How does the D-CDTF solve the problem? By integrating the capabilities of the ADCS, IEW battalion, and ACS, supported by the combat aviation brigade (CAB) and division artillery (DIVARTY), the D-CDTF allows division commanders to combine arms in the reconnaissance and security fight to seek targets, sense targets, shape targets, and enable their destruction while

securing the division throughout the entire depth of the battlefield framework.

The D-CDTF accomplishes this by task organizing and integrating the following formations:

1. Armored division cavalry squadron: The ADCS provides all-weather reconnaissance and security capability (sense/shape/secure) in the division close area and enables the commander's visualization of the battlefield to support tactical decision making. The squadron preserves division combat power by developing the situation without committing a BCT or other resource. The ADCS gives division commanders the ability to fight for information in the division close area, secure key terrain, and protect the division main body to allow the division to mass at the decisive point with the maximum combat potential of the BCTs.
2. Intelligence and electronic warfare (IEW) battalion: Provides seeking and sensing capability in the division close area and beyond. By employing organic TLS and leveraging data from both Joint and National sensors, provides the commander with enhanced situational awareness and understanding along with timely and accurate targeting support. Current

equipment fielding includes the Tactical Ground Station Lot F that receives Moving Target Indicator data from Joint Sensors through the Global Broadcast Service. National Data is ingested via the Embedded National Tactical Receiver over the national Integrated Broadcast Service. Army of 2030 will utilize the Tactical Intelligence Targeting Access Node (TITAN) that will provide enhanced data from the space layer.

3. Air cavalry squadron (ACS): Provides rotary wing reconnaissance (seek/sense/shape/secure) and security capability in the division close area. With the ability to seek, sense, and shape targets across the entire division battlefield framework, the ACS eliminates enemy sanctuary areas in the battlefield framework, and exponentially increases the amount of reaction time and maneuver space available to the division via security operations. The ACS's organic Shadow unmanned aerial systems (UASs) allow the D-CDTF to position sensors and conduct reconnaissance forward of ground elements for long periods of time, weather permitting. This significantly decreases the amount of time and level of coordination required to get timely and accurate reports to the ADCS. The organic AH-64Es employed in an air cavalry role enhance the ground force commander's understanding of the enemy and environment, while simultaneously providing responsive and highly mobile attack aviation support to increase the relative lethality of the ADCS. Employment of the Shadows together with AH-64E helicopters as a team significantly increases aircraft survivability in a rapidly evolving threat environment.

4. DIVARTY and the CAB's attack aviation battalion: Provide shaping capability via long-range massed and precision fires in the division deep area; by massing joint fires against targets sought and sensed by the IEW battalion, DIVARTY and attacks out of contact by attack aviation enable the degradation of enemy targets to favorable force ratios with which the division can close with and complete their destruction in the close fight with the BCTs.

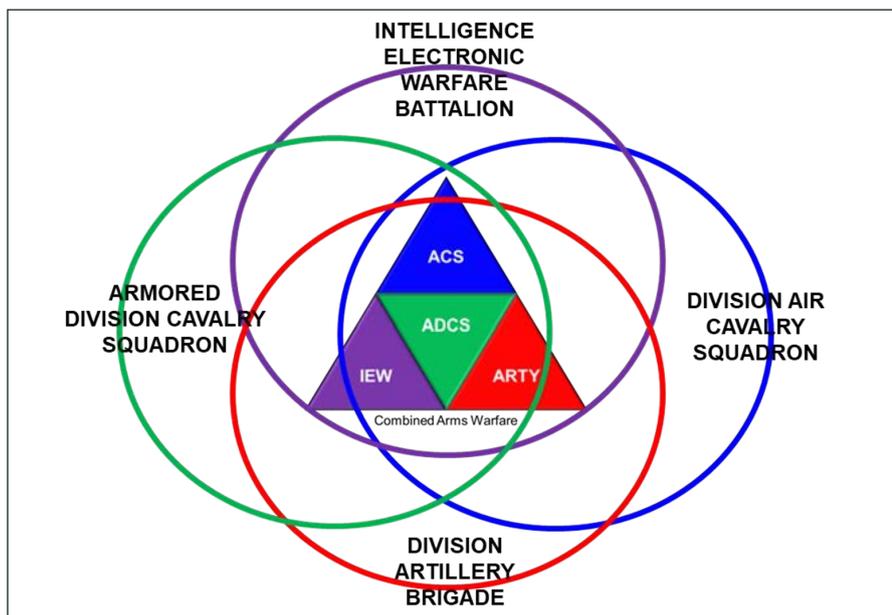


Figure 1: Visual Depiction to describe how massing effects within the D-CDTF is integrated. (U.S. Army graphic)

Enabling operational level convergence

As echelons above division (EAD) achieve convergence creating windows of opportunity for divisions via the cross-domain task force (CDTF) and corps fires at the operational level, the D-CDTF enables seizure of initiative, penetration, exploitation, and pursuit within such windows via the ADCS cross-domain troop and other D-CDTF assets at the tactical level.

The combination of the three elements (ADCS, ACS and IEW battalion), supported by attack aviation and DIVARTY, can seek, sense, shape and secure across multiple domains.

This formation reduces risk for the commander by creating the best possible understanding of the operational environment in air, ground, electromagnetic and cyber domain/environments. By enabling exploitation of operational level windows of opportunity, the D-CDTF achieves cross-domain effects at the tactical level allowing EAD to achieve continued convergence and retain the initiative.

The cross-domain effects achieved by the D-CDTF at the tactical level create a “feedback loop” enabling continued creation of windows of opportunity at the operational level, contributing to the achievement of operational objectives and ultimately strategic ends.

Security

The D-CDTF enables the division to exploit windows of opportunity created by convergence at the Operational Level first by rapidly developing the situation during reconnaissance operations, but primarily by providing reaction time and maneuver space to the division through security operations.

Security provided by the D-CDTF mitigates and diversifies risk for the division across the entire battlefield framework and generates options for the division commander.

The D-CDTF accomplishes this by:

1. Enabling the division to seek, sense, shape and secure through cross-domain effects.
2. Contact layering:

- ADCS develops the situation by fighting across four domains in the division close area, setting conditions for the enemy’s destruction by BCTs; the ADCS can seek, sense, shape, and secure the division continuously in the division close area, but is limited in the division deep area beyond the coordinated firing Line. The ACS and IEW battalion set conditions for the ADCS to expand its footprint and enable the division to “spring load artillery and sustainment” into sector.
- IEW battalion seeks and senses in the division close area and beyond to identify targets in accordance with the high-payoff target/high-value target lists; the IEW battalion can seek and sense targets in the close area and division deep area to facilitate deep fires but cannot secure the division.
- ACS develops the situation while shaping targets in the division close area and provides periodic in contact attacks in support to the ADCS. The ACS cannot seek or sense targets comprehensively, nor can it provide continuous security for the division, but it is reinforcing and complementary to the ADCS. Like the IEW battalion, its capabilities can be limited during inclement weather.
- DIVARTY and attack aviation shape targets in the division deep area, but cannot seek or sense targets comprehensively, nor can they secure the division.

Way forward/conclusion

The D-CDTF is designed around a problem that is equipment agnostic, so as new materiel solutions come online, they can fit into this structure with relative ease (unmanned ground vehicles (UGVs), air launched effects, etc.).

By continuing with this pilot, the division maintains a task organized unit and “landing spot” for future technology where these planned and unique technologies have a place to be fielded, employed, and assessed. Furthermore, this equipment-agnostic quality emphasizes the D-CDTF’s adaptability and resiliency, demonstrating that this formation will avoid obsolescence and remain not only relevant, but vital into the future.

As we modernize to fight the Army of 2030/2040 concepts most effectively, IEW battalions will possess their full suite of sensors to include TITAN. The ADCS will field robotically combat vehicles and other robotics in its scout and tank platoons, as well as the cross-domain troop’s full suite of sensors and UAS.

These developments, in conjunction with DIVARTY’s fielding of Extended Range Cannon Artillery further demonstrate the increasing capability of an already robust formation, a formation capable of conducting reconnaissance and security out to operational-level ranges in the future. These capabilities diversify risk not only for division commanders, but also for operational commanders, and the joint and coalition force.

The D-CDTF is agile, adaptable and postured to evolve continuously towards Aimpoint 2035.

MG John Richardson served in combat with the 2nd Armored Cavalry Regiment, the 5th Squadron, 4th Cavalry Regiment, and the 1st Cavalry Division. He was the 74th Colonel of the 3rd Cavalry Regiment and commanded the 1st Cavalry Division. His professional education includes the Armor Officer Basic and Advanced Courses, Command and General Staff College and the Joint and Combined Warfighting School. He attended the Senior Service College Fellowship at the Harvard University, Kennedy School for Government with a concentration in Leadership and Management. In addition to a bachelor’s degree in history from West Point, he also holds a master’s degree in Leader Development and Counseling from Long Island University.

MAJ John Pelham is the operations officer for the 2nd Battalion, 5th Cavalry Regiment, 1st Armored Brigade Combat Team (ABCT), 1st Cavalry Division, Fort Cavazos, TX. His previous assignments include deputy G-5, 1st Cavalry Division; team leader, Combat Advisor Team 1, Company B, 1st Battalion, 3rd Security Force Assistance Brigade (SFAB); commander, Company B, 1st Battalion, 3rd SFAB; commander, Headquarters and Headquarters Troop, 6th Squadron, 9th Cavalry Regiment, 3rd ABCT, 1st Cavalry Division; commander,

Company A, 1st Battalion, 12th Cavalry Regiment, 3rd ABCT, 1st Cavalry Division; and platoon leader, Reconnaissance, Surveillance and Target Acquisition Platoon, Troop B, 5th Squadron, 1st Cavalry Regiment, 1st SBCT, 25th Infantry Division. MAJ Pelham's military schools include the Advanced Military Studies Program (School of Advanced Military Studies), Command and General Staff Officers' Course; Survival, Evasion, Resistance and Escape School; Pathfinder School; Combat Adviser Training Academy; Cavalry Leader's Course (CLC); Air-Assault School; MCCC; Cold Weather Leader's Course; Army Reconnaissance Course; Armor Basic Officer Leader Course; and Airborne School. MAJ Pelham has a

Bachelor's of Arts degree in history from Tennessee Technological University; a Master's of Science degree in organizational leadership from Columbus State University; a Master's of Military Arts and Science degree from the U.S. Army Command and General Staff College (CGSC), Art of War Scholar; and a Master's of Arts degree in Military Operations from CGSC (School of Advanced Military Studies). MAJ Pelham's awards include the Bronze Star Medal and the Meritorious Service Medal with two oak leaf clusters.

Notes

¹ Headquarters Department of the Army (HQDA), Execution Order 148-22, (Washington, D.C.: HQDA), 2022.

ACRONYM QUICK-SCAN

- ACS – air cavalry squadron
- ADCS – armored division cavalry squadron
- BCT – brigade combat team
- CAB – combat aviation brigade
- CAC – Combined Arms Center
- D-CDTF – division cross-domain task force
- DIVARTY – division artillery
- EAD – echelons above division
- HHQ – higher headquarters
- LSCO – large-scale combat operations
- MDO – multidomain operations
- PIR – priority intelligence requirements
- R&S – reconnaissance and security
- TITAN – Tactical Intelligence Targeting Access Node
- TLS – Terrestrial Layer System
- UAS – unmanned aerial system
- WFX – warfighter exercise

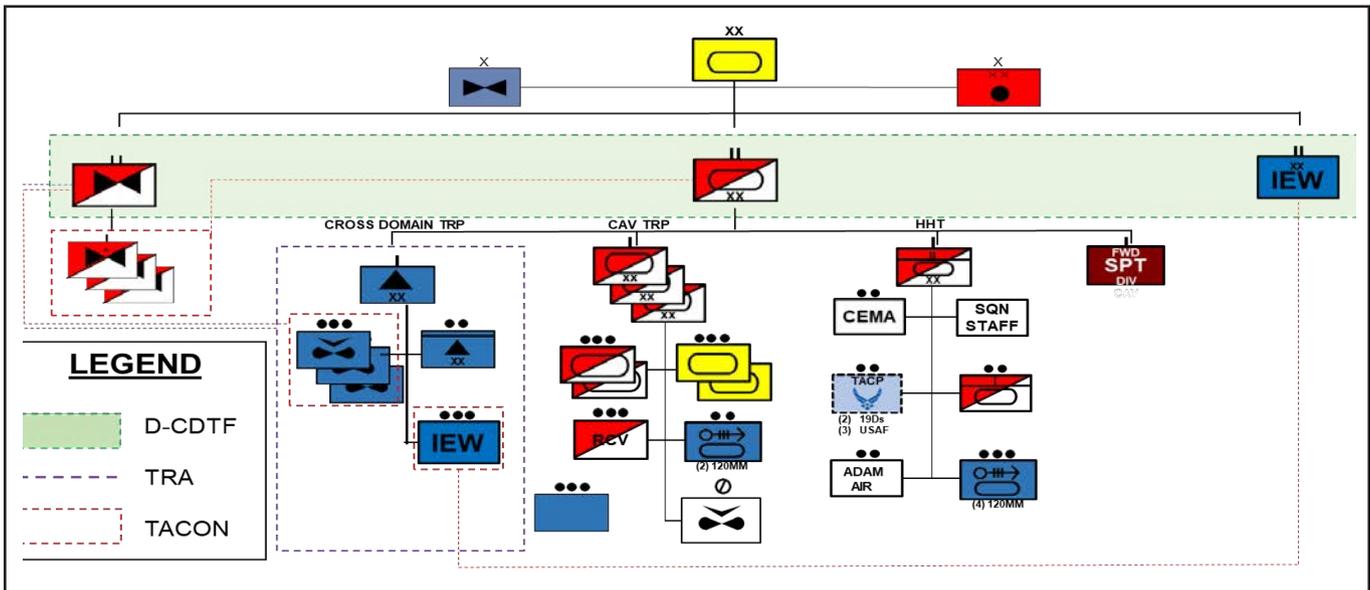


Figure 2: D-CDTF Task Organization

Tanks Need Infantry to Lead Way

by 1LT Brandon Akuszewski and
CPT Larry D. Tran

A U.S. Army combined arms battalion deployed to Vekaranjärvi, Finland for the first time in history to participate in combined arms maneuver training with the Finnish Army's Karelian Brigade earlier this year.

The U.S. 1st Battalion "Mustangs," 8th Cavalry Regiment deployed in support of Operation Lock 2023 to eastern Finland from May 28 to June 10, 2023. This was also the first time the allied Finnish Karelian Brigade conducted maneuver training east of the Kymi River.

Task Force (TF) Mustangs included 400 Karelian soldiers who were attached and fought with their U.S. allies as a multinational battlegroup against a mechanized battlegroup from the Finnish Army's Armoured Brigade in four force-on-force battle periods. As the Mustangs prepared for Operation Lock, they faced a training problem that armored brigade combat teams (ABCTs) have not focused on recently: how do infantry and armor integrate and conduct large-scale combat

operations (LSCO) in severely restricted terrain?

The Army Techniques Publication (ATP) 3-90.1, *Armor and Mechanized Infantry Company Team*, published in 2016 is the current U.S. Army doctrine for company teams. However, there is no discussion on how a company teams operate in severely restrictive terrain or standing operating procedures (SOPs) for infantry and tank integration.¹ Older U.S. Army doctrine Field Manual (FM) 71-1, *Tank and Mechanized Company Team*, states SOPs for defile operations in restrictive terrain; however, this was published in 1998.²

The lack of infantry and tank doctrine was identified by the School of Advanced Military Studies in 2001.³ As a result of this gap in doctrine, U.S. Marines 1st Tank Battalion had to relearn how to integrate their infantry and tanks during their combat operations in Fallujah, Iraq in 2004.⁴

Similarly, TF Mustangs had to reeducate and retrain their company teams on infantry and tank integration before Operation Lock.

Operation Lock provided the Mustangs the opportunity to codify SOPs for company teams, and it highlighted dismounted infantry's critical role in clearing restrictive terrain before the tanks began maneuvering. Dismounted infantry pulling in the tanks consistently resulted in mission success throughout force-on-force operations. TF Mustangs' SOPs during Operation Lock provide a framework for addressing doctrinal gaps in ATP 3-90.1, *Armor and Mechanized Infantry Company Teams*, allowing company teams to be lethal in severely restricted terrain in future LSCO.

Tailored SOPs

Intelligence preparation of the battlefield in the Vekaranjärvi area enabled the Mustangs to develop SOPs tailored to eastern Finland's restrictive terrain and the Finnish Armoured Brigade opposing force (OPFOR). The training area was heavily forested with dispersed trails throughout, resulting in mounted platoon mobility corridors. Dismounted avenues of approach were uninhibited and there was little underbrush that impeded movement. Mounted maneuver was restricted to the trails and made the intersections of trails key terrain because control of the junctions provided the owner access to multiple roads. Fields of fire through the vegetation varied from 100m-400m depending on forest density. Keyhole shots on mounted avenues of approach could be identified from 600m-800m away providing the engaging tank with cover and concealment.

Bridges over the multiple water features throughout the area also canalized the offensive unit's maneuver to chokepoints or forced gap crossings to continue maneuvering. Overall, the terrain favored the defending force due to the forest's cover and concealment. Keyhole shot positions could be identified and supported by dismounted battle positions with anti-tank weapon systems.

For Operation Lock, the Mustang's



Figure 1. Task Force Mustang briefs the battalion operations order for the first battle period of Operation Lock 2023. (U.S. Army photo by 1LT Raven Parker, battalion unit public affairs)

force-on-force enemy was a mechanized infantry battlegroup from the Finnish Armoured Brigade. The Armoured Brigade is garrisoned at Hämeenlinna, Finland and deployed 107 miles east for this operation. Their units have trained at Vekaranjärvi's training areas before and are familiar with the dense, forested terrain there. TF Mustangs' intelligence section analyzed the OPFOR's capabilities and developed a detailed enemy situation template, based on the enemy order of battle and historical Finnish tactics from the Winter War and Continuation War.

The Armoured Brigade deployed a battlegroup for Operation Lock. This is equivalent to a U.S. Army battalion task force. Their warfighting function strengths included maneuverability of their vehicles, decentralized fires network allowing for shortened fires processing, and they had robust capabilities to emplace tactical obstacles. Finnish history was analyzed to abstract how they have conducted defensive operations in the past. The Finnish conducted delaying tactics during the Winter War and

Continuation War, between 1939-1945 resulting to the successful attrition of numerically superior Soviet invaders. The Finns' delaying operations coupled with their envelopment tactics, or motti tactics, in the severely restricted terrain on the Finnish-Russian border resulted in five times more Soviet casualties and three times more Soviet vehicles destroyed when compared to Finnish losses in Winter War.⁵

The Armoured Brigade was an enemy that the Mustangs had never faced before. A formidable enemy that has experience conducting defensive operations against a superior force in severely restricted terrain. Therefore, the Mustangs' company teams considered these factors when adapting their SOPs for Operation Lock.

Team Assault's execution and SOP

TF Mustangs (Table 1) task organized with their organic battalion minus one-tank company. The TF also included one U.S. Army sapper platoon that was subsequently attached to the mechanized infantry company. The

Karelian units that were attached to the TF were a Finnish mechanized infantry Company (Poni), a Finnish reconnaissance platoon (Eagle 10), a Finnish engineering platoon (Snow), a Finnish tank platoon (Delta 10), and a mortar company equipped with the Advanced Mortar System (AMOS), a Finno-Swedish 120mm semi-automatic twin barreled, breech loaded mortar turret (Zander). This article focuses on Assault Company's SOPs that enabled infantry and tank integration and underpinned the TF's tactical success and how its SOPs and lesson learned can facilitate future revisions of ATP 3-90.1.

TF Mustangs conducted three offensive operations during Operation Lock. During these operations, the TF's order of battle deployed the reconnaissance units, followed by the two mechanized infantry companies, and Team Assault remained in its attack position until conditions were set. The deployment of Team Assault was triggered by the identification of the Karelian battlegroup's main body. Table 2 depicts the offensive SOPs that shaped Team Assault's offensive operations

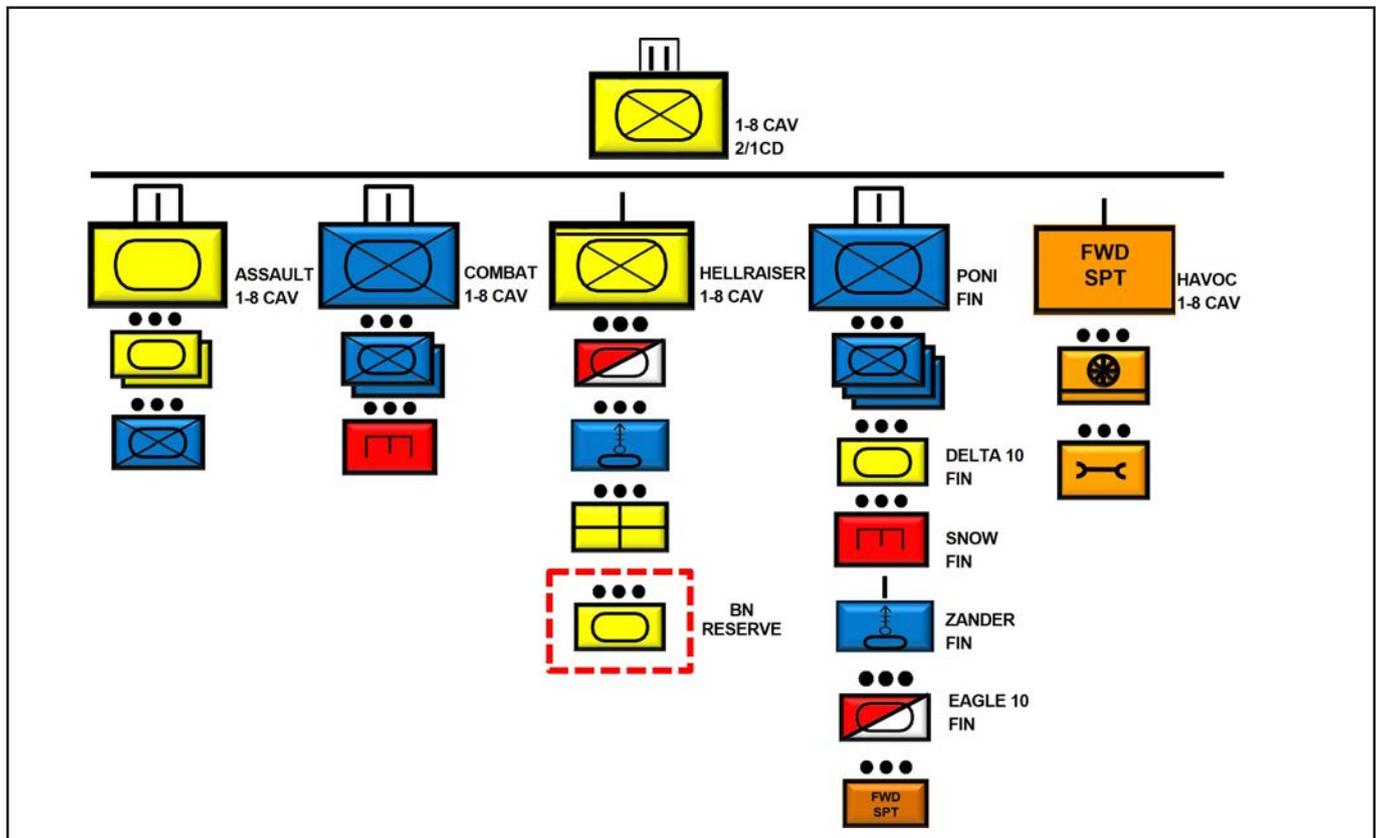


Table 1. Task Force Mustangs Task Organization (U.S. Army Graphic)

once deployed. Figure 3 illustrates the execution matrix that Team Assault utilized for offensive operations.

The first action in the SOP was to conduct the forward passage of lines (FPOL). This was tasked to the mechanized infantry platoon because it became the led unit and allowed the platoon to quickly transition to vehicle dismount operations (VDO) after the FPOL was completed. During the FPOL, the mechanized infantry platoon leader conducted a battle handover (BHO) with the stationary unit via FM or a face-to-face brief. The intelligence gained from the BHO confirmed or refined the templated VDO points. Completion of the FPOL triggered the next action in the SOP, the VDO.

The mechanized infantry maneuvered to VDO and began dismounting. This was a crucial aspect of Team Assault's SOP because the infantry cleared the severely restrictive terrain of OPFOR anti-tank teams, identified OPFOR tank battle positions and allowed Team Assault to initiate contact with their smallest unit prior to the commitment of its tanks. For Team Assault, the platoon leader dismounted allowing the platoon to be with the unit that initiated contact with the enemy. The platoon sergeant maintained command and control of the Bradley's and occupied an attack position, ready to support the dismounts.

The takeaway is that there must be platoon leadership in the mounted and dismounted sections to facilitate the relay of reports from the dismounts all the way to the company commander.

Team Assault's experience in Operation Lock demonstrated that the tempo of a company team's offense in severely restricted terrain is initially slow. The dismounts conducted squad patrolling techniques and squad attacks when faced with enemy dismount teams as stated in ATP 3-21.9, **Infantry Platoon and Squad**.⁶ The crucial trigger within the Team Assault's SOP was the identification of OPFOR tank battle positions.

The resulting action was the deployment of tank platoons. The tempo of the tank's assault was fast because the



Figure 2. Battalion S-3, MAJ Ryan Van Wie, and Tank Company Commander, CPT Larry Tran, make final coordination before the first battle period. (U.S. Army photo by 1LT Raven Parker, battalion unit public affairs)



Figure 3. Tank and infantry integration during the second battle period of Operation Lock 2023. Crucial to Team Assault's SOP was the coordination between dismounted infantry, mounted infantry and tanks. (U.S. Army photo by 1LT Raven Parker, battalion unit public affairs)

team's dismount had cleared the axes of attack of OPFOR anti-tank teams and relayed the position of OPFOR tanks. Team Assault's initial deployment and the sequenced SOPs provides a framework for company teams to maintain a slow initial tempo, allowing the dismounts to set conditions for the tank platoons. The decision to deploy the tank platoons causes the tempo to shift to an aggressive, fast-mounted assault.

Company teams must provide the enemy with multiple problem sets once the tank platoons deploy from the

attack positions. These problem sets include indirect fires with preplanned fires on the objective, direct fires with Javelin teams engaging the OPFOR tanks they have visual contact with, and the tank platoons engaging with their 120mm main gun.

Team Assault continued coordination with dismount infantry through face-to-face battle hand overs in which the dismounted squad/team leader hopped on the turret to provide the location of OPFOR Leopard tanks. A gap in the U.S. Army company team doctrine is standardized hand and arm

signals that U.S. dismounts utilize to relay information to the tanks on the move.

Team Assault's offensive operations showed the speed at which tank platoons moved through the objective led to enemy elements being bypassed. Company teams must determine how the M2 Bradley's are incorporated into the attack. For Operation Lock, Team Assault maneuvered the M2 Bradley's behind the tank platoons to clear any enemy elements that the tanks bypassed and positioned the Bradley's where they could mount the dismounts back into their vehicles as needed.

The next action is a decision point for the company team commander dependent on the remaining combat power and the enemy situation. Team Assault's decision point was if it had

reached its limit of advance and had 60 percent of its combat power. If yes, then Team Assault would exploit the success and continue attacking to a subsequent objective to seek enemy command and control nodes or sustainment nodes. If the combat power was below 60 percent, then Team Assault would transition to a hasty defense.

This engagement criteria and SOP was utilized for two offensive battle periods and resulted in the successful seizure of Team Assault's objectives each time with 85 percent or greater of the Team's combat power remaining for future operations.

Conclusion

The Mustangs were lethal in Operation Lock due to their implementation of company teams and the

deployment of the infantry before the tanks. Their successes provide an opportunity to address a gap within ATP 3-90.1 on infantry and tank integration SOPs and company teams operating in a severely restrictive terrain. The gaps addressed in this article follow. Team Assault's doctrinal template and execution matrix (Tables 2 and 3) are example products that enabled success and can be potentially added to ATP 3-90.1 as an appendix focused on company teams operating in severely restrictive terrain.

The highlight from both products is that company teams must conduct a slow, deliberate maneuver of dismounted infantry through severely restrictive terrain allowing the conditions to be set for the tank platoons' fast assault through the objective. Team Assault's infantry deployed ahead of the tanks and the Javelin teams always initiated the contact with OPFOR tank crews, who were unable to observe the dismounts within the forest due to their reduced situational awareness inside the tank with the engine running. The smallest element of the company team must initiate contact with the enemy.

The position of the mechanized infantry platoon leadership is flexible if the information from the dismounts is relayed to the rest of the company team via FM communications. Standardizing hand and arm signals in the ATP would facilitate the effective face-to-face communication with dismounted squad leaders and tank commanders. Lastly, company teams must plan the M2 Bradley's role in the attack of the objective, so that the Bradley's are staged to link up with their dismounts or support the tanks in the attack.

Team Assault's SOP for infantry and tank integration led to increased survivability of the tanks operating in severely restrictive terrain, while also allowing the infantry to get into the fight with their Javelin systems. The SOPs addressed multiple gaps in ATP 3-90.1 about operating in severely restrictive terrain and infantry-tank integration.

Revisions to the U.S. Army's ABCT company teams' doctrine increases the lethality of armored formations in

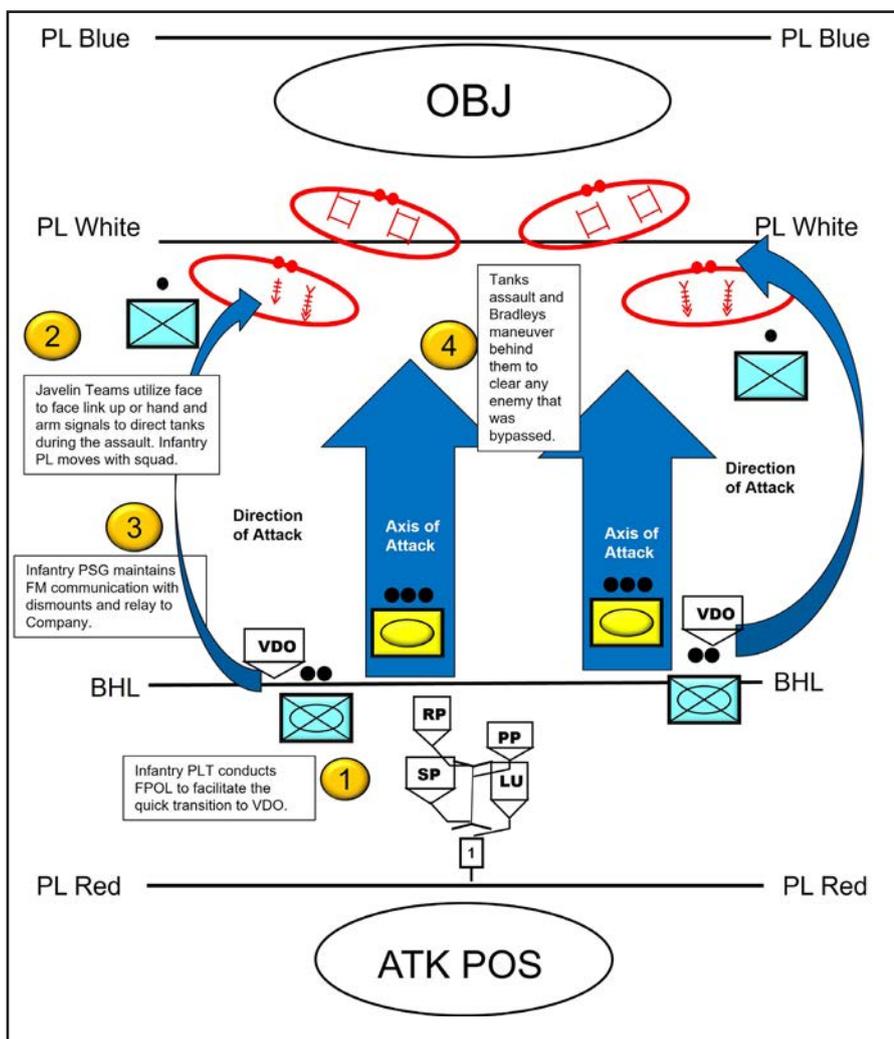


Table 2. Infantry and tank integration offensive operations. (U.S. Army graphic)

severely restricted terrain during future LSCO. Armor is the combat arm of decision, but it still needs the infantry to set conditions and lead the way!

1LT Brandon D. Akuszewski is a platoon leader, Company A, 1st Battalion, 8th Cavalry Regiment, 2nd Armored Brigade Combat Team (ABCT), 1st Cavalry Division, Fort Cavazos, TX. Previously he served as assistant S-3, Company A, 1-8 Cavalry, 2nd ABCT. His military schools include (all at Fort Moore, GA) Scout Leaders Course, Tank Commander Course, Airborne School, and Armor Basic Officer Leaders Course. 1LT Akuszewski has a bachelor's of science degree in international affairs from the U.S. Military Academy at West Point, NY.

CPT Larry D. Tran, commander, Company A, 1st Battalion, 8th Cavalry Regiment, 2nd Armored Brigade Combat Team (ABCT), 1st Cavalry Division, Fort Cavazos. His previous assignments include assistant S-3, 4th Squadron, 9th Cavalry Regiment, 2nd ABCT; commander, Headquarters and Headquarters Company (HHC), Task Force Sinai, Sharm el-Sheikh, Egypt; executive officer, HHC, 1st Battalion, 66th Armor Regiment, 3rd ABCT, 4th Infantry Division; and tank platoon leader, Company A, 1st 66th Armor Regiment. CPT Tran's military schools include the Cavalry Leaders Course; Maneuver Captain's Career Course; Army Reconnaissance Course; Armor Basic Officer Leaders Course. All schools were at Fort Moore, GA. CPT Tran has a bachelor's of science degree in human biology from the University of Texas at Austin. His awards include the Meritorious Service Medal.

Notes

¹ ATP 3-90.1, **Armor and Mechanized Infantry Company Team**, (Washington, D.C.: U.S. Government Publishing Office, 2016), Chapter 3.

² FM 71-1, **Tank and Mechanized Company Team**, (Washington D.C.: U.S. Government Printing Office, 1998), Chapter 3, Section 6.

³ John W. Washburn, "Integration of Armored Forces in the U.S. Army Infantry Division," School of Advanced Military Studies, January 2001: <https://apps.dtic.mil/sti/pdfs/ADA387170.pdf>.

⁴ B.T. Watson, "Maintaining Tank and Infantry Integration Training," U.S. Marine Corps Command and Staff College,

Friendly Forces	Enemy		
	Tanks	BMPs or APCs	Dismounts
<p>1x Dismounted Squad w/ Javelin</p> <p>Trigger: VDO point reached after BHO</p>	<p>Visual contact with a section of enemy tanks and under; engage with Javelin.</p> <p>Visual Contact with an enemy platoon of Leopards or more; triggers Tank Platoon to maneuver from ATK POS.</p> <p>Direct contact with 1x enemy tank or up; disengage and regains contact</p>	<p>Visual contact with any BMPs or APCs; bypass and trigger the Bradley's to maneuver from ATK POS.</p>	<p>Initiate direct contact with enemy squad or lower. If in contact with two enemy squads or more, then trigger maneuver of Bradley's.</p>
<p>1x M2 Bradley IFV Platoon</p> <p>Trigger: identification of any BMPs/APCs; engage with an enemy BMP/APC platoon or lower</p>	<p>Disengage and triggers maneuver of Tank Platoons from ATK POS.</p>	<p>Initiate direct contact with BMP/APC platoon or lower; if in contact with two BMP/APC platoons or more, then trigger maneuver of Tank Platoon from ATK POS</p>	<p>Engage with direct fire with any enemy dismantled elements.</p>
<p>2x M1 Abrams Tank Platoons mutually supporting</p> <p>Trigger: identification of enemy tank PLT or more; identification of a platoon of BMPs/APCs or more</p>	<p>Engage with direct fire on two enemy tanks Platoons and below; if in contact with enemy tank Company and above, triggers maneuver of BN reserve.</p>	<p>Engage with direct fire with any enemy BMPs/APCs</p>	<p>Engage with direct fire with any enemy dismantled elements.</p>

Table 3. Execution Matrix (U.S. Army)

January 2005: <https://apps.dtic.mil/sti/pdfs/ADA505349.pdf>.

⁵ Munter Neny, T. Wirtanen, C. Birks, **Finland at War: The Winter War 1939-40**. (Bloomsbury Publishing 2015).

⁶ ATP 3-21.9, **Infantry Platoon and Squad**, (Washington, D.C.: U.S. Government Publishing Office, 2016).

ACRONYM QUICK-SCAN

ABCT – armored brigade combat team
ATP – Army techniques publication
BHO – battle handover
FPOL – forward passage of lines
LSCO – large-scale combat operations
OPFOR – opposing force
SOP – standing operating procedures
TF – task force
VDO – vehicle dismount operations



Figure 4. Team Assault conducted an after-action review after the second battle period of Operation Lock 2023. (U.S. Army photo by 1LT Raven Parker, battalion unit public affairs)

Peaking at LD: A Way to Achieve Maintenance Excellence

by LTC Jay Ireland

The job of a combined arms battalion (CAB) commander is to deliver lethal platoons, sections, and crews to the brigade and division commander. Lethality in a CAB begins with fully functional equipment. Trained crews, platoons, and companies cannot accomplish their assigned mission essential tasks with broken kit. Therefore, every CAB commander's goal should be to maximize the readiness of their combat platforms for the precise moment they are needed.

What follows goes beyond looking at operational readiness rates (ORRs) to determine the health of a unit's maintenance. It defines a more holistic approach to help battalion commanders establish the systems necessary to give the brigade and division commanders what they require – a combat credible force at the decisive point.

The questions, therefore, are how do you achieve maintenance excellence and how do you know when you are there? The quickest and most accessible method to assess maintenance performance would be to monitor ORR. It would be incomplete, however, to label a CAB proficient at maintenance because they have a high ORR at any randomly selected time. Rather, units that have their maintenance highest when that OR is needed most, essentially "at the line of departure (LD)," should be considered the gold standard. It is also unrealistic and potentially problematic to expect units to always maintain 100 percent ORR as vehicles are almost always in a state of degradation. However, ORR across the entire unit should follow a predictable heartbeat in advance of, during and following major training windows.

Battalion commanders know they have peaked at LD from a maintenance perspective when every crew can shoot gunnery from their own platform, platoon live fires happen with all vehicles assigned to the platoon, and all vehicles drive off the rail cars to

their combat training center (CTC) rotation.

A battalion that does not properly resource/protect services, refill shop stock lists (SSLs), reorder basic issue items (BII), and repair lethality-related maintenance faults will only achieve peak maintenance if they are lucky. It is more likely that unscientific units will enter gunneries or CTC rotations with fleets that struggle to keep up with the demands of the operating environment. I submit that battalion commanders should not always define maintenance success as a high ORR but rather look to create a culture of lethality through maintenance that focuses on accountability, preventive maintenance checks, and services (PMCS) that generate repairs, SSL replenishment and leader development.

Culture of lethality via maintenance

Maintenance centers around these thoughts: Does everything you are authorized and assigned work exactly as it is designed? If not, what are you doing about it?

The single most important component of lethality in a CAB is a battalion-wide culture that refuses to accept anything but fully mission capable equipment. This culture can be difficult to establish because it requires buy-in from every echelon in the formation in a time where there more demands on an armored brigade combat team (ABCT) than ever. With that in mind, it's essential to acknowledge we do not have enough mechanics even when fully manned to drop off our vehicles at the forward support company (FSC) like a service station.

That acknowledgement is even more important when considering the current mechanic shortfalls across the force. Crews need to be empowered, trained, and required to do their own skill-level 10 (operator) maintenance as a way of vehicle ownership. After all, the mechanics won't be the ones

pulling the triggers, and the crews should be the ones who know their vehicles the best, what works and what doesn't. Unfortunately, we have not developed a machine that can automatically diagnose a vehicle's faults by plugging the tank into the computer. As a result, the crews must be engaged, informed and care about getting their vehicle to operate exactly as it was designed.

The trick to establishing a culture of maintenance lies in leader development beginning with the lowest echelon about the role of the equipment status reports (ESR) - both the wide-open look and the non-mission capable (NMC) report. Battalion commanders should be spot checking ESRs every single command maintenance to set the tone, spot problems and ensure compliance.

As the saying goes, commanders cannot expect what they don't inspect. Additionally, it's helpful to make any vehicle that hits the NMC prepare a commander's critical information requirement from the company commander to the battalion commander because it forces a commander's dialogue about maintenance that might not occur otherwise.

When Soldiers start seeing parts ordered against the faults they've been writing on the 5988Es for months, they begin to trust that their leadership actually listens to them, and that maintenance is important. Conversely, 5988Es that come back empty week after week and ESRs that have nothing on them erodes that trust. How can we possibly expect our crews to do a PMCS by the book for hours at a time in the heat (or cold) of the motor pool if we cannot ensure their work results in action?

Leader development

Leader development continues in the battalion through the service briefs (in and out briefs). When I was a young lieutenant, the service briefs were the

single most stressful events in my very young career because I was asked to know everything about my equipment from top to bottom. My battalion commander expected me to understand how the tank worked, never allowed me to use acronyms without first spelling them out, demanded a deep understanding of the processes associated with maintenance to include the wide open ESR and checked to ensure the entire company, including the mechanics, was pulling in the same direction.

More importantly, the service in brief should be a contract between the lieutenant and the battalion commander about what will get done in the three-plus weeks that follow, and the out brief should be a description of what occurred/what needs to be policed up. I cannot begin to describe how much I have learned about my battalion from these briefs and how critical they are to maintenance program excellence when you get them right. If your organization does not have set service windows like a tank and Bradley formation (should), then set them quarterly and call them maintenance deep dives following the same construct as above.

Battalion commanders will know they have hit the mark with their leader development when the Soldiers hold their leadership to task:

- Where is my Bradley seat, sergeant?
- My heater has an -18 status, why haven't you picked it up yet?
- Why is my M113 not deadlined on the ESR?

The platoon leader and the executive officer should know every day that their Soldiers understand how to read the ESR and understand who's at fault when 5988Es come back blank. Too often, commanders deflect the responsibility to "do maintenance" onto the battalion executive officer, FSC, and field maintenance technician, leaving the commander free to focus on things like training management and lethality.

Instead, commanders need to lead from the front during command maintenance, wearing coveralls, doing their own PMCS, and rotating throughout their entire formation to ensure

compliance. Commanders, after all, prioritize with their presence.

Battalion commanders focus on metrics

Operational readiness is most definitely important, but it is only one measurement of readiness. True maintenance superiority can only be assessed using a wide range of variables: SSL replenishment, to-standard service completion, number of crews that qualified off their platforms, working Joint Battle Command – Platform/frequency modulation communications, BII on hand and signed for on bill of materials, ESR understood at user level, technical manuals used during PMCS, leaders present during maintenance, etc.

The best way to understand the strength of the maintenance culture is to randomly select wide open ESRs across the battalion and check for completion. The language across the ESR can be complicated to include sources of supply, status, priority, estimated ship dates, quantity on hand/issued/next level, etc. Units that have prioritized leader development, have engaged senior leadership present during PMCS, and have a maintenance meeting that supports the commander's intent will have wide open ESRs that accurately reflect the maintenance status of the fleet. This will also demonstrate the way ahead to fix the identified deficiencies.

Undeveloped programs will have wide open ESRs that show no faults, old faults whose parts came in long ago, parts at the next level but have not been picked up, long lead estimated ship dates with no supply action requests associated to speed up the process, etc.

It is important to focus on your support vehicles in addition to your combat platforms. Many CABs can have perfectly functioning tanks and Bradleys but have broken tactical operations center generators, fuelers and MKTs.

SSL is also fantastic way to evaluate the health of a maintenance program because of how tricky it is to get right and how important SSL is to keep the fleet ready while still training. There

are two essential things to consider with SSL:

1. Are the field maintenance teams (FMT) properly inventorying and consuming their SSL, and
2. Are the FMTs automatically replenishing their SSL?

The Army mandates that FMTs inventory their SSL every quarter but that is a bare minimum. Rather, FMTs should be mandated by their company executive officer to consume every single part they pull from the SSL daily. If the system is set up correctly, the parts that get consumed are then automatically reordered. This is important because SSL gets reordered at 05/12 priority, meaning that it takes months for many of these parts to get restocked. Units that understand the importance of SSL are sticklers about keeping their parts bins stocked full and the parts flow consistently working in their favor. Properly filled SSLs can prolong training opportunities and save countless vehicles from hitting the print.

Services are another window to the maintenance soul of a battalion. Not only must the battalion commander look to monitor the completion of services, which is important in it of itself, but must also set the conditions necessary for the proper execution of services. Training management is the foundation of service execution as CABs execute tank and Bradley services the same way they do gunneries, situational training exercise lanes, or CTC rotations – in that they are resourced, protected and enforced. When commanders write their annual, semi-annual, and quarterly training guidance, subordinate commanders should understand that services require leader development, standards (akin to training and evaluation outlines), and they must not to be sacrificed for any reason. Services provide excellent leader development opportunities for young Armor leaders and should result in all members of the battalion being significantly better trained on their platform than before the service began.

Maintenance excellence systems

Command maintenance executed

properly, without exception, is the single most important system for a CAB. Command maintenance is the beginning of the PMCS process that begins on Monday mornings when crews, with the NCO and officer leadership present, conduct their checks using the technical manuals (TMs) as a guide. First line leaders, especially the officers, should be encouraged to get access to GCCS-A, so they can pull their own maintenance related forms to monitor the process. Crews then place the faults right from the TM on the 5988Es and only stop when their first line leader has inspected the 5988E and the vehicle, to ensure completion. When complete with all the 5988Es for the company, the company executive officer then takes those forms to be inspected by the battalion executive officer in the battalion tactical operations center established in the motor pool. When the battalion executive officer approves, the company commander may now switch to ancillary equipment that the commander's briefed for approval at the battalion training meeting. Some of this equipment includes muzzle bore-sight devices, small arms, machine guns, gas masks, tentage, camouflage nets, etc.

PMCS continues throughout the week as mechanics move to verify faults based on the company executive officer prioritization for the FMT, the form 5988Es inputted by the GCCS-A clerk and the military occupational specialty (MOS) 92As (automated logistical specialists) in the motor shop. Then, new form 5988Es get printed for the company executive officers. The process continues as the platoon leader can now make sure all the faults are on both the updated form 5988Es and the ESR (either the NMC or wide open ESR depending on the fault).

Battalion commanders can assess if there is a culture of maintenance in the battalion by asking crews (gunners/operators) to go line-by-line on the wide open ESR and compare it to their last completed PMCS to see if parts are being ordered. This check is vital because it allows the battalion commander to see broken linkages in the maintenance system.

The battalion and company

maintenance meetings are critical systems as well. These forums are the place to begin with an ESR scrub to ensure: every fault has a part against it, supply action requests have been submitted for long lead exchange control documents, parts labeled at -18 (or "in the bin") have been picked up from the supply support activity (SSA), or they are on hand/properly secured by the FMTs. The maintenance meetings are also a place for SSL management. Properly stocked SSLs minimize deadline faults during a training event or routine maintenance operations. Again, SSL stockage and inventories must be planned months in advance because it takes millions of dollars and weeks for parts to start flowing after automatic reordering of all non-deadline fault (05-12 priority) SSL parts.

The maintenance meeting is also an important means of conveying commander's intent to the maintenance team: maintenance control tech, maintenance control officer, battalion maintenance officer (BMO), and the FMT. As stated previously, the battalion and company commanders must take an active role in the management of the maintenance process of their echelon including prioritization, course correction, and task completion. Company commanders must be held accountable for the actions of their FMTs, especially when those FMTs are attached to the maneuver companies as is the case with most CABs. While the battalion executive officer is the primary executer of the battalion commander's intent to run the unit's maintenance program through the company executive officers, I cannot overstate how important the battalion commander's role is in setting the tone with the company commanders. If the boss doesn't care about maintenance, then the lower echelon commanders won't care either. Company commanders should be answering questions about the status of the FMT's SSL, the reason for the delay in the agreed upon service schedule, and why the FMTs have not been able to pick up their Class IX (repair parts and components) from the SSA. It is easy to spot battalion commanders who prioritize maintenance because they have excellent material management to include timely

overaged repairable-item list execution, empty bins at the SSA, historical records of material release orders, and accurate delivery monitors (VL061s). The converse manifests itself with parts overflowing in the bins, old track sitting around for months without being turned in, and a lack of awareness at the end user level as to what is on order.

The final system that must be addressed is the battalion training meeting. Battalion commanders should not separate maintenance from training. The BMO, who is probably the #1 lieutenant in the battalion post platoon leader time, should brief the service windows during the mid-long range planning horizons to ensure training events and services are deconflicted. Another good indicator as to the seriousness of the battalion's commitment to maintenance is the caliber/military occupational specialty of the BMO. Hard core maintenance enthusiasts make the position nominative and sought after, while those who do not understand the BMO's role will often put new second lieutenants or excess officers into the billet. With the right person in the job, the BMO can greatly increase the overall effectiveness of a unit's maintenance by monitoring company service plans, deconflicting training and maintenance, ensuring effective 5988E and PMCS flow, freeing up the maintenance tech from staff work, and watching for trends happening around the Army. Commanders who fail to account for services before they start planning training, invariably attempt to jam services into inappropriate windows that aren't protected, and everything becomes the dreaded "rolling services."

Conclusion

Maintenance proficiency at battalion level is often defined by a high ORR. While an accurate ORR is important, it is only a small part of what battalion commanders must accomplish to be considered excellent at maintenance operations. Therefore, it is more valuable to assess a battalion commander's ability to "peak at LD" regarding maintenance as it demonstrates understanding of all the many levers that drive maintenance. Additionally, going away from the notion that high ORRs

need to occur 100 percent of the time and moving toward the idea that ORRs should have a predictable “heartbeat” creates a scenario that is more sustainable and grounded in the realities associated with today’s budgetary and manning operational environment.

LTC Jay Ireland is the commander, 1st Battalion, 8th Cavalry Regiment, 2nd Armored Brigade Combat Team (AGCT), 1st Cavalry Division, Fort Cavazos, TX. His previous assignments include East Africa Branch Chief, ACJ51, U.S. Africa Command, Stuttgart, Germany; secretary of the general staff, 1st Armored Division, Fort Bliss, TX; brigade executive officer, 3rd ABCT, 1st Armored Division; and executive officer, 1st Battalion, 67th Armored Regiment, 3rd ABCT, 1st Armored Division. LTC Ireland’s military schools include the Armor Officer Basic Course, Fort Knox, KY; Armor Captains Career Course, Fort Knox; and

Command and General Staff College, Fort Leavenworth, KS. He has a bachelor’s of arts degree in geography from the U.S. Military Academy, West Point, NY; and he has a master’s of arts degree geography from the University of Hawaii at Manoa. LTC Ireland’s awards include the Bronze Star Medal with two oak leaf clusters, and the Meritorious Service Medal with two oak leaf clusters. He has three combat tours: Operation Iraqi Freedom with the 1st Cavalry Division 06-08, Operation Enduring Freedom with the 4th Infantry Division 09-10, and Operation Inherent Resolve with 1st Armored Division 15-16. LTC Ireland also participated in one U.S. European Command rotation in Lithuania 22-23, during which he was the first non-Finnish person to command a Finnish Battlegroup during Operation Lock ’23 in Vekeranjarvi, Finland.

ACRONYM QUICK-SCAN

ABCT – armored brigade combat team
BII – basic issue items
BMO – battalion maintenance officer
CAB – combined arms battalion
ESR – equipment status report
FMT – field maintenance team
FSC – forward support company
GSCC-A – Global Combat Support System – Army
LD – line of departure
NMC – non-mission capable
ORR – operational readiness rate
PMCS – preventive maintenance checks and services
SAR – supply action request
SSL – shop stock list



U.S. Army Pvt. Rosa Guzman, an allied trade specialist assigned to 1st Battalion, 68th Armor Regiment, 3rd Armored Brigade Combat Team, 4th Infantry Division, welds a part of an M2A3 Bradley Fighting Vehicle during maintenance at Drawsko Pomorskie, Poland, Aug. 31, 2022. The 3/4 ABCT is among other units assigned to the 1st Infantry Division, proudly working alongside NATO allies and regional security partners to provide combat-credible forces to V Corps, America’s forward-deployed corps in Europe. (U.S. Army National Guard photo by SPC Hedil Hernandez)

Controlling Chaos: The Cavalry Troop Command Post

by CPT Ryan F. McGovern

“The battlefield is a scene of constant chaos. The winner will be the one who controls that chaos, both his own and the enemy’s.” – Napoleon Bonaparte

As the brigade combat team’s (BCT) reconnaissance and security force, cavalry troops operate at the transition between the brigade’s deep and close fights. Cavalry troops must gain contact with enemy forces and develop the situation rapidly in a dynamic environment far forward from BCT fires and sustainment nodes. In this environment, the cavalry troop command post (CP) fulfills an essential role facilitating early and accurate reporting, controlling maneuver, and enabling the troop commander to identify and execute decision points.

This article examines the role of the armored brigade combat team (ABCT) cavalry troop command post in enabling successful reconnaissance and security operations through effective command, control, and sustainment functions. Using CP doctrine as a starting point to discuss CP functions, and drawing on lessons learned during Troop B, 1st Squadron, 1st Cavalry Regiment, 2nd Armored Brigade Combat Team’s National Training Center (NTC) Rotation 22-10, it identifies central considerations and recommends tactics, techniques, and procedures (TTPs) for the effective employment of troop CPs. The discussion concludes with recommendations for training proficient CP teams at home station.

Doctrine and capabilities

Given the decentralized nature of reconnaissance and security operations, the demand for continuous synchronization of information collection efforts, and the requirement to provide timely, accurate reporting, cavalry troops are the only company-sized combat arms unit within a BCT authorized a command post.¹ According to Field Manual 6-0, **Commander and Staff Organization and Operations**, a

command post “is a headquarters, or a portion thereof, organized for the exercise of command and control (C2).”² At the troop level, essential personnel who operate within and from the CP include the troop executive officer, troop first sergeant, operations NCO, communications NCO, the chemical, biological, radiological, nuclear and (high-yield) explosives (CBRNE) NCO, medics, and the combat repair team.³ Although Army Techniques Publication 3-20.97, **Cavalry Troop**, outlines the roles and responsibilities of these personnel within the CP, it does not prescribe how a troop CP operates or specify functions unique to a troop-level CP. There are no unique factors which suggest the basic functions of a troop CP should differ from those of Army CPs in general. The functions of a command post are:

1. Building and maintaining situational understanding,
2. Controlling operations,
3. Assessing operations,
4. Coordinating with internal and external organizations,
5. Performing CP administration, and
6. Conducting knowledge management, information management, and foreign disclosure.⁴

The capabilities of an armored cavalry troop CP enable it to fulfill these functions, albeit with limited redundancy and overall capacity. The M1068A3 Standard Integrated Command Post System, currently being replaced by the Armored Multipurpose Vehicle, is the primary platform for the troop CP. The vehicle provides protection from indirect fires, multi-frequency communications, and power generation, in addition to supporting both digital and analog battle tracking. The platform supports the monitoring and power-amplified transmission of messages on four frequency modulation (FM) radio nets, enabling the command post to operate on both troop and squadron command nets, as well as the

squadron fires and operations and intelligence (O&I) nets. In addition to the digital battle tracking and long-range communications provided by the Joint Battle Command-Platform (JBCP), the AN/VRC-104 vehicle-mounted high frequency (HF) radio set enables the troop CP to communicate beyond the range of FM systems.

While the M1068A3 platform and CP personnel provide significant capabilities to enable effective C2, CP assets offer limited protection from enemy direct and indirect fires. Troop CPs lack the personnel or equipment to establish robust local security, as they are not equipped with machine guns, anti-armor weapons, or sufficient personnel to establish long-duration observation posts (OPs). To decrease CP vulnerability, troops can exploit the small footprint of CP assets to conceal their locations using a combination of terrain and camouflage, as well as noise, light, and electromagnetic signature discipline. Scout platoons can assist the commander in refining CP locations by confirming the suitability of planned locations during reconnaissance operations. The troop operations NCO can incorporate security patrols, displacement drills, and crew served weapons from the unit first sergeant (M113A3) and maintenance platforms (M88A2), when available, to improve CP survivability. To prevent the loss of the critical capabilities the CP provides, troop commanders must consider CP survivability and protection when planning command post locations and displacement triggers.

C2 in maneuver fight

The CP is not the only element within a troop responsible for effective C2, but it is the troop commander’s primary asset for controlling the fight. Commanders may exercise command, the authoritative act of making decisions and ordering action, separate from their command posts to apply their personal leadership at locations where they can best overcome friction

in an operation. Troop CPs, which maintain a continuous common operating picture (COP) and synchronize sustainment operations, provide control, the regulation of forces and warfighting functions to accomplish the mission in accordance with the commander's intent.⁵ Building and maintaining situational understanding, controlling operations, and assessing operations are the three command post functions critical to controlling the fight.

Situational understanding

Command posts build and maintain situational understanding for the troop by aggregating reporting from within the troop and consolidating information provided by adjacent units and higher headquarters to support the troop's maneuver. The troop CP directly integrates on the squadron and brigade intelligence nets by queuing troop collection assets to indicators observed by brigade assets, such as the Shadow Unmanned Aerial Vehicle (UAV) and electronics intelligence (ELINT) collections. Troops collect indicators to answer the brigade commander's priority intelligence requirements (PIR), and to incorporate troop CPs into brigade O&I nets, which facilitates timely reporting and provides redundancy in the event the squadron CP is unable to consolidate and forward such reports (the squadron CP is also included in the brigade O&I message room and thus it maintains visibility on troop reports submitted directly to brigade O&I). In addition, troop CPs reporting on the brigade JBCP O&I net can assist with mitigating friction in operations involving multiple battalion or squadron headquarters, such as the execution of a forward or rearward passage of lines, especially if the troop is the stationary unit. To support this TTP, troop CP personnel must understand the information collection plan and have the training to recognize and report priority indicators.

Effective, routine reporting from the troop CP to squadron and, as needed, brigade CPs on indicators and the status of friendly forces builds situational understanding for higher headquarters, while freeing the troop commander to adjust the troop's scheme

of maneuver and execute decision points.

Perhaps the most important way the troop CP controls operations is by maintaining an accurate COP of troop and adjacent unit operations. This can have a direct impact on the troop's lethality and ability to generate tempo. Therefore, troop CPs must not only track troop and adjacent unit locations, but also the direct and indirect fire control measures in effect. Scout platoons support the CP's role in enabling timely fires by providing routine, time or trigger-based reports on the location of their forces and the fire control measures on which they are oriented. Troop commanders clear ground for the employment of troop mortars within permissive indirect fire control measures, and, often operating at the brigade's line of contact, must be able to confirm clearance for squadron and brigade indirect fires targets and attack aviation. If confident in the COP maintained by the CP, the troop fire support officer (FSO) and commander can rapidly confirm clearance of indirect fires to suppress enemy positions, while minimizing the risk of fratricide.

Maintaining continuous communications with higher headquarters and adjacent units is essential for the CP to effectively battle-track operations and sustain an accurate COP. The executive officer, who serves as the CP officer in charge, and the commander should consider mission requirements to coordinate with adjacent units (such as for a passage of lines or planned maneuver through another troop's area of operations), as well as the communications (primary, alternate, contingency, and emergency) PACE plan, when planning CP locations.

Shared understanding

Through effective battle tracking, the CP enhances shared understanding, and it increases the troop's tempo by supporting rapid direct and indirect fires engagement decisions. In addition, battle-tracking reports of enemy activity and other indicators in space, within or relative to named areas of interest, facilitates rapid and accurate reporting to answer higher

headquarters' PIR and inform commanders' assessments.

At the troop level, the CP assesses operations by consolidating information on the friendly and enemy situations to support assessments by key leaders within the troop, including the commander, executive officer, first sergeant, and platoon leaders. Battle tracking and situational understanding, as discussed above, support accurate assessment. In addition, the troop CP should aggregate battle damage assessment (BDA) reports from scout platoons and the troop fire integration support team (FIST) by time, element, and location. In maneuvers against live opposing forces (OPFOR), as well as live fire training, it is common for platoons to overestimate their BDAs. Well-trained CP personnel will engage platoon leadership to verify the accuracy of BDA reports for engagements occurring along section and platoon boundaries to confirm whether duplicate reporting resulted in inflated BDAs. By confirming his BDA with the troop CP, the troop commander can provide an updated assessment of the enemy situation to the squadron headquarters and determine whether the troop has observed indicators sufficient to answer PIR.

Located at the CP, the executive officer prepares assessments of the friendly situation to support decision making and the execution of sustainment operations. Informed by routine and post-engagement logistics status reporting, the executive officer should maintain an accurate estimate of the supply status of friendly forces and attachments. Beyond understanding on-hand quantities, the executive officer should update the commander on consumption rates and the duration the troop can continue to fight without conducting resupply. Against a mechanized, peer enemy, accurately tracking and forecasting the troop's consumption of ammunition (especially tube-launched optically tracked wire-guided (TOW) and Javelin missiles, and 120mm mortar rounds), fuel and water is essential.

Therefore, the executive officer should establish the metric he/she will use to forecast consumption rates during troop leading procedures "Step 6:

Complete the Plan,” using the enemy situation template to anticipate ammunition expenditure and develop triggers for resupply. Such planning, followed by accurate battle tracking, equips the executive officer to have a dialogue with the commander on how the sustainment status of friendly forces impacts troop decision points, risk and opportunities. In parallel with the troop CP and mortar section, the troop FSO must maintain an accurate count of the troop’s 120mm mortar ammunition to make recommendations on fire mission prioritization and approval as the troop depletes its mortar ammunition during enemy contact.

Building sustainment initiative

In addition to informing tactical decision making, the armored cavalry troop CP can be employed to build initiative in the sustainment warfighting function through managing the operations of the troop trains. Current cavalry squadron doctrine empowers commanders to determine the composition of the troop trains.⁶ Rather than establishing a fixed composition for the troop trains, troops should develop a flexible standing operating procedure which prescribes adjustments to the composition of the troop trains based on the tactical situation. Leaders should primarily consider the threat situation and friendly force maintenance demand, as well as the disposition of squadron maintenance nodes, when determining the composition of the troop trains.

To reduce the time required to assess and repair equipment, as well as the demand for recovery assets, troops should maximize their capability to conduct assessment and repair as far forward as possible. A TTP in which the troop establishes a combat repair team co-located with the CP increases the responsiveness of maintenance support to the platoons and provides greater C2 of maintenance operations.

In most tactical situations, co-locating the field maintenance team (FMT) contact truck and M88 recovery vehicle with the troop CP can be achieved with low risk to the maintenance assets. Locating the shop van at the CP

when the risk of direct and indirect fire is low, and there is a greater demand for maintenance support forward than at the unit maintenance collection point, increases the mechanics and parts available to conduct forward repairs. The FMT chief, who has the most experience to make recommendations on maintenance and recovery decisions, should be located forward at the CP. By locating the combat repair team at the CP, the executive officer can provide clear guidance for dispatching a recovery mission, and platoons can rotate vehicles to the vicinity of the CP for fault validation and Form 5988-E Equipment Maintenance Worksheet submission. To streamline fault validation and identify National Stock Numbers for parts ordering, the combat repair team should be equipped with maintenance support device computers. This enables the CP to submit requests via JBCP or HF directly to the maintenance control section for priority parts ordering on a faster timeline than the return of paper copy Form 5988s. For weapons maintenance, the troop master gunner should maintain a stock of M242 repair parts with him at the CP. Posturing maintenance assets forward at the CP improves the flexibility of maintenance operations by providing troop leadership with options to deploy the combat repair team forward to assess damage, validate faults, and conduct repair or recovery operations, while also providing greater visibility on the status and impact of maintenance faults on combat platforms.

Effective coordination with internal and external organizations, the fourth function of a command post, is essential for conducting effective casualty evacuation (CASEVAC) operations and integrating enablers. To support the CASEVAC plan, the CP must track and communicate the status of troop casualty collection points (CCPs), while also refining prospective CCP locations based on the terrain, enemy and friendly situations with the assistance of the platoon sergeants. The medical NCO and first sergeant should use the CP’s access to multiple FM nets and the brigade’s digital JBCP COP to identify and coordinate casualty evacuation to adjacent unit aid stations, as necessary, given the squadron aid

station may not be the closest option for casualty treatment.⁷

The executive officer, equipped with the communications capabilities resident in the command post, is responsible for coordinating the integration of combat enabling units.⁸ Essential details the executive officer must coordinate with higher and adjacent unit headquarters include linkup times and locations, as well as responsibilities for sustainment. Often, the CP or a nearby area serve as suitable locations for the troop to conduct enabler linkup and integration. Pending the enabler unit understanding of the current fight, directing the enabler unit leadership to linkup at the CP for an orientation to the tactical situation and mission briefing can decrease the friction inherent in enabler integration.

Troop CP lessons from NTC

There are a variety of approaches and TTPs which support effective troop CP operations. The essential role of Troop B, 1st Squadron, 1st Cavalry Regiment’s CP in enabling an effective zone reconnaissance mission in vicinity of School Bus Wadi during NTC Rotation 22-10 provides examples to illustrate several of the TTPs discussed above.

To confirm suitable approaches for 2/1 AD to maneuver into the central corridor after occupying terrain north of the Whale Gap, Troop B executed a zone reconnaissance from south to north through a zone including the School Bus Wadi and adjacent terrain.

The other cavalry troops, Troop A and Troop C conducted zone reconnaissance operations in parallel with Troop B to the west and east, respectively. Crossing the line of departure at 9 p.m., Troop B neutralized OPFOR within the security zone in vicinity of School Bus Wadi and maneuvered to observe Hill 720 and the Snow Cone, key terrain which could influence 2nd Brigade Combat Team, 1st Armored Division’s maneuver into the Central Corridor.

With effective communications and battle tracking, the troop CP can clear ground for indirect fires, including across unit boundaries. While maneuvering through School Bus Wadi under

limited visibility, 2nd Platoon dismounts identified what appeared to be an OPFOR OP approximately 500 meters into the Troop C zone in vicinity of the Porta Potti Wadi. Positioned on the east side of the troop's zone and able to maintain consistent FM communications with the Troop C CP and commander, the Troop B CP confirmed the OP was enemy OPFOR and obtained approval for a cross-boundary mortar fire mission within 20 minutes, enabling Troop B to successfully engage the stationary OP. The CP's situational understanding, battle tracking, and close coordination with the adjacent troop CP and the Troop B FSO were essential in delivering timely fires.

Troop CP integration into BCT O&I nets supports timely reconnaissance management decisions. Once 1st Platoon reached the northern end of School Bus Wadi, the BCT intelligence section broadcast ELINT and Shadow UAS indicators with associated Military Grid Reference System locations on the BCT O&I JBCP message room.

After plotting these locations with the troop commander, the CP confirmed 1st Platoon, Troop B was in the best position to collect on the disposition of the OPFOR combat trains and a T-90 platoon identified by BCT collections. After queuing Raven UAS and M2 Bradley capabilities to observe these locations, the troop was able to provide additional, continuous reporting on these OPFOR elements to the BCT.

Continuous monitoring of the squadron fires net (FM and JBCP) enables the CP to facilitate the delivery of fires from artillery and attack aviation. As 1st platoon confirmed a platoon of OPFOR T-90s moving slowly from west to east, south of Hill 720, the CP received an update on the squadron fires FM net that a section of AH-64 Apache helicopters had checked on station to support the squadron's maneuver. Battle tracking the reports from 1st platoon and equipped with the artillery and aviation attack guidance matrices, the executive officer contacted the squadron fires cell and the attack aviation section to report the location of the enemy T-90 platoon. He then facilitated FM linkup between the attack aviation section and the troop FSO, enabling

the destruction of the OPFOR platoon.

The troop must maintain both primary and alternate means of communication with the squadron CP while the troop CP is displacing. As the Troop B commander and scout platoons maneuvered into School Bus Wadi, they lost FM communications with the squadron CP, which remained established in vicinity of the Whale Gap. The Troop CP set up its Quick Erect Antenna Mast (QEAM) system while stationary, enabling it to relay FM communications between the troop commander and squadron CP. When the troop CP collapsed the QEAM antennas to displace north, the troop lost FM communications with the squadron CP, leaving JBCP communications as the only functional element of its communications PACE plan.

Troops should ensure they maintain a primary and alternate means of communicating with the squadron CP while the troop CP displaces to minimize the risk of a communications gap. In subsequent missions, the troop commander and FSO used tactical satellite (TACSAT) communications to maintain voice communications with the squadron CP while operating beyond FM or HF radio range.⁹ Troops also have sufficient OE-254 antenna mast systems for the FSO and commander to maintain a system on each of their tracks.

Troop CPs must track current airspace control measures to facilitate timely establishment of restricted operating zones (ROZ) for troop UAS. After confirming the location of OPFOR combat trains southwest of Hill 720, 1st Platoon was unable to maneuver M2 Bradleys to gain better observation of the trains without risking decisive engagement from the T-90 platoon nearby. The platoon leader prepared to launch the Raven UAV and requested the establishment of the ROZ in vicinity of Hill 720. The CP attempted to activate the associated keypad ROZ but did not have the current digital and analog airspace control measure overlays for the current mission. Although the commander and CP worked with the squadron CP to establish a ROZ, it required additional time and transmissions, delaying the establishment of a

ROZ by two hours.

Training command post proficiency

Proficient CP personnel exercising disciplined initiative and generating shared understanding through established systems are the foundation of an effective troop CP. Troops must plan to train headquarters section junior-enlisted Soldiers and NCOs who are serving their first assignment in a cavalry organization, as they receive little to no training on CP operations during advanced individual training and the NCO basic leader course. In addition to the duties of command post personnel outlined in *ATP 3-20.97, Cavalry Troop* (Appendix C), troops must ensure command post NCOs and Soldiers serving as radio-telephone operators (RTOs) understand how to consolidate and organize reporting based on the information collection plan, graphic control measures, and the troop's task organization. Integrating CP NCOs into tactical rehearsals, as well as troop-level recovery and CASEVAC battle drills, validates the readiness of the CP.

The operations NCO should ensure all personnel in the CP are proficient in operating CP communications and battle tracking systems, as low-density military occupational specialty (MOS) NCOs (communications and CBRNE NCOs) may not be available in the CP while performing MOS-specific tasks. The executive officer may need to travel away from the CP to enable other operations, such that the operations NCO must be proficient in conducting all CP functions in his absence.

Troops must maximize opportunities to train CP operations prior to maneuvering at scale during a combined arms live fire exercise or attending a combat training center rotation. Deploying the troop CP in its tactical configuration to support crew gunnery, dismount live fire, and platoon situational training and live fire exercises provides repetitions for CP personnel to develop proficiency, enables the troop to refine CP systems, and validates the maintenance readiness of CP equipment. Squadron staffs can support multi-echelon CP training by deploying the squadron main command

post concurrent with these training events to validate squadron C2 systems.

Conclusion

In tactical environments characterized by great uncertainty and effects spanning multiple domains, troops will face challenges maintaining the control necessary to synchronize combined arms maneuver. Effective troop CPs provide the control, internal and external coordination, and support to assessment vital to maintaining an operation's tempo.

As they build cohesive teams, commanders must maximize opportunities to develop proficient and capable CPs which contribute to the success of subordinate, adjacent, and higher unit missions.

CPT Ryan F. McGovern is the commander, Troop B, 1st Squadron, 1st Cavalry Regiment, 2nd Armored Brigade Combat Team, 1st Armored Division, Fort Bliss, TX. His previous assignments include Plans Officer, 2nd ABCT, Camp Buehring, Kuwait; executive officer, Headquarters and Headquarters Company, 1st Battalion, 68th Armor Regiment, 4th Infantry Division, Fort Carson, CO; scout platoon leader, HHC,

1-68 Armor; tank platoon leader, Company B, 1-68 Armor. His military schools include U.S. Marine Corps Expeditionary Warfare School, Quantico, VA; Cavalry Leaders Course, Fort Moore, GA; Army Reconnaissance Course, Fort Moore; and Armor Basic Officer Leaders Course, Fort Moore. CPT McGovern has a bachelor's of science degree in political science: international relations from the U.S. Military Academy, West Point, NY.

Notes

¹ Headquarters, Department of the Army (HQDA), Army Techniques Publication 3-20.97, **Cavalry Troop**, (Washington, D.C., 2016).

² HQDA, Field Manual (FM) 6-0, **Commander and Staff Organization and Operations**, (Washington, D.C., 2022), 7-1.

³ ATP 3-20.97, **Cavalry Troop**.

⁴ HQDA, Army Doctrine Publication 6-0, **Mission Command**, (Washington, D.C., 2019c).

⁵ HQDA, FM 6-0, **Commander and Staff Organization**.

⁶ HQDA, FM 3-98, **Reconnaissance and Security Operations**, (Washington, D.C., 2023). "The troop commander determines the troop trains, which may consist of the troop first sergeant, supply sergeant, and troop medical assets. Maintenance teams from the Forward

Support Company may be included."

⁷ ATP 3-20.97.

⁸ FM 3-98.

⁹ Although the BCT is equipped with a limited number of TACSAT systems, such systems can be employed to enable effective communications between cavalry troops and squadron/brigade CPs when the troops are conducting reconnaissance or security missions far forward of the main body.

ACRONYM QUICK-SCAN

ABCT – armored brigade combat team
BCT – brigade combat team
BDA – battle damage assessment
C2 – command and control
CASEVAC – casualty evacuation
CCP – casualty collection point
CP – command post
ELINT – electronics intelligence
FIST – fire integration support team
FM – frequency modulation
FMT – field maintenance team
FSO – fire support officer
HF – high frequency
JBCP – Joint Battle Command-Platform
MOS – military occupational specialty
OP – observation post
OPFOR – opposing forces
PIR – priority intelligence requirement
O&I – operations and intelligence
QEAM – Quick Erect Antenna Mast
ROZ – restricted operating zone
TACSAT – tactical satellite
TTP – tactics, techniques, and procedures
UAV – unmanned aerial vehicle



FORT MOORE, GA – 2nd Squadron 15th Cavalry Regiment trainees learn Land Navigation during the ANVIL phase of basic training July 26, 2023. Trainees are learning the ability to navigate terrain with a map and compass. (U.S. Army photo by Denise Mosley, Maneuver Center of Excellence and Fort Moore Public Affairs)

places more load on the Soldier by requiring excess batteries to operate night-vision equipment. The batteries are prone to freezing, and common methods to keep them warm involve body heat under a Soldier's body armor or continuously wrapping hand warmers around larger batteries.

Finally, to conduct dismounted maneuvers in the snow, both brigades are equipped with snowshoes and skis for Soldiers. When Soldiers do not train with them, they are funneled onto plowed roads, but trained Soldiers are reduced to speeds as low as 250 meters an hour in tactical movements – or they can cover three to four kilometers in an hour, depending on the terrain.

These unique operational variables impacted both training-center rotations and the Cavalry squadrons' ability to conduct R&S operations.

JPMRC 22-02

The SBCT and 5-1 Cav started with an advantage during JPMRC 22-02 compared to 1-40 Cav. To enter the box, 5-1 Cav needed to conduct a 100-mile tactical roadmarch along a double-lane paved plowed road. This played directly into the SBCT's strength, enabling the squadron to get into the fight and deploy more than 90 percent of its combat power in the box within the first 24 hours.

Once the Strykers arrived in DTA, they were confined to one of the four plowed roads in the box. As a result, a single obstacle enabled the opposing force (OPFOR) to close a mounted avenue of approach (AoA), which multiple companies needed to maneuver through. On the west side of the area of operations (AO), the AoAs led to one of the tallest ridge lines in the area, which resulted in repeated exposure of RTU vehicles.

On three occasions, one troop and two infantry companies were destroyed on this ridgeline before a dismounted zone reconnaissance culminated in the seizure of the decisive terrain when the OPFOR retrograded out of the area. These operations were more akin to a movement-to-contact than an attempt at reconnaissance operations.



Figure 2. Ridgeline dominating DTA during JPMRC 22-02. (Photo by 1LT Tristan Meadows)

The Stryker's ability to sustain itself by carrying multiple days of supply benefited echelons at all levels. Platoons deployed with three to five days of supply (DoS) of Class I, Class III and Class V and could rapidly relocate to a sustainment node and refit for several days of combat. The squadron failed on one aspect of sustainability when it conducted a refuel-on-the-move after its initial tactical roadmarch. A single plowed road became a parking lot as convoy serials attempted to position themselves in line for the fueler. Completion of refueling operations were not complete until 48 hours later due to the traffic jam. In these situations, the squadron doesn't just rely on fuel to maneuver but also to maintain critical life-support functions to keep Soldiers warm.

The 5-1 Cav command-and-control capabilities relied on frequency-modulation (FM) communications and the Joint Battle Command-Platform (JBC-P) for communications among platoons, troops and the squadron. Although the SBCT is equipped with many HF platforms, the squadron only had two operations throughout the 10-day force-on-force exercise.

FM communications remained degraded in the AO due to the muskeg, and the deployment of a retransmission Stryker proved difficult due to the lack of plowed pull-offs for a retrans element to operate on. JBC-Ps are degraded so far north since most of the Global Positioning System network satellites operate off an equatorial orbit and lack line-of-sight to the poles due to trees and the Alaskan Range to the south.

JPMRC 23-02

The 1-40 Cav's deployment through a combination of two airborne jumps and a 350-mile tactical roadmarch caused immediate issues with its ability to mass all its combat power in the box. Weather and plane delays resulted in not all scheduled jumpers deploying and led to dismounted forces stuck in Anchorage, 350 miles from the fight. These Soldiers deployed three days later using contracted civilian buses to make the trip. The mounted organizations had the same problem as 5-1 Cav encountered in the previous rotation, with their maneuver limited to roads. However, 1-40 Cav elements dealt with extreme supply limitations during their deployment.

The two mounted troops, Aero and Blackhawk, repeatedly deployed on the only two skylining roads in YTA that run west to east through the area. The roads offered great opportunities for use of the squadron's Long-Range Advance Scout and Improved Target-Acquisition System but against a dug-in enemy, 1-40 Cav endured repeated failures to conduct effective reconnaissance. The dismounted troop, Chaos, did not fully deploy as a reconnaissance element until Day 9 of the operation, when they conducted a successful air assault where they effectively cut off the enemy's only line of communication to the rear.

Chaos Troop initially jumped into YTA on Day 1 of the operation but did not receive enough sustainment support. This resulted in the troop simply surviving on the drop zone until Day 7, when the troop reconsolidated around

the squadron command post (CP) to plan for the air assault.

The combination of mounted and dismounted organizations in 1-40 Cav did not allow them to deploy with the same combat load as the Strykers. Paratroopers jumped with a maximum of one DoS, relying on the sustainment bundles that were either dropped before or after them. In Chaos's case, these bundles did not make it to them, and they could not put all Soldiers in front of a heat source until Day 4; they resorted to "cold bagging" in their sleeping bags a night. The temperatures at this time favored their survival since the low was only 10 degrees Fahrenheit through the entire exercise, but five days later, temperatures on Fort Wainwright reached -12F at night. If Soldiers had "cold bagged" it at these temperatures or colder, many Soldiers in the company would have quickly become cold-weather casualties and would have required medical evacuation to the rear.

Way forward

To successfully conduct Cavalry R&S operations in the Arctic and align with the 2021 Arctic strategy, squadrons cannot field the same modified table of organization and equipment (MTOE)

as squadrons in the lower 48. The 5-1 Cav transitioned from an SBCT to an IBCT this year but received the same MTOE as every IBCT Cavalry squadron, with the promise of changes later. In both rotations, the OPFOR made excellent use of tracked vehicles with Small-Unit Support Vehicles (SUSVs) or snow machines to maintain freedom of maneuver against the RTU.

The SUSV, originally produced in 1980, is now a legacy system in 11th Airborne Division with very few vehicles still operational. The division plans to replace remaining SUSVs with more than 100 CATVs in the coming years.

Snow machines were fielded in February 2023 to 11th Airborne Division in limited numbers and were used by the RTU and OPFOR as sustainment assets. Snow machines need to be pushed to line troops in quantities that allow them to use them to emplace and displace observation posts for R&S.

Chaos Troop, 1-40 Cav, had five snow machines with them, but since the troop was not deployed until Day 9, they were unable to use them at the tactical level. Equipping each line troop with a minimum of eight snow machines would enable two for sustainment, leaving six for tactical

operations. That allows a section of scouts to maneuver in all terrain in a single lift.

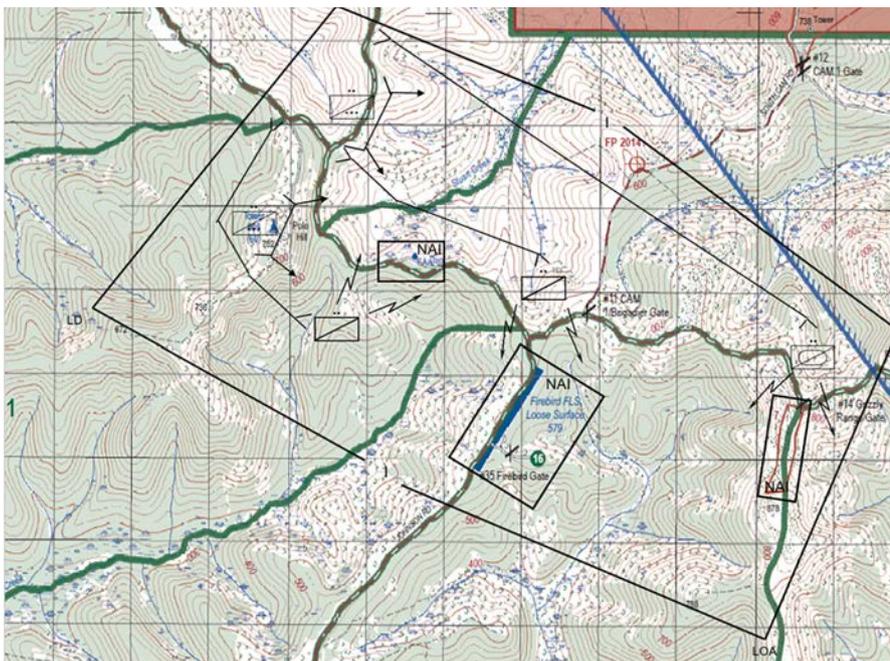
Cavalry leaders learn the importance of dismounted operations during the courses of Scout Leader's Course and Reconnaissance and Surveillance Leader's Course. This reconnaissance method was employed very little by both 5-1 Cav and 1-40 Cav, but the OPFOR displayed great success in dismounted operations. Using skis and snowshoes, OPFOR elements in both rotations repeatedly infiltrated behind the forward-line-of troops and attacked rear CP nodes. The mounted troops in 5-1 Cav and 1-40 Cav need to maintain a minimum of a dismount platoon if they continue operating with humvees that are limited to roads.

Maintaining a dismounted platoon in the Alpha and Bravo troops ensures survivability of the mounted platoons and enables off-road maneuver. The dismounted platoon is then able to clear terrain in front of the mounted platoons to enable their maneuver. The dismounted platoon can then rely on the mounted platoons for more firepower and sustainability. The two JPMRC rotations by 5-1 Cav and 1-40 Cav highlights the inability for purely mounted organizations to conduct successful R&S operations in the Arctic.

Finally, HF and TACSAT communications platforms need to be embraced by all echelons to stop reliance on FM communications. The 1-40 Cav had success using the platforms such as Mobile User Objective System and Warfighter Information Network-Tactical from the platoon to squadron level and had little reliance on FM.

The 1-40 Cav still had their own communication difficulties, but they did not repeat 5-1 Cav's mistakes and had communications platforms that did not rely on line-of-sight.

The Army is spending money on innovation in the Arctic, from snow machines to CTAPs and CATVs. Other armies have successfully fought in the Arctic for years, such as Finland in the 1939-1940 Winter War, and they have succeeded using simple methods that are still taught in Cavalry doctrine but



often not practiced. The squadrons are benefiting from the influx of money to the organization, but you don't need a \$1,000 battery warmer that weighs 15 pounds to keep a AAA battery warm when a Soldier can use his body heat.

Reinforcing 5-1 Cav to a truly Arctic Cavalry squadron with off-road mobility platforms of snow machines and CATVs, conducting dismounted operations and leveraging TACSAT and HF communications at all echelons will enable 5-1 Cav's success in JPMRC in February 2024 and the success of future operations in Arctic environments.

1LT Tristan Meadows is S-4 of 5-1 Cav, Fort Wainwright, AK. Previous

assignments include platoon leader, 5-1 Cav, Fort Wainwright. He served as Red Platoon leader for Bandit Troop, 5-1 Cav, during JPMRC 22-02 and as observer/coach/trainer for Chaos Troop, 1-40 Cav, during JPMRC 23-02. His military schooling includes Basic and Advanced Military Mountaineering Courses, Heavy Weapons Leader's Course, Stryker Leader's Course, Scout Leader's Course, Air-Assault Course, Armor Basic Officer Leader's Course, UH-72A Light-Helicopter Repairer Course, UH-60 A/L-M Helicopter Repairer Course and Basic Combat Training. 1LT Meadows has a bachelor's of science degree in criminal justice from the University of North Dakota and a bachelor's of arts degree in sociology from the University of North Dakota.

ACRONYM QUICK-SCAN

AO – area of operations
AoA – avenue of approach
CATV – Cold-Weather All-Terrain Vehicle
CP – command post
CTAPS – Cold-Temperature Arctic Protection System
DoS – days of supply
DTA – Donnelly Training Area
FM – frequency modulation
FST – forward-support troop
HF – high frequency
HHT – headquarters and headquarters troop
IBCT – infantry brigade combat team
JBC-P – Joint Battle Command-Platform
JPMRC – Joint Pacific Multinational Readiness Center
MTOE – modified table of organization and equipment
OPFOR – opposing force
R&S – reconnaissance and security
RTU – rotational training unit
SBCT – Stryker brigade combat team
SUSV – Small-Unit Support Vehicle
TACSAT – tactical satellite
YTA – Yukon Training Area



Cold Weather Leaders Course students move through the rugged terrain at the Northern Warfare Training Center's (NWTC) Black Rapids Training Site, AK, during a snowstorm in March 2023. NWTC cadre worked overtime to help meet the increased need for more Arctic experts in the units to help pass critical knowledge throughout the formations. (U.S. Army photo by John Pennell, 11th Airborne Division)

Spec. Zachary Ewing digs out a personal sleeping space in preparation for an overnight without a tent at the Northern Warfare Training Center's Black Rapids Training Site, AK. (U.S. Army photo by John Pennell, 11th Airborne Division)



Junior Leaders in Age of Experimentation

by MAJ Adam Nodin

Why should anyone outside of Army Futures Command bother thinking about the future of innovation and technology? Battalions and companies hardly have enough time to squeeze in a good training event, they can barely keep up with new equipment being fielded, and they can't get rid of the old stuff fast enough. The property books are a mess, and junior leaders struggle to find time to train their troops.

Anyone who has ever been fielded the new Enhanced Night Vision Goggle-Binocular (ENVG-B) or a PUMA unmanned aircraft system can attest to their utility on the battlefield, but those technologies did not arrive by accident. Their concepts were meticulously researched, designed by teams of scientists and soldiers, and went through rigorous testing before landing on any company commander's property books. As the character of war evolves at the pace of technological advancement, and without a raging war to spur technological advancement, the Army is investing in the Army Futures Command's Project Convergence. Experimentation will be key to the Army's ability to evolve with new concepts and technologies, to adapt to those changes, and to integrate devices and systems to win on the next battlefield.

The fundamentals of fire and maneuver and the force's ability to adapt to a changing landscape will always be important, still everyone must remember that technological advancements are not unique to the United States – its adversaries are adopting their own experimentation programs to aggressively compete on a global scale. Therefore, the United States' lead as the world superpower is being contested.

All said, the fundamentals of soldiering will likely stay un-touched. Very few envision a terminator-like landscape with clashing drones, while the humans remain hidden from sight.

Wars will be fought, and won, with people, and those people need to be trained to close with and destroy their enemy. Training this force will be increasingly complex, and leaders need to not only understand their role in training lethality to fight tonight, but also embrace the requirements to be relevant tomorrow.

Imagine the maneuver company commanders of 2040. For the most part, they look like the company commanders of today: physically fit, Ranger qualified and trained to jump out of an airplane. They wear body armor adorned with fighting tools, are bogged down by an array of wires, batteries, and antennas, and carry a rifle that is likely still the 6.8mm Next Generation Squad Weapon that is presently being fielded. The main difference is their access to information. They'll probably carry an advanced version of Integrated Tactical Network (ITN) that gives them portable data and voice communications transport to both over-the-horizon nodes and shorter-range networks. A device that resembles a cell phone on their chest will give them access to sensors, shooters, and command and control centers in their network. With the support of artificial intelligence (AI) software, they'll be able to communicate their company's situation more efficiently and contribute to the generation of offensive and defensive actions. The company's structure will look much the same as today except for a larger headquarters platoon to manage a small fleet of drones and offensive cyber and communications specialists.

Consider the stature of the Army in which those company commanders serve, possibly as much as 20 years removed from counterinsurgency and full-scale combat operations. Years of successful competition and deterrence could keep threats to the United States and its allies in check. Thanks to the degradation of Russia in Ukraine, the shrinking of a Chinese

work force, and economic and domestic pressure on North Korea and Iran, the typical big four adversaries might not cross the threshold of armed conflict. Heavy investment in strengthening partnerships and alliances, and a nimble counter-terrorism force might keep threats on the homeland manageable. Despite occasional Immediate Response Force deployments for noncombatant evacuation operations in unstable states across the Baltics and Africa, the low demand on the U.S. Army's divisions would allow its experimentation culture to accelerate. Since technology tends to advance most rapidly during combat operations, the absence of armed conflict will necessitate the focus on rigorous, deliberate military development. The challenges of managing an effective training plan would be complicated by the consistent introduction of new equipment or experiments to refine the understanding of the battlefield of 2060.

If war breaks out in 2040, those company commanders' roles will look much like today's, though the character of war will look different. Their primary mission will still be to close with and destroy the enemy in close combat. A multi-dimension battlefield will be second nature to those companies. They'll be well-versed in signals collection and disruption, likely have the means to launch limited cyber-attacks on local objectives, and they will be able to deploy ground and air unmanned systems. Their enemy will have the same capabilities.

Should these company commanders find themselves being the objective of an enemy attack, their advanced communications, drones, and cyber weapons could be disabled or disrupted, meaning their ability to fight in an analog environment will be important for survival. The training and attention they put into the fundamental fighting skills that are cherished today will still be the root of their success on a future battlefield.

Ultimately, the force that can survive in a contested environment, protect its advanced capabilities, and mass all its power in a narrow window of opportunity will win the day.

What is experimentation?

Experimentation is ubiquitous in most Army formations, and it allows leaders to learn what they don't already know. What exactly is experimentation? This might sound like an easy answer. Many took high school chemistry and remembered the reaction when baking soda was mixed with vinegar. But many might not remember what made that event an experiment. After all, the reaction of the mixture is well-known and unsurprising. Most likely, the teacher had the students write a hypothesis – *I believe that adding vinegar to baking soda will create a fizz in the solution.* A controlled environment was likely prepared for the experiment that included a clean classroom, a graduated cylinder, or a scale for measuring the variables, and a sterile glass cylinder to mix everything together. The students repeat the experiment using different amounts of the variables or by adding additional variables like water or food coloring. Students probably recorded the size of the initial reaction as the control, then measured the size of the reaction when different amounts of the variables were added. Finally, over time, the experimenters not only answered their hypothesis, but also learned the exact ratios of vinegar and baking soda required to make the biggest reaction, the speed that they must be added, and how non-reactive ingredients like water affect the reaction.

The Department of Defense (DoD) defines experimentation as “*testing a hypothesis, under measured conditions, to explore unknown effects of manipulating proposed warfighting concepts, technologies or conditions.*” It is not an end, but a tool to explore unknown relationships and outcomes that result from new disruptive technologies and concepts, new applications of existing capabilities or emerging threats.¹ Experimentation is more about learning what isn't known or understood rather

than proving what already exists.

In recent years, an evolution in individual soldier technology landed in the hands of some of the most junior combat arms troops. Some examples include ITN, a brick-style radio that utilizes both FM and cellular networks to transport voice and data through a relay-style mesh network; ENVG-B, the dual-tube, thermal-enabled night vision devices that incorporate picture in picture views of the user's geo-position and weapon optic and can be linked to the ITN; and the Infantry Squad Vehicle, a vehicle that can rapidly transport a nine-person squad without the cumbersome weight of armor and large-caliber weapons. These enhancements are a result of experimentation, prototyping, and assessment. They went through years of development, withstood the durability tests of the Defense Advanced Research Projects Agency, and were tested by Soldiers at numerous stages called Soldier touch points before fielding. Through the research and development cycle, these products tangentially informed the capabilities of the future force. Innovation breeds more innovation, and that is the power of experimentation.

Army Futures Command

Conceptualizing the future battlefield through the lens of today's technology. Army Futures Command is already researching the challenges, capability gaps, and requirements that must be overcome to achieve the future operating concept. It is a multi-domain effort, and artificial intelligence and machine learning are at the forefront to accelerate problem-solving. A key objective is to build networks from powerful processors that can digest data from sensors of any service, provide actionable information to a designated command node, distribute an effects solution to available systems, and inform a logistical action for resupply or maintenance.

Multinational partners and the joint services make up a portion of the solution since the United States will rely heavily on others for things like

penetration, mobilization and basing in any conflict.

It might sound like the problem is not necessarily revolutionary, and many might be surprised the U.S. military doesn't already have such a system. Unfortunately, the U.S. military's focus for the last 20 years has been based on defeating a shape-shifting adversary – the ideological foot soldiers of various terrorist networks in the Middle East who used their ability to vanish within the local population as their primary means of survival.

From the 1980s through the wars in Iraq and Afghanistan, the U.S. military focused on platforms to give it the competitive and lethal edge on the battlefield.² Some of the platforms that gave U.S. troops a tactical advantage in the Middle East included the Mine-Resistant, Ambush-Protectant vehicles, the 155mm M777 Howitzer, the Javelin anti-armor missile, the M142 High Mobility Artillery Rocket System (HIMARS), and the AH-64 Apache Helicopter. Key defensive platforms include the C-RAM (Counter Rocket, Artillery, and Mortar) and the Patriot missile system. All these platforms brought much-needed technological leaps to the battlefield, but none revolutionized the character of war.

These platforms often showcased a major enhancement of an old problem, but lacked an improvement to the Decide, Detect, Deliver, Assess (D3A)³ targeting process, sometimes referred to as the kill chain or kill web.⁴ The M777 or HIMARS brought longer-range precision fires and the Apache brought advanced targeting, but a human was still required for much of the targeting process. Humans are required to determine if a target observed through an Apache's Forward-Looking Infrared is friend or foe, to decide the best munition to attack the target, and consider whether that target could be passed to a different platform (such as a howitzer), so the Apache could preserve its ammunition for deeper targets. Should this tactical scenario play out on a current battlefield, a cumbersome process of verbal communications would fill the radio net

to precisely describe the problem. Then, the information would get translated into an Advanced Field Artillery Data System to determine if the target is in range before sending a message to the gun line to prosecute. A well-trained team might take minutes before a commander would be able to approve the plan. Iterated dozens of times per day, the consequence translates to fuel burn and exposure for the Apache, mental fatigue for the staff, and potential temporary reduction in situational awareness for the commander.

The Army Futures Command's Project Convergence is focused on conceptualizing the design of the future force through an experimentation plan to pursue and integrate the technology and capabilities needed to dominate a future conflict. Every two years, the Army Futures Command holds its Capstone event (formerly called Project Convergence). Industry partners such as Raytheon, Lockheed Martin, and Palantir join Army research and development teams and active Army units to test the force's ability to fight on a conceptualized future battlefield. Special operations troops, naval fleets, fighter aircraft, Marines, Space and Missile Defense, and Army troops along with international partners such as the United Kingdom and Australia attempt to link their sensors, shooters, and command and control nodes to reduce the time of the D3A process in complex scenarios.

Drone swarms, ballistic missile barges, unmanned vehicles, and cyber-attacks are typical problems that complicate the network during this experiment. A difficult balance of imagination, probability, and technology takes place in a six-week conceptualization of the future company commander's battlefield to identify shortcomings and gaps that must be addressed.

At a very high level, the Army Futures Command, the Army service component commands (ASCC), and even the Army corps are hosting experiments with consequential results. Aside from Capstone, the Futures and Concepts Center, a three-star directorate within Army Futures

Command, designs experiments within annual training events held by U.S. Army Pacific and U.S. Army Europe and Africa. Not only are these experiments tailored to a particular region, but they also harness the thoughts and knowledge of Soldiers who live outside the continental United States, actively participate in partner force operations, and are focused on deterring and defeating a specific adversary. The data taken from these experiments inevitably feeds future experiments, including Capstone, as well as smaller-scale experiments hosted by the Army's warfighting functions.

A solution to link the existing and new platforms to cut down on the D3A process to speed target prosecution in narrow opportunity windows will be the means to dominate the next battlefield. Advances in processing power, software, and algorithms are leading to computation solutions to improve a leader's ability to make decisions based on impossible volumes of data. In turn, computer-assisted command and control means decisions can be made faster, orders can be distributed and synchronized more rapidly, and precision effects can be delivered to multiple targets at a much higher rate.

Those future company commanders will be in the throes of this high-intensity and fast-moving kill chain. Their companies will collect data through their sensors, refine unclear data, or act on data collected by other sensors. The information they transmit or act on will lead to decisions that will be computed in milliseconds, and the pace of their battlefield will move far faster than today. Unlike many other military innovations, these advances are occurring off the battlefield in digital labs and in experiments like Capstone.

How innovations intersect with junior Soldiers

The junior leaders of today will have to embrace technological developments to be relevant on the battlefield of tomorrow. Without question, the higher-level focus on experimentation is important to the Army as a force, but it does not overhaul what

tactical-level leaders need to think about day-to-day. Army Futures Command is experimenting with solving problems at the three-star, joint task force level. Ballistic missiles, deep sensing, drone swarms, and multi-domain operations are common themes at that level. At the tactical edge, Soldiers still need to be competent at their core skills of fire and maneuver. Leaders should embrace opportunities to participate in experiments, be mindful of ways to innovate within their own formations, and to become experts with, and provide feedback for, newly fielded equipment.

Company leaders today have an important responsibility in bridging the counterinsurgency force with the multi-domain force. The future battlefield will have drones, hypersonic missiles, a mind-blowing network architecture, and Soldiers. With a 10 to 20-year time horizon for implementation, the transition will take root slowly. In that time, Soldiers and leaders will be subjected to testing and training with new equipment. Technology will continue to advance in and out of the DoD sphere, and there will be several force design updates. Soldiers from across the force are often requested to take part in these experiments where they are mixed with industry leaders, scientists, and innovators to test prototypes and inform concepts. Their participation and feedback provide steering guidance for those shaping the force's understanding of the character of warfare.

Soldiers are natural innovators and experimenters, and formations should, when practical, take opportunities to learn from each other. There isn't an Infantry or Armor Soldier who isn't the beneficiary of a good tactic, technique, or procedure (TTP) that will never be found in any Army publication. Often these TTPs are honed by an individual or group striving to make their lives a little better.

Finding the best position for a magazine pouch for shooting from the prone position or the best antenna setup to use for a dismounted radio or a smart way to quickly establish

voice communications after a combat equipment static line jump are all examples of these experiments that resulted in a useful TTP. Often the proprietor of these TTPs isn't sure if they're going to like a particular configuration, but they experiment in a training environment and decide if it works for them. Often a squad leader or team leader will make his or her team follow the same TTPs, beginning a micro-propagation of an experiment that will inevitably be refined by those who use it. The more our leaders can nurture this culture, the better our formations will be at applying critical reasoning when testing and evaluating new equipment.

In pursuit of furthering its understanding of the next battlefield, training exercises would add another flavor of conceptualized warfare that underscore the value of adaptive leaders. For echelons above brigade at the combat training centers, in warfighter exercises, and in regionally aligned ASCC exercises, experiments will be integrated into training events. They will incorporate concepts and prototypes of yet-to-be-fielded technologies and capabilities, and Soldiers across the force will be subject to far-fetched ideas that, seemingly, have no chance of becoming reality. Those company commanders will likely find themselves navigating the complexities of technology dependency, adapting their formations to new technology, and training their companies to fight austere – without battery power and radio waves. Collectively, the force's ability to rapidly assimilate new capabilities into its arsenal and scale their usage at the exact right moments might become a critical competency.

Leaders in brigades do not need to make a hard pivot toward innovation, especially given the challenges already on their plate, but they do need to be prepared to adopt and assimilate new innovations within their ranks. For starters, individual skill competency should be the highest priority at the lowest level.

Amateurs train to get the task right; professionals train until they can't get the task wrong.⁵ New technology

and equipment will not replace the requirement for Soldiers to be experts at their craft. With technology comes new burdens, such as a heavy dependency on batteries and more devices that transmit and receive communication signals. Adversaries will have capabilities to detect signal communications, and batteries will almost always be a commodity. China, for instance, is the world's largest manufacturer of battery-grade Lithium,⁶ meaning digital technology cannot replace fighting with analog systems.

Soldiers will always need to live, and be expected to succeed, in analog environments. Innovation does not reduce the importance of field craft and core competencies, and formations will have to learn to be effective in all conditions.

Putting it all together

The Army is deliberately planning for a fast-paced, integrated, a technologically assisted future battlefield. Therefore, today's junior leaders will be the catalysts of that highly sophisticated Army. Predicting the future is almost impossible, especially when it comes to uncertainty in geopolitical tensions, economics, and the strength of a nation's fighting force. Trends and patterns provide indications and clues to what the future might look like, but nothing is for certain. Despite these challenges, Army Futures Command is making a well-educated estimate of the threats the Army will face in the next two to three decades. As such, Project Convergence is the professional, scientific, and war-focused process to continuously refine understanding of the future, while simultaneously learning through experimentation. Soldiers from across the Army will be in increased demand to support such experiments, and their participation should be embraced as an opportunity to inform development rather than as a hinderance to training.

More importantly, today's leaders are in the best position to train the generation of leaders ahead of them since tech-enabled decision making will already be part of the Army they join. With a new reliance on digital

warfare, tactical leaders' greatest challenge will be keeping their troops focused on individual warfighting skills to fight, and survive, until they reach a window of opportunity to strike.

MAJ Adam Nordin works in the Experimentation, Synchronization and Resourcing Division (G35); Future Concepts and Capabilities Directorate; U.S. Army Futures Command, Fort Eustis, VA. His previous assignments include brigade S-3; 1st Brigade Combat Team, 82nd Airborne Division; company commander, 2nd Battalion, 75th Ranger Regiment. MAJ Nordin military schools include Ranger School and Jumpmaster School. He has a bachelor's of science degree in mechanical engineering from the U.S. Military Academy, West Point, NY; and a master's of arts degree in defense strategic Studies from U.S. Naval War College.

Notes

¹ Department of Defense. 2021. **Experimentation Guidebook**, Version 2.0. Washington, D.C.: Office of the Under Secretary of Defense for Research and Engineering.

² Brose, Christian. 2020. **The Kill Chain**. Hachette Books.

³ Department of the Army. ATP 3-60, **Targeting**, 2015, Washington, D.C.

⁴ Joint Chiefs of Staff, JP 3-09, **Joint Fire Support**, Suffolk, VA, 2019, Joint Force Development, J7.

⁵ No citation, but it is known to circulate many of the combat arms communities within the Joint Special Operations Command.

⁶ Chang, Agnes, and Keith Bradsher. "Can the World Make an Electric Car Battery Without China?" **New York Times**, May 16, 2023.

ACRONYM QUICK-SCAN

AI – artificial intelligence
ASCC – Army service component commands
D3A – Decide, Detect, Deliver, Assess
DoD – Department of Defense
ENVG-B – Enhanced Night Vision Goggle-Binocular
HIMARS – High Mobility Artillery Rocket System
ITN – Integrated Tactical Network
TTP – tactics, techniques, and procedures

Training Individuals and Units to Fight and Win in LSCO

by LTC Mitchell Payne and LTC John Thomas

From the earliest histories of humankind, the nature of war has remained unchanged.¹ At its heart, it is an inherently violent contest of wills between two parties, where one party enforces its will upon the other.

This inherent nature of conflict has not changed throughout the thousands of years of recorded human history.² But while the inherent nature of war may remain the same, the conditions of war have continually changed and evolved in conjunction with technological and military revolutions. If the character of war is unchanged, the characteristics of today's large-scale combat operations (LSCO) environment bear further examination.

Understanding LSCO

From the start, however, it is necessary to understand that LSCO is not a series of tasks for individuals or units to train on, it is an operating environment that individuals and units must train in. The individual level task of "Treat and evacuate a casualty" is a basic 10-level task for all Soldiers, but the way in which it is executed may differ greatly based on the surrounding environment.

LSCO, as an environment, has several characteristics that differ greatly from small-scale combat. Some of these characteristics include the

predominance of indirect fires from both sides, as well as contested airspace without the guarantee of friendly air dominance. Fluid conditions on the battlefield dictate the need for rapid transitions between offense and hasty defenses, where leaders may not have time to fully develop engagement areas.

No one fights alone

Subsequent integration with multiple functions means that no one warfighting function, branch, or unit is self-sufficient in the LSCO environment. Compounding all these factors is the physical terrain in which LSCO is fought.

The continued urbanization of world populations virtually guarantees that LSCO will be fought in urban and suburban terrain, presenting challenges to both information operations as well as determining the appropriate (and inevitable) collateral damage estimates.

While these five characteristics are certainly not an exhaustive list of every characteristic of LSCO, they do represent a broad compilation of characteristics that other military leaders across the U.S. Army have identified and discussed.

In this paper, we will expand the discussion on each of these characteristics of LSCO and offer suggestions for military leaders on ways to tailor individual and unit training to prepare for,

fight, and win in LSCO environments.

Characteristic 1: Predominance of indirect fires

Indirect fires (IDF) are the most lethal aspect of LSCO. This has been evidenced in both U.S. Army Warfighter Exercise (WFX) simulations and in the brutally stark reality of the 2014 Russian invasion of Crimea and the current Russian invasion of Ukraine. Data analysis from multiple WFXs indicates that IDF will account for +90 percent of friendly casualties, translating to 6,000-7,000 casualties in a 10-day period at the division level. The truth of these simulated data has been evidenced in Ukraine. From March 2023 to June 2023, "most of the casualties are the results of [artillery] barrages: in the last three months of war, 80-90 percent were due to artillery..."³

Individual training implications

At the individual training level, this has four distinct implications. First, individual-level training cannot over-emphasize the need for and importance of overhead cover and hasty fighting positions. In a recent article discussing the infantryman's experience in the trenches of Donbas noted that "Soldiers on the front in Ukraine adhere to a maxim that grows more sacrosanct the longer they survive: If you want to

Characteristics of LSCO	1. Predominance of IDF	2. Contested Airspace	3. Multi-Faceted Integration	4. Rapid Transitions	5. Urban Operations
Individual-Level Training Implications	<ul style="list-style-type: none"> - Overhead cover / Hasty Fighting Positions - Overhead (Vehicle) Concealment - Survival Moves - Call For Fire Training 	<ul style="list-style-type: none"> - Establish Individual Air Guards for vehicle crews and dismount squads - React to Red Air 	<ul style="list-style-type: none"> - Armored crewman familiarization with dismount support - Dismount infantry supported by tanks and BFVs 	<ul style="list-style-type: none"> - Build adaptability by training in ambiguity - Communication mastery on all platforms - Train drivers on berm drills and movement to battle positions 	<ul style="list-style-type: none"> - Accepting Appropriate Collateral Damage - Higher Casualties - Continual (unsecured) connectivity on the battlefield
Unit-Level Training Implications	<ul style="list-style-type: none"> - Permissive FSCMs - Push Fires Assets Forward - Avoid Massing Formations (BSAs, C2 Nodes) 	<ul style="list-style-type: none"> - Train for effective Airspace Planning - Incorporate Red Air into Risk Mitigation planning for Protection Wf 	<ul style="list-style-type: none"> - Multi-echeloned training incorporating C2, Logistics, and Fires at every opportunity - EW integration - CBRNE Planning 	<ul style="list-style-type: none"> - RDSP focus - Better Organizational Assessment process - Plan to secure rear areas from hybrid threats - C2VE vs. COMMEK 	<ul style="list-style-type: none"> - Ethical Training - Casualty Evacuation - Triage/Remains Processing - EW integration - Social media discipline

(CUT) Holistic Intelligence
<ul style="list-style-type: none"> - Employ SUAs whenever Possible - Recon assets must be familiar with all other intelligence assets - Consider and mitigate deception and feint - Examine C2 of holistic intelligence picture

Table 1. Characteristics of large-scale combat operations and training implications. (Source: Authors)

live, dig.”⁴ Individual-level training must emphasize the presence of overhead cover as a part of hasty survival positions as a critical part of fighting in the LSCO environment.

A corollary of this for the armored community is also a renewed emphasis on overhead concealment for individual vehicle positions. Armored vehicle crewmen at the individual driver level, must be well-trained in how to establish overhead concealment using both natural terrain and vehicle camouflage netting. Setting up vehicle camouflage nets must be as inherently intrinsic a task for armored crewmen as digging fighting positions is for individual infantrymen.

Third, all individuals at every echelon must embrace the need for continual survival moves. This means that artillery forces must be well-trained to shoot and move. Logistics Soldiers must be well-versed in rapidly breaking down and re-establishing logistical nodes. In the LSCO environment characterized by massive amounts of IDF, staying stationary means you will end up as one of those 80-90 percent of casualties. Individual Soldiers must learn to move or die.

Lastly, if we accept the premise that IDF is the most lethal aspect of the LSCO environment, then all maneuver individuals must be masters of using IDF. For the military occupational specialty (MOS) 19D Cavalry Scout, calling for fire is a 10-level task.

This same emphasis must be instilled in all maneuver personnel. If IDF is the biggest killer on the battlefield, individual-level training must emphasize to every Soldier not only how to survive IDF, but how to use it to gain lethality on the battlefield.

Unit training implications

In a broader scope, this same mentality applies at the unit level. Former National Training Center commander of the Operations Group and current U.S. Armor School Commandant BG Michael J. Simmering noted in a recent article that units must “synchronize fires with the movement of tactical formation at the speed required to function effectively in the decisive action training environment.”⁵ Units



Figure 1. Soldiers assigned to the 1st Battalion, 14th Field Artillery Regiment, 41st Field Artillery Brigade, V Corps, engage targets with a pair of high mobility artillery rocket systems during Exercise Griffin Shock 23 in Bemowo Piskie, Poland, May 19, 2023. Exercise Griffin Shock demonstrates the Army’s ability to assure the NATO alliance by rapidly reinforcing the NATO Battle Group Poland to a brigade size unit. (U.S. Army photo)



Figure 2. U.S. Army boats assigned to the 50th Multi-role Bridge Company, 5th Engineer Battalion, ferry a Romanian Piranha III Armored Personnel Carrier across the Danube River near Bordusani, Romania, during the wet gap crossing exercise of Saber Guardian 23, June 6, 2023. The exercise is a component of DEFENDER 23, co-led by Romanian Land Forces and the U.S. Army at various locations in Romania to improve the integration of multinational combat forces by engaging in events such as vehicle road marches, medical training exercises and river crossings. (U.S. Army photo)

must train their staff to develop permissive fire support control measures, which further enables free use by reconnaissance assets to shape the deep fight. Failure to develop permissive fire measures inhibits the speed at which fires can be effective against enemy forces, while also significantly hindering counterfire and targeting efforts.⁶

Using IDF also means accepting a degree of risk by pushing those assets

forward enough in proximity to the forward line of own troops to truly effect transition of the fight from the BCT deep fight to the close fight to affect the enemy as early as possible.⁷

Finally, given the predominance and lethality of IDF in the LSCO fight, units must train themselves to avoid massing formations in stationary positions. The Ukrainians learned this in 2014, when in the space of about two hours, Ukrainian forces lost more than 30

Soldiers and two battalions worth of combat vehicles and equipment due to Russian artillery fire.⁸

Ukrainian military forces, in turn, taught that same lesson to Russian military forces in May of 2022, when Ukrainian artillery destroyed more than 100 Russian combat vehicles across two battalions that were massing to execute a wet gap crossing of the Siverskyi River.⁹

Ukrainian forces repeated the same lesson to Russian forces in June 2023. Russian bloggers and independent news agencies reported that members of the Russian 20th Combined Arms Army allegedly massed in formation and stood stationary for more than two hours so that the division commander could address his troops prior to executing a major offensive.

Ukrainian artillery and M142 High Mobility Artillery Rocket System (HIMARS) allegedly inflicted more than 100-200 dead and wounded in the space of a single artillery attack on the massive stationary target.¹⁰

Characteristic 2: Contested airspace

The second major characteristic that defines the LSCO environment is the fact of contested airspace. During counterinsurgency operations over the last two decades, the U.S. military grew accustomed to the air dominance that was quickly established throughout every theater. Fighting against an asymmetric threat, U.S. military forces intrinsically knew that if something was in the air, it was inherently friendly. In today's LSCO environment against peer threats, however, that cannot be a predominant assumption. In fact, the evidence from our training centers and the ongoing conflict tells us that one should assume the worst.

Individual training implications

At the individual level, this has two distinct implications. First, individual Soldiers must be trained to look and think in all directions. All too often,

individuals are only taught to look out and around, with less emphasis on the equally critical task of "looking up." For the armored crewman on a tank, Stryker, or Bradley, this means that individual members (such as 19K loaders) must be designated as air guards for their vehicle. In a similar fashion, for the dismounted infantry squad, one should also designate a squad member as an "air guard."

These air guards must provide their vehicle, squad, or section with a critical warning for enemy unmanned aerial systems (UAS) and enemy aviation assets.

Second, all individuals at every echelon must be trained to understand the inherent link between red air (either aviation, rotary wing, or UAS assets) and indirect fire. Every individual Soldier must intrinsically understand that if the enemy is flying an asset overhead, then enemy IDF is likely quickly to follow.

The "react to red air" must become an individual battle drill for all Soldiers if



Figure 3. An AH-64D Apache attack helicopter flies in front of a wall of fire during the South Carolina National Guard Air and Ground Expo at McEntire Joint National Guard Base, S.C., May 6, 2017. The expo showcases South Carolina National Guard airmen and soldiers. (U.S. Air National Guard photo by Tech. Sgt. Jorge Intriago)

they are to survive in the LSCO fight.

Unit training implications

At the unit level, two additional implications emerge. First, brigades and divisions must emphasize the importance and need for effective airspace planning at echelon. Elements at the corps and division must build expertise to train in the Joint Specialized Airspace Training at every opportunity.¹¹

As units gain expertise with effective airspace planning, they must emplace airspace coordination measures (ACMs) to ensure a detailed understanding of the airspace. Accurate ACMs can help to identify red air in the battlespace, giving precious time for units on the ground to react and survive. Additionally, this helps corps and divisions identify and target the crux of the threat.

Second, units must include red air planning and mitigation into their orders process. Failure to do so results in an untenable risk to force and risk to mission. Integration of red air planning as a subset of the protection warfighting function can highlight gaps in coverage for critical protection

assets and drive subsequent task organization changes.

Characteristic 3: Multifaceted integration

The burning Russian tanks littering Ukrainian roads are vivid proof of the next characteristic of LSCO: to be successful, you must learn to integrate at all levels. In the Russian offensive into the Ukrainian town of Vuhledar in the Donetsk region in February and March 2023, Russian military forces lost more than 100 armored vehicles, a third of which were ambushed along the roadway in one ambush. "Russian tanks have fallen prey to Ukrainian Soldiers using anti-tank Javelin missiles ... one serious misstep by Russia's military has been its failure to protect its tanks with a combined-arms approach that provides additional support and integrates its armor with other units."

Individual training implications

At the individual level, this means every Soldier must be comfortable working together as part of a combined arms team. Recent events show that infantry forces without armor and

artillery coverage, function more as targets than as combat power. The burning Russian tanks littering the road to Vuhledar teach the exact same lesson. Individual Soldiers who are not trained to operate in integrated combined arms efforts of mounted and dismounted maneuver supported through fires all become individual targets.

The U.S. Army Armor community must end the false dichotomy of mounted vs. dismounted warfare pervasive in our programs of instruction. Armored crewmen are first and foremost maneuver warfare experts, which requires both mounted and dismounted expertise.

Similarly, the U.S. Army Infantry community that fails to grasp the obvious combat power enhancement of armor in LSCO will at best secure the division security area, or at worst contribute to high casualties associated with LSCO. Armored and infantry forces must work together to fight and win in LSCO, or they will die separately.

The MOS 19K10 tank driver must be comfortable operating the tank with MOS 11B10 dismounts in support. The 11B10 dismounts must be trained to



Figure 4. A U.S. Army paratrooper fires an FGM-148 Javelin shoulder-fired, anti-tank missile during a combined arms live-fire exercise at Grafenwoehr Training Area, Germany, Aug. 21, 2019. Javelin missiles have been pulled from U.S. military inventory to be sent to Ukraine. Now, the Defense Department is contracting to backfill those weapons. (U.S. Army photo)

support and be supported by MOS 19D and 19C Bradley vehicles. All maneuver Soldiers must be comfortable using all types of indirect assets.

Unit training implications

The same characteristic applies at echelon. From company/battery/troop to division levels, commanders must look for ways to make every training event a multi-echeloned training opportunity. A platoon live-fire exercise trains lieutenants on the employment of combined arms and maneuver, but it can also serve to train a battalion staff how to battle track dismounted maneuver units using graphic control measures. Every event also has the potential to be a logistical training event, both in terms of maintenance and support across all classes of supply, thereby stimulating another critical area of LSCO.

At higher echelons, as more assets become available, the integration and sequencing of those assets on the battlefield to maximize combat power at the decisive place and time become even more arduous.

Enemy EW capabilities may shut down satellite-based communications. Limited ranges of FM and limited familiarity with HF radio systems present challenges that can be integrated along

multiple facets of all unit-level training.

Characteristic 4: Rapid transitions

A third characteristic of the LSCO environment is the speed at which combat fluctuates. The sheer lethality of munitions and weapon systems at work in LSCO means that the combat power of any given unit can change in a matter of moments. The propensity for rapid transitions means both individuals and units must be mentally prepared to operate effectively in a complex and ambiguous environment to achieve their military objectives.

Individual training implications

For individual Soldiers, this means they must be trained to react to rapidly changing conditions with flexibility and adaptability. This may mean designing training events for individuals with the express intent of changing plans, to continue to enhance that individual adaptability. Furthermore, all Soldiers at the individual level must be trained to be comfortable working with “intent” and sometimes ambiguous guidance.

To mitigate the risks of ambiguous

guidance, however, individual-level Soldier training should also focus on having them master all available communications platforms. In a rapidly changing environment, communication is the critical element that will enable disciplined initiative within the commander’s intent. Soldiers must master all forms of communication, from Advanced System Improvement Program radios and satellite Joint Capabilities Release systems to maps with overlays. If we accept that the LSCO environment is characterized by rapid transitions, individual Soldiers must be comfortable operating in ambiguity and equally competent in their ability to receive and process updated information on various communication platforms.

Lastly, mounted Soldiers must be trained on the basics of operating armored vehicles in both offense and defense or security-type mission sets. It is not sufficient that individual-level armored crew operators know how to operate the vehicle – they must learn to execute berm drills and how to move from concealed positions into primary and alternate battle positions and back to concealment. Individuals must be taught how to use micro-terrain to mask vehicle and dismounted movement. The more familiar everyone is with these operations, the better prepared they will be to react to rapid transitions in LSCO.

Unit training implications

At the unit level, every echelon from platoon to division must be comfortable with effective Rapid Decision-Making and Synchronization Planning (RDSP). Successful RDSP in LSCO emphasizes speed and synchronization over detail in planning.¹² Units must also examine their organizational assessment processes to increase the speed at which information flows to the appropriate decision-making level.¹³

Second, the Russian military has shown time and time again that rapid transitions in LSCO environments may involve non-contiguous or non-linear environments. Russian military forces use speed and audacity to make rapid and deep thrusts along major ground lines of communication in conjunction



Figure 5. An Army M1 Abrams tank fires during live-fire training at Pabrade Training Area, Lithuania, Dec. 10, 2020. (U.S. Army photo)

with airborne and air assaults to seize key terrain (airports).¹⁴ The Russian operational approach dating as far back as the 1979 invasion of Afghanistan, including the 2008 actions in Georgia, 2014 actions in Crimea, and the current Ukrainian conflict all began with bold thrusts at the outset of hostilities. The Russian propensity for bold offensive actions adds a layer of additional complexity in an already rapidly changing environment. Units must plan and allocate resources to secure areas that are behind the forward line of own troops, whether from special purpose and hybrid threats or from large-scale conventional offensive operations.

Lastly, units must also gain a mastery of their C2 architecture. Prior to each exercise, units should execute a command-and-control validation exercise (C2VE). C2VEs are differentiated from a mere communications exercise (COMMEX) in that COMMEXs only test the functionality of the equipment – C2VEs test each operator’s ability to use the equipment the way it is intended. It does not matter if the various computer programs in a command post can send 1s and 0s if the operators are not trained on how to process that data to make coherent recommendations or disseminate orders.

This is a subset of the command post training progression, which details training progressions at various echelons for command post functions.¹⁵

Characteristic 5: Urban operations

The final characteristic of LSCO discussed in this paper is the physical context in which LSCO takes place. Currently, over 56 percent of the world’s population – around 4.4 billion inhabitants – live in urban areas. That trend is expected to continue growing, with estimates indicating that upwards of 70 percent of the world’s population will live in urban areas by 2050. Simply put, this means that conflict of any kind is likely to involve urban terrain. Urban terrain contains multiple tiers and generally leads to higher casualty rates. Threats can come from any level, whether multi-storied buildings or sewer networks below the surface. Hybrid threats can

observe friendly forces virtually undifferentiated from the normal civilian population. Social media bloggers hundreds or thousands of miles from the front have unlimited 24-7 access to emerging news from the front, and use that to shape national opinion and politics, as well as the current enemy situation. While all environments are challenging, the urban environment presents specific challenges to modern LSCO efforts. “The advantages afforded to the better trained, equipped, supported, and mentally prepared Soldier are magnified by this environment, which rewards tactical skill.”¹⁶

Individual training implications

Training individuals for this characteristic of LSCO means that individuals must learn to assess and accept appropriate collateral damage. Put another way, the task of entering and clearing a building may require hand grenades, an AT-4, or a 120mm HEAT round as opposed to a four-man stack. The hybrid and urban threat environment means Soldiers must be well-prepared to make difficult decisions to preserve themselves and accomplish their military objectives.

Second, both LSCO and urban operations may generate higher casualty numbers. Soldiers should be trained in self-medication and buddy aid, without the expectation of aerial medical evacuation. The high number of casualties may often exceed a unit’s inherent medical capabilities, effectively rendering every medical engagement as a mass casualty event. Individuals and leaders must be prepared for this significant shift in casualty processing to save the most lives possible and still preserve the mission.

Third, continued urbanization means Soldiers in the future may have virtually unlimited access to social media and Wi-Fi networks. This is evidenced today on the Ukrainian front lines, where Soldiers can chat with their significant others in the dugouts from the front lines.¹⁷ Cell phone discipline in LSCO is critically important, and individuals must be trained on how not to use cell phones. In January of 2023, “Unauthorized use of cellphones by Russian soldiers led to a deadly

Ukrainian rocket attack on the facility where they were stationed, [raising] the death toll from the weekend attack to 89.”¹⁸ This is true at the highest echelons, where early in the 2022 war it was common news to hear Russian general officers were also targeted and killed due to their use of unsecured cell phones.¹⁹

Unit training implications

Implications for unit-level training responsibilities should include consideration of additional ethical training as a part of the law of war and collateral damage estimation. Units should practice and rehearse non-standard evacuation of casualties given the likelihood of mass casualty events. Gone are the days when individuals can expect a medical evacuation helicopter to fly to the point of injury – units must practice the art of moving casualties from the point of injury through exchange points to higher levels of care. Casualty operations should also consider civilian casualty processing. Military medical centers may have to reconsider triage operations, given the predominant mission of battlefield medicine to build as much combat power as quickly as possible. Contrary to recent experience, more severe cases may not be treated first if it means returning critical combat power back to the unit. Finally, given the massive number of casualties associated with both LSCO and urban operations, units may need to consider the appropriateness of battlefield burials if logistical capabilities run out of capacity for processing remains.

Urbanization and access to personal cellular devices also mean that units must continually work to educate the electronic warfare (EW) signatures that their communications emit. Units must train individuals on radio net discipline, understanding that a long radio communication might directly correlate to enemy IDF. Secondarily, real-world examples in Ukraine show the power of blending open-source intelligence (OSINT), social media, and enemy cyber warfare. Ukrainian forces using both OSINT and social media posts from Russian military units were able to identify and target headquarters elements at echelon. “It’s using online posts like these that Molfar was

able to locate the aforementioned Pyatnashka Brigade. This video shows the [Russian] brigade's anniversary celebration posted on its Telegram channel ... from another angle [on the video], you can see the blue and white hanger and power lines in the background. They had a match and a pinpoint location on Google Maps. One month after they passed their target report to Ukrainian intelligence, the site was struck Aug. 22, according to local media and this drone footage."²⁰

Conclusion

The U.S. Army exists to fight and win the Nation's wars. The nature of war remains unchanged, but the characteristics of LSCO may require a new way of looking at both individual and collective training. We do not know how or when our nation will call us to serve in the future, but as stewards of the profession of arms, it is the responsibility of military leaders to ensure that our subordinates have the best equipment and the best training possible to defeat the nation's enemies on the field of battle with honor. MG Buzzard, the U.S. Army's proponent for maneuver warfare, expressed a belief that "we are in an interwar period, our next war will be far more dynamic and complex," and that success in the next war necessitates a cognitive shift in how we train at both the individual and unit level to prepare for the specific challenges of LSCO.²¹ Success in LSCO means, among many other things, that individuals and units must understand the predominance of IDF, the risk associated with contested airspace, and the necessity of multifaceted integration at all levels in training.

Even when fully trained, each headquarters must develop and practice systems to enable effective command and control of all these elements – something that is beyond the scope of this paper but warrants further discussion. All combat is inherently chaotic, but LSCO involves multiple rapid transitions for which individuals and units must be prepared. Failure at the individual and unit levels to adjust to the LSCO environment may result in even higher casualties at every echelon. Tough and realistic training is how leaders inform and mitigate risk at

both the individual Soldier level as well as at higher echelons.

LTC Mitchell Payne commands the 5th Squadron, 15th Cavalry Regiment at Fort Moore, GA. His previous assignments include Chief C2 Observer/Coach/Trainer, Mission Command Training Program (MCTP), Fort Leavenworth KS; commander, Battalion Task Force, 3rd Infantry Division, Fort Stewart, GA); executive officer, 188th Infantry Brigade, Fort Stewart; and executive officer, 5th Squadron, 1st Cavalry Regiment, 1-25 Stryker Brigade, Fort Wainwright, AK. LTC Payne has a Ph.D. in organizational leadership and Human Resource Development from Regent University; a master's degree in military arts and science from the Command and General Staff College, Fort Leavenworth; and a bachelor's of arts degree in philosophy from Wheaton College. His awards include the Bronze Star Medal, Meritorious Service Medal (silver oak leaf cluster) and the Combat Action Badge.

LTC John Thomas commands the 3rd Battalion, 54th Infantry Regiment (One Station Unit Training), 197th Infantry Brigade, Fort Moore, GA. His previous assignments include Deputy Chief, Operations Group Bravo, MCTP, Fort Leavenworth; Chief of Training, Operations Group Charlie, MCTP, Fort Leavenworth; operations officer, 1st Brigade Combat Team (BCT), 10th Mountain Division (Light Infantry); and executive officer, 1st Battalion, 87th Regiment, 1st BCT. LTC Thomas' military schools include the U.S. Army Ranger School, Fort Moore, and Command and General Staff College, Fort Leavenworth. He has a bachelor's of science degree in Russian and German Language studies from the U.S. Military Academy, West Point, NY, and a master's of science degree in adult and continuing education from Kansas State University. LTC Thomas awards include the Meritorious Service Medal (3 oak leaf clusters). He also earned the Combat Infantryman's Badge and the Senior Parachutist Badge.

Notes

¹ GEN Mark A. Milley, "Strategic Inflection Point: The Most Historically Significant and Fundamental Change in the Character of War is Happening Now – While the Future is Couched in Mist and

Uncertainty." *Joint Forces Quarterly* (JFQ 110, 3rd Quarter 2023).

² J.F.C. Fuller, *A Military History of the Western World, Volume 1: From the Earliest Times to the Battle of Lepanto*, (De Capo paperback).

³ Nabih Bulos, "Endless Shelling and Dead Soldiers: A Vicious Artillery War Spreads in Ukraine." *LA Times*, June 17, 2023. <https://www.latimes.com/world-nation/story/2022-06-17/endless-shelling-and-dead-soldiers-a-vicious-artillery-war-spreads-in-ukraine>.

⁴ Luke Mogelson, "Two weeks at the Front in Ukraine." *The New Yorker* magazine, May 22, 2023. <https://www.newyorker.com/magazine/2023/05/29/two-weeks-at-the-front-in-ukraine>.

⁵ COL Michael J. Simmering, "Working to Master Large-Scale Combat Operations: Recommendations for Commanders to Consider during Home-Station Training." *Military Review*, May-June 2020 edition. <https://www.armyupress.army.mil/Portal/7/Hot-Spots/docs/LSCO/Simmering-Home-Station-Training-LSCO-UA.pdf>.

⁶ COL Brian L. Babich, *MCTP FY22 Key Observations*. Center for Army Lessons Learned. <https://api.army.mil/e2/c/downloads/2023/02/07/591e46d0/23-03-763-mctp-key-observations-fy22-feb-23-public.pdf>.

⁷ Ibid.

⁸ David Axe, "The Ukrainian Army learned the Hard Way – Don't Idle your Tanks when the Russians are Nearby." *Forbes* magazine, Aug. 5, 2020. <https://www.forbes.com/sites/davidaxe/2020/08/05/the-ukrainian-army-learned-the-hard-way-dont-idle-your-tanks-when-the-russians-are-nearby/?sh=2367f6ed2fbc>.

⁹ David Axe, "The Russians lost an entire battalion trying to cross a river in Eastern Ukraine." *Forbes* magazine, May 11, 2022. <https://www.forbes.com/sites/davidaxe/2022/05/11/the-russians-lost-nearly-an-entire-battalion-trying-to-cross-a-river-in-eastern-ukraine/?sh=480ea60a1689>.

¹⁰ Sinead Baker, "Russian Soldiers really did stand still for 2 hours for their commander's speech, leaving them sitting ducks for a HIMARS strike, Ukrainian official says." *Insider* magazine, June 16, 2023. <https://www.businessinsider.com/russian-troops-stood-for-2-hours-himars-target-ukraine-official-2023-6>.

¹¹ Babich, MCTP FY 22 Key Observations.

¹² LTC Mitchell Payne, *RDSP in LSCO: Observations and Methods*, Center for Army Lessons Learned, 22-678. <https://www.academia.edu/download/81441932/18186.pdf>.

¹³ LTC Mitchell Payne, "Assessing the Modern Fight." *Military Review*, March – April 2023 edition. <https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/March-April-2023/Modern-Fight/>.

¹⁴ James K. Greer, "LSCO Lessons: What the Army Should be Learning about Large-Scale Combat Operations from the Ukraine War." *Modern War Institute*. <https://mwi.usma.edu/lSCO-lessons-what-the-army-should-be-learning-about-large-scale-combat-operations-from-the-ukraine-war/>.

¹⁵ Headquarters, Department of the Army, Training Circular 6-0.2, *Training the Mission Command Warfighting Function for Battalions, Brigades, and Brigade Combat Teams*. Army Publishing Directorate. https://rdl.train.army.mil/catalog-ws/view/100.ATSC%2FA711F133-D3F1-4B5D-B0C6-94D722B58291-1563301440627/tc6_0x2.pdf. See also TC 6-0, *Training the Command-and-Control Warfighting Function* (March 2021). https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN31776-TC_6-0-000-WEB-1.pdf.

¹⁶ David Betz and Hugo Stanford-Tuc, "The City Is Neutral: On Urban Warfare in the 21st Century" (August 2019). *Texas National Security Review* (Aug. 2,4, 2019). https://repositories.lib.utexas.edu/bitstream/handle/2152/79637/Betz%20and%20Stanford-Tuc_TNSR%20Vol%202%20Issue%204.pdf?sequence=2.

¹⁷ Ibid.

¹⁸ Associated Press, "Unauthorized use of cellphones by Russian soldiers led to Ukrainian strike that killed 89 troops, military says." *CBS News*, Jan. 4, 2023. <https://www.cbsnews.com/news/ukraine-news-russia-military-blames-cell-phones-strike-soldier-deaths/>.

¹⁹ Greg Wilson, "Russian Generals Paying Price for Using Unsecured Phones, Radios, in Ukraine war." *Washington Examiner*, March 17, 2022. <https://www.washingtonexaminer.com/news/russian-generals-paying-price-for-using-unsecured-phones-radios-in-ukraine-war>.

²⁰ Jack Hewson, "Ukrainian company uses social media, open-source technology to counter Russian invasion." *PBS News Hour*, April 19, 2023. <https://www.pbs.org/newshour/show/ukrainian-company-uses-social-media-open-source-technology-to-counter-russian-invasion>.

ACRONYM QUICK-SCAN

ACM – airspace coordination measures
C2VE – command-and-control validation exercise
COMMEX – communications exercise
EW – electronic warfare
HIMARS – High Mobility Artillery Rocket System
IDF – indirect fires
LSCO – large-scale combat operations
MOS – military occupational specialty
OSINT – open-source intelligence
RDSP – Rapid Decision-Making and Synchronization Planning
UAS – unmanned aerial systems
WFX – Warfighter Exercise

[org/newshour/show/ukrainian-company-uses-social-media-open-source-technology-to-counter-russian-invasion](https://www.pbs.org/newshour/show/ukrainian-company-uses-social-media-open-source-technology-to-counter-russian-invasion).

²¹ MG Curtis A. Buzzard, MCOE and Fort Moore Campaign Plan 2023. Maneuver Center of Excellence.

Armored Fighting Vehicles of the World

T-14 Armata

Russian main battle tank, first fielded in 2015. Unmanned turret, three-man crew. 48 tons weight. 125mm smoothbore main gun, autoloader, advanced ERA armor protection, 55 mph top speed. In service with: Russian ground forces.

Maximizing Operational Readiness in the Baltics

by 1LT Darren Pitts

During our 2023 U.S. European Command (EUCOM) rotation, 1st Battalion, 8th Cavalry Regiment “Mustangs” spent seven months on a “heel-to toe” rotation in Lithuania, briefly interrupted by two months of multinational collective training in Finland.

During nine months in EUCOM, we were located 500-900 miles away from the nearest supply support activity (SSA).

Throughout our rotation, the Mustangs adapted to expeditionary maintenance realities that are present in the Baltics:

- constrained parts flow,
- long lines of communication (LOCs), and
- reliance on ring routes and box trucks that can support only a limited capacity for critical parts.

Limited parts flow becomes a constant for all rotational units deployed in the Baltics. A constant that can only be mitigated through deliberate action on the part of company leadership and battalion maintenance teams through an understanding of the Army’s field maintenance operations.

Combined arms battalions (CABs) require a well-disciplined, organized maintenance program that encompasses the Army Maintenance Fundamentals laid out in Department of the Army (DA) Pamphlet (PAM) 750-3, **Guide to Field Maintenance Operations**.¹

These fundamentals highlight the factors that can be controlled at the unit level to mitigate the effects of limited sustainment capabilities, to include parts management, shop stock management, demand analysis and controlled exchanges.

These specific fundamentals, combined with an effective command maintenance program can enable company and battalion commanders to maintain the highest possible

operational readiness (OR) levels while on rotation in eastern Europe, specifically in the Baltics.

Expeditionary maintenance in Baltics

Rotational units located a long distance from supporting sustainment nodes, like units in the Baltics, will experience additional sustainment challenges that can directly impact their readiness. In our experience, we found ourselves with some of the longest LOCs in Europe between our time in Lithuania and a two-month training mission in Finland. For example, our forward operating site was located more than 500 miles away from the nearest SSA, creating systematic sustainment and maintenance challenges. The 1-8 Cavalry adapted during the nine-month rotation, and many of the fundamentals used will be crucial to the success of CABs in a large-scale combat operations (LSCO) environment.

Beyond the distance to the SSA, accessing the theater’s maintenance repair facility for next-level requirements at the Maintenance Activity Vilseck (MAV) in Germany is not easily accessible for rotational units on the North Atlantic Treaty Organization’s eastern flank. Alternative dispute resolution certification, next level repair on combat vehicles, hose fabrication, and welding support are some examples of the critical capabilities offered at the MAV but hard to access for eastern-based rotational units.² Organic welding capabilities and a 40-foot trailer with capability for hose fabrication were critical to supporting our CAB’s maintenance requirements, highlighting the need to be creative and expeditionary to maintain OR. In cases where side skirts, radiators, or fan vents may have been replaced outright in garrison, organic capabilities within our CAB found new ways to repair damaged components to maintain combat power.

Another challenge we faced in

Lithuania was the lack of motor pool space and overhead lift, which required additional creativity to ensure the completion of tank services and significant repair requirements, such as the installation of turret rings on the Bradley Fighting Vehicle. The requirement to complete services using organic lift capacity from M88s or a Forward Repair System is paramount to rotational unit’s success in the Baltics. Host nation facilities offer minimal or zero overhead lift to support maintenance on wheeled vehicles. The facilities are not adequately postured to support a CAB’s extensive maintenance requirements.

Given the constraints, leaders at all levels require a level of flexibility to overcome the space and lift requirements to ensure timely completion of services or installation of critical parts. That flexibility, combined with creativity and adherence to maintenance fundamentals is the easiest way a rotational unit can maximize its OR in an expeditionary setting.

Parts management

To overcome these expeditionary maintenance challenges, parts management and understanding parts flow is the first fundamental step in maximizing OR. OR ebbs and flows because of training and other requirements, highlighting the need for parts management to maintain OR at the highest possible level. The added problem set of LOCs stretching over 500 miles through the Suwalki Gap to the nearest SSA in Poland highlights an additional requirement for effective parts management. During our out of sector exercises in Finland, we were 900 miles away from our SSA.

The most viable way a unit can increase the effectiveness of its parts management to maximize combat power is fostered through the ability to forecast and track parts throughout the supply chain process. Leaders who monitor critical parts for deadlined vehicles as they ship from continental United States (CONUS) and transit to

the SSA can accurately time trips to the SSA and re-generate combat power within the shortest possible window. Effective observation of critical parts flow requires daily equipment status report (ESR) scrubs in Global Combat Support System – Army (GCSS-A) and constant checks in the Integrated Development Environment/Global Transportation Network Convergence (IGC). The CAB maintenance team's mastery of the ESR, combined with IGC, enables CAB commanders to understand how their forecasted OR will ebb and flow during planned training events.

Units in the Baltics have several options to facilitate parts flow through the Suwalki Gap: ring routes, transportation movement requests (TMR), organic distribution platoon assets, and rented or contracted box trucks. TMRs and ring routes have alleviated the build-up of Class IX at our bin at the SSA, but they don't provide a singular answer to the overarching challenges related to EUCOM's supply system. TMRs are a way to move Class IX at projected intervals, but the submission requirements often mean that TMRs are submitted before some critical parts may have even arrived in theatre, with some TMRs being cancelled outright on the day of the mission. Ring routes provide a relative constant flow of Class IX with personnel and vehicles from an external division sustainment support battalion but offer a limited capacity for large parts or major assemblies. In our experience, a weekly push from the SSA would yield only one or two pallet spaces of Class IX, given that the same ring route was supporting multiple battalions. Units that arrive in the Baltics expecting to rely solely on ring routes to provide adequate parts flow will fail and their OR will not be adequately postured to support training or readiness. Additionally, organic distribution plat

oon assets offer a way to increase capacity for parts flow but given the distance and multiple days associated with the movement, regular movements on a weekly basis that are required to sustain a CAB are unrealistic at best.

Our ability to manage parts flow and

Overage Repairable (extended) Report turn-in was based solely around organic efforts at the battalion level associated with a contracted box truck used to support parts flow for our exercises in Finland and the normal Class IX requirements of a CAB. The importance of our box truck can't be understated; our weekly pushes to the SSA in Poland, combined with parts flow pushed further north to Finland added up to more than 35,000 miles driven by our team in a period of less than five months. Parts management relating specifically to parts flow requires a level of creativity to overcome the challenges of EUCOM's supply system. Our best answer came in the form of a box truck.

Shop stock

Beyond using the ESR and IGC to understand parts management, shop stock list (SSL) management is the easiest way a unit can maintain combat power in Europe. While numerous articles have been written in **ARMOR** magazine during the last 10 years, about building successful maintenance programs from the perspective of battalion commanders. However, little has been written from the Armor community about SSL or its importance in maintaining a CAB in a LSCO environment.³ BG Michael Simmering, in an article for *The Company Leader* in 2020, wrote of the need to maintain SSL to ensure readiness, but beyond that few seem to grasp the importance of SSL and recent CTC summary reviews indicate as much.⁴

Leaders beyond the shop office, specifically company and battalion commanders have a responsibility to take a vested interest in their SSL health to ensure the ultimate success of their formations.

SSL management can result in sustained OR if maintenance leaders and commanders forecast major training and ensure SSL health is prepared to sustain all vehicle platforms across their formations. SSL replenishment is an often-slow process, with proper consumption and automatic re-ordering or initiated replenishment ordering parts at the lowest priority. The requirement is therefore in the CAB's hands to ensure that SSL forecasting

for major training is taking place two to three quarters out. Our CAB is currently forecasting SSL health for the entirety of the upcoming fiscal year and ensuring SSL is postured to support a CTC rotation at the end of the next calendar year.

In our experience conducting out of sector exercises in Finland, with minimal parts flow from the SSA, SSL was critical to our success keeping all our combat platforms in the fight. Going into our training, SSL health was over 98 percent which translated to a sustained OR rate of 93 percent for the duration of our training. During a one-week period, our unit maintenance collection point (UMCP) received 19 combat vehicles for next level maintenance, and all 19 rolled out of the UMCP in less than 24 hours, fully-mission capable (FMC) and back in the fight. SSL's ability to keep combat power in the fight is unmatched and can easily be the difference between a combat credible force or a UMCP packed with deadlined vehicles.

SSL is often thrown around as term for any part that is retained by a unit to perform field-level maintenance but is comprised of three different types of stock: demand supported (ZV), command directed (ZM), and bench stock (PD) lines. ZV lines are authorized SSL lines to stock, or simply put shop stock. Our CAB stocks 597 lines of shop stock at the battalion level and maintains 131 lines within our tank companies as demand-support repair parts.

The number of lines at each echelon are mandated by Department of the Army G-4 and are based upon demand analysis. ZM lines are shop stock lines that are maintained by the unit, which is allowed to stock 10 percent of its authorized SSL lines as a ZM. These are often referred to as command adds or command directed stock. For our CAB's 597 lines, 60 lines would account for the 10 percent of our authorized SSL. These lines enable commanders to stock critical items for combat systems that are specific to their formation, which in our CAB is focused on parts for our M1A2 SEPv3 platforms. PD lines are bench stock items and are usually low-cost, high-use consumable items used by

maintenance personnel at a high rate. Items that are ordered against bumper numbers will appear as a PD until a goods movement is conducted to the work order.

Understanding how many lines a unit is authorized to stock and of which type is the first step in effective SSL management. The next steps involve accurate inventories, ensuring stocks have initiated replenishment or automatic re-ordering points, demand analysis of previous high-density training cycles, and accurate forecasting of upcoming training and requirements. In addition to the need for constant SSL demand analysis, quarterly demand analysis is mandated by Army Regulation 750-1, **Army Materiel Maintenance**, and within GCSS-A as a check to ensure that units across the Army are maintaining their SSL.

While responsibility for SSL management generally falls on the individual field maintenance team and leadership within the battalion maintenance program, Commanders have a responsibility to regularly validate and ensure SSL levels are being maintained at the highest possible level.

The easiest way to maintain visibility of a unit's SSL levels are via the Commander's Actionable Readiness Dashboard – Shop Stock program on GCSS-A, where a commander can very quickly view the health of their SSL and view replenishment rates to better inform expectations for their maintenance program.

In the Baltics, units don't have the luxury of quick trips to the SSA, so proper demand analysis is crucial to ensure SSL is stocked with the necessary lines, when units don't have the luxury of accessing their SSA as easily or as often.

Controlled exchanges

Outside of parts management and SSL, controlled exchanges (CE) are an option that units can use to maintain OR in the Baltics when presented with long lead times for parts. A Controlled Exchange is the removal of a serviceable component from an unserviceable, non-mission capable (NMC) platform to a like-item NMC platform that restores a platform to FMC. The

process can be used to generate combat power or increase a unit's OR but requires deliberate analysis of lead times for parts for both platforms and a conversation between Battalion leadership and maintenance leaders before the Commander can authorize the execution of the CE. In the Baltics, our unit approach to CEs has been used to restore combat power when lead times for two like-platforms are backordered or have a longer lead times because of parts shipping from the CONUS. The analysis associated with understanding lead times to inform CEs tie-in with the importance of parts management and with utilizing GCSS-A and IGC. CEs aren't a long-term answer but can often enable units that have depleted their SSL to maintain their OR during high density training periods.

CEs enable a unit to exercise a level of battle damage assessment and repair (BDAR). BDAR will be critical for maintenance programs maintaining combat power in large-scale combat operations (LSCO), particularly for an Army that has been spoiled with substantial parts flow over the last 20-years and has not experienced significant Armored-vehicle loss rates in over 70 years. In Finland, our unit utilized CEs to maintain OR across M-113 variant platforms after M-113 variant major assemblies had been consumed. The depleted SSL limited combat regeneration during the following training exercises, but an NMC M-113 from the Battalion's medical platoon generated options for CEs that ultimately maintained 1064 Mortar Tracks and kept additional combat power in the fight.

The conversations among leaders at the UMCP are critical to the success of CABs during training in the Baltics and will prove critical in a LSCO environment. Competent maintenance leaders enable combat re-generation via timely CEs, which in turn translate to maintained capabilities for commanders.

Conclusion

These lessons are important for all units preparing for a EUCOM rotation, or expeditionary training in any austere condition. The deliberate preparation of maintenance systems is the

best way to set the conditions to maintain OR. The fundamentals that have maximized our success in the Baltics can be exploited by any unit that rotates to eastern Europe, but it requires component maintenance leaders and building a culture of maintenance across a formation.

The need to leverage the fundamentals of parts management, shop stock management, demand analysis, and controlled exchanges to overcome the sustainment challenges of the Baltics are nothing new and will be critical to generating combat power in the next conflict. Leaders beyond the Army's sustainment enterprise or the forward support company who are not focused on generating combat power under these current conditions will be combat ineffective when their time comes to cross the line of departure.

1LT Darren R. Pitts is the battalion maintenance officer, 1st Battalion, 8th Cavalry Regiment, 2nd Armored Brigade Combat Team, 1st Cavalry Division, Fort Cavazos, TX. He previously served as tank platoon leader, Company A, 1-8 Cavalry. 1LT Pitts military schools include the Armor Basic Officer Leader Course, Bradley Commander Course, and the Scout Leader Course, all attended at Fort Moore, GA. He has a bachelor's of arts degree in history from the Virginia Military Institute. 1LT Pitts participated in an Operation Atlantic Resolve rotation in Finland and Lithuania from January to September 2023.

Notes

¹ Department of the Army Pamphlet 750-3, **Guide to Field Maintenance Operations** (Washington, D.C.: Government Printing Office: 2023).

² "External Standard Operating Procedures," **Maintenance Activity Vilseck**, 2022.

³ 1LT Samuel C. Skillman, "A Lean, Expeditionary Shop Stock Listing", **ARMOR**, 2018, <https://www.dvidshub.net/publication/issues/43709>.

⁴ COL Michael J. Simmering, "Winning the Maintenance Fight at Pace," **The Company Leader**, March 16, 2020, <https://companyleader.themilitaryleader.com/2020/03/16/winning-the-maintenance-fight-at-pace/>.

ACRONYM QUICK-SCAN

BDAR – battle damage assessment and repair
CAB – combined arms battalion
CE – controlled exchanges
CONUS – continental United States
CTC – combat training center
ESR – equipment status report
EUCOM – U.S. European Command
FMC – fully-mission capable
GCSS-A – Global Combat Support System – Army
IGC – Integrated Development Environment/Global Transportation Network Convergence
LOC – line of communication
LSCO – large-scale combat operations
MAV – Maintenance Activity Vilseck
NMC – non-mission capable
OR – operational readiness
PD – bench stock
SSA – supply support activity
SSL – shop stock list
TMR – transportation movement requests
UMCP – unit maintenance collection point
ZM – command directed
ZP – provisional (new fielding/diagnostic spares)
ZV – demand supported



U.S. Soldiers assigned to the 1st Battalion, 8th Cavalry Regiment, 2nd Armored Brigade Combat Team, 1st Cavalry Division supporting the 4th Infantry Division, maneuver an M1A2 Abrams tank during exercise Arrow 23 in Niinisalo, Finland, May 4, 2023. Exercise Arrow is an annual, multinational exercise involving armed forces from the United States, United Kingdom, Latvia, Lithuania and Estonia, who train with the Finnish Defense Forces in high-intensity, force-on-force engagements and live-fire exercises to increase military readiness and promote interoperability among partner nations. (U.S. Army National Guard photo by Sgt. John Schoebel, 117th Mobile Public Affairs Detachment)



U.S. Army Soldiers assigned to the “Spartan Brigade,” 2nd Armored Brigade Combat Team, 3rd Infantry Division, fire from modernized M1A2 SEPv3 Abrams tanks at the National Training Center (NTC), Fort Irwin, California, March 10, 2023. The Spartan Brigade, the Army’s most modernized brigade, completed rotation NTC 23-05, making it not only the best equipped but most lethal unit in America’s arsenal as the Army moves toward building the Army of 2030. (U.S. Army photo by SGT Dre Stout, 50th Public Affairs Detachment)

Manning Next Generation Main Battle Tank

by CPT Larry D. Tran

What is the ideal crew-size for the next U.S. main battle tank? The Armor community continues to train for large-scale combat operations (LSCO) with continued efforts in modernizing the armored fleet. Dan Heaton describes these modernization programs in his recent **ARMOR** article.¹ Since Heaton's article was published, the M2A4 Bradley Infantry Fighting vehicles and the Armored Multi-Purpose Vehicles (AMPVs) fielding are continuing to modernize ABCTs. The defense industry is competing within the Next Generation Main Battle Tank (NGMBT) program to determine the future MBT for the U.S. Army. The competitor for the NGMBT program, the Abrams X platform, was showcased at the Association of the U.S. Army Conference 2022.² The Abrams X and many other tanks from our allies and adversaries are transitioning to three-person crews with an autoloader. Fifty-five percent of the newly announced MBT platforms are now three-person crews; this includes the Republic of Korea's K2 Black Panther, the German Leopard 2, the Russian T14 Armata

and the Chinese Type 99.

The U.S. Army's MBT has not changed the four-person crew size since the transition from the M4 Sherman (five-person crews) to the M60 Patton platform in 1959. However, this has not stopped the Armor community's continued analysis of the ideal crew size for the next MBT. The reinvigorated push to modernize the U.S. Army's MBT and the arguments for the MBT's ideal crew size have been echoed since the 1990's. For example, CPT Mike Newell argued for a two-person crew in 1992. His argument was focused on reducing the overall silhouette of the tank allowing for the increase in armor.³ Robin Fletcher proposed a three-person crew in 1995 with the crew sitting abreast in the hull compartment, similar to the Abrams X.⁴ Years of failed modernization programs since 1994, such as the Future Combat System, coupled with the focus on Counterinsurgency Operations during the Global War on Terrorism, resulted in the M1 Abrams platforms continued use within the modern ABCTs supplemented with modernization packages to extend the

Abrams's longevity.⁴ The incorporation of autoloaders and three-person crews in the U.S. Army's NGMBT is likely to follow suit with the new MBT of our allies and adversaries.

Within this article, I assess how a reduction to three-person crews might impact the Armored community at the tactical level. Specifically, I consider how the personnel, organization, doctrine and training factors from the doctrine, organizations, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) framework will be impacted. Within the personnel aspect, the reduction of manning within a tank company results in an expansion of time allocated for maintaining vehicles and a reduced capability to sustain continuous combat operations due to stressed fighter management. Organizationally, there is an opportunity for changes to the tank company's structure allowing more NGMBTs to be fielded, while also mitigating the strains caused by a reduction of personnel. Lastly, training of armor crewman will shift to accommodate the additional duties taken on without a loader. By understanding these effects, the Armored community can communicate to industry what capabilities a three-person crew requires for LSCO and better prepare for these changes to ensure a more seamless transition to the NGMBT program.

Personnel

Utilizing the fiscal year 2023 modified table of organization and equipment (MTOE), the implementation of autoloaders and three-person crews reduces the tank company's amount of military occupational specialty 19K10 Soldiers from 29 to 15. This 51-percent decrease in 19K10 manpower affects the tank company's ability to conduct maintenance and continuous operations in a LSCO environment.

Maintenance is what gets a tank company into the fight and the reduction of one crew member extends the amount of time it takes to maintain



Figure 1. Tanks from Assault Company, 1st Battalion, 8th Cavalry Regiment conduct a Combined Arms Breach Full Dress Rehearsal at Vekaranjarvi, Finland prior to Operation Lock 2023. (Army photo by 1LT Raven Parker, battalion unit public affairs representative)

and sustain a tank unit. Maintenance on the M1A2 SEPv3 tank includes the weekly preventive-maintenance checks and services (PMCS), semi-annual services and annual services. Technical Manual 9-2350-412-10-4 for the M1A2 SEPv3 prescribes the 51 items for the “before” PMCS, two items for the “during” PMCS, a road test, and then the 65 items “after” PMCS. Typically, a full crew of four can complete PMCS in 4-6 working hours, depending on experience levels of the Soldiers. Taking away one Soldier from the crew results in the other crew members assuming additional tasks required for the completion of the total work hours needed for weekly PMCS.

Services will also be impacted with a reduced crew. The M1 Abrams’s TM 9-2350-412-13&P shows that 275-300 working hours are required to complete semi-annual and annual services. Automations are unlikely to have a significant impact on reducing crew-level NGMBT service tasks. Many tasks still require crew members or mechanics to complete the task, such as

replacing filters, replacing seals, cleaning the hull and turret compartment, etc. Battalion-level training management typically uses three weeks as a planning factor for tank companies to complete services with tank platoons rotating through hull services, turret services and ancillary services. If the NGMBT goes to three-person crews, then company and battalion leadership need to provide additional time for services given fewer hands to turn wrenches with a similar amount of work hours required.

The modernization to the M1A2 SEPv3 incorporated additional digital components that links multiple subsystems of the hull and turret together. The complexity of these added digital components become difficult to maintain at the operator and field maintenance level. More often than not, units have sought the assistance of field service representatives (FSRs) from General Dynamics Land System. The effects on maintenance due to personnel reduction is exacerbated due to the requirement for advance technical knowledge of the FSRs to diagnosis faults if the

NGMBT’s modernization shares the same trends as the M1A2 SEPv3 with the addition of complex digital components. Units must allocate the time for the FSRs, which is an asset that is currently managed at the division level, before 10 level and 20 level maintenance can continue.

PMCS and other services for the NGMBT become an even more deliberate and longer process compared to the M1A2 SEPv3. Currently, commanders in armored brigade combat teams (ABCTs) attempt to protect “services and maintenance Monday’s” as much as possible; however, it is common for competing garrison requirements to spread the formation thin and a four-person crew on the Abrams quickly turns into two. Overall, the reduction to three-person crews on the NGMBT will result in ABCTs allocating more time that is solely dedicated to services within their training calendars. ABCTs will have to enforce that maintenance does not stop on Monday’s. Maintenance never stops and continues throughout the week. In addition to maintenance impacts, reducing the

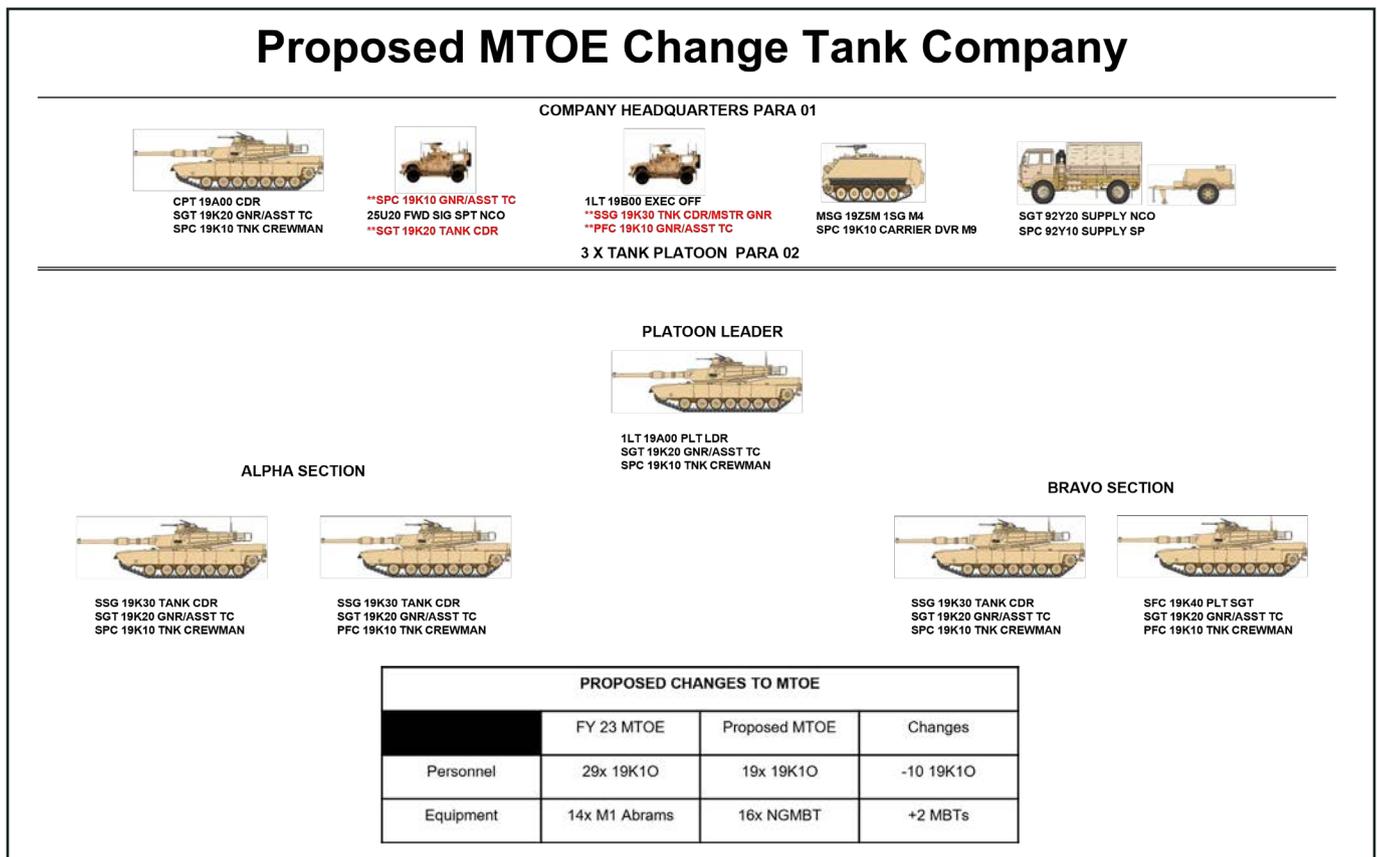


Table 1. Proposed MTOE change for tank company. (U.S. Army)

NGMBT's crew size limits a tank company's ability to sustain continual operations in a LSCO environment. In the Russo-Ukraine conflict, the Battle of Vuhledar extended for 21 days before the Ukraine ground forces destroyed the Russian 155th Naval Infantry Brigade.⁵ From my personal experience, I served as a tank platoon leader during exercise Combined Resolved VIII in 2017 at the Hohenfels Training Area (HTA) in Germany. Three out of the four tanks in my platoon had three-person crews, my crew being one of the three-person crews. Sustained combat operations for the 10 days of force-on-force operations put pressure on our platoon's fighter management plan. With only a three-person crew, maintenance, sector sketches, camouflage, local security tasks, and rest became difficult to balance within the later battle periods.

I assess that sustained combat operations with a three-person tank crew results in faster degradation on tactical level units to accomplish their platoon battle tasks and company mission-essential tasks when compared to a four-person tank crew due to the increased stress on fighter management. Tank companies would require the same tasks out of their crews with less time to rest. Furthermore, when tank companies begin combat operations, the strain on the three crew

members increases as they also absorb the loader's former responsibilities. While loading the main gun is automated, the loader has additional responsibilities like assisting the tank commander with directing the driver and maintaining the communications equipment. A quantitative analysis of the increased workload on three-person crews versus four-person crews in a combat scenario was conducted showing that drivers in three-person crews had a higher overall workload and gunners had twice as many tasks.⁶

The Armor community continues to refine the understanding of what automations can provide within the NGMBT and how that effects fighter management in continuous LSCO operations at the tactical level. A deliberate assessment on sustained combat operations must be conducted with the NGMBT's three-person crews. This assessment will come when the first NGMBT ABCT unit rotates through a CTC and provides the Armor community with an assessment of how long the three-person crews can sustain continuous operations. The assessment should also identify tasks and training that tank commanders must assume with the loss of a crew member.

Organization and doctrine

Retired COL Richard Kolasheski wrote

about the organization and doctrine change that occurred in 1978 when the U.S. Army transitioned to the M1 Abrams platform, stating how the changes were "designed for better distribution and controls of combat power" as the U.S. Army tested a new battalion organization in preparation for the incorporation of the M1 Abrams platform from Jan. 17-23, 1977 during field training exercise Polar Gauntlet at HTA, Germany.⁷ Similarly, three-person crews in the NGMBT opens opportunities within the U.S. Armor Branch to reassess how we organize our forces, and it provides an opportunity to change our MTOE to expand the amount of combat power a tank company brings to the fight, while also mitigating the negative effects of less crew members per tank.

Company H, 2nd Squadron, 6th Cavalry Regiment at Fort Knox was tasked with the final testing and fielding of the M-1 program, which was finalized as the M1 Abrams MBT, in the Spring of 1980. Simultaneously, the U.S. Army enacted a major change in tank platoon organization and MTOE for armored battalions as they decreased the number of tanks per platoon from five M60 MBTs in one tank platoon to four M1 Abrams MBTs in one tank platoon. The "Smaller Crews" article by Alfred Bowen discusses that the driving factor for this organizational change was the "combined costs of procurement and operations."⁸ This change of tank platoon organization was argued within the Armor community. Retired LTG Arthur Collins believed the M1 Abrams tank platoon should be reduced even further to three tanks.⁹ Retired MG Walter Ulmer supported the four M1 Abrams MBT tank platoon, citing that four tanks were the minimum number of fires and maneuver capabilities to allow a tank platoon to be effective.¹⁰

I believe that another organization change will occur with the NGMBT, and there is potential to transition back to five tanks per tank platoon affecting the tactical-level echelons across the U.S. Army. Note that this assessment comes without the knowledge of the cost estimate of what the NGMBT will be compared to the M1 Abrams cost. Referencing the FY23



Figure 2. U.S. Army Soldiers of 1st Battalion, 66th Armored Regiment, 3rd Armored Brigade Combat Team, 4th Infantry Division, setup their M1 Abram Tanks during Saber Getica 17 in Romania, July 10, 2017. (U.S. Army photo by SPC Kelsey VanFleet)

MTOE again, the current tank platoon has 16 Soldiers. The anticipated implementation of an autoloader and three-person crews allows tank platoons to field five NGMBTs per platoon with 15 Soldiers. The proper adjustment to the MTOE can be made to organize additional MOS 19K20 and 19K30 Soldiers to serve as the gunner and tank commander for the additional tank. Further changes could be made to alleviate the strains discussed within the personnel aspect of DOTMLPF. I argue that there is little tactical value added with the company executive officer in a tank. In a tactical environment, the executive officer is responsible for resourcing classes of supply for the company, facilitating operations at the company command post, overseeing maintenance, and supervising the company combat trains. The company executive officer can accomplish all these duties in one of the wheeled vehicles or the M113/AMPV within the headquarters section provided the right mission command and communication systems.

Overall, this reduction of one tank crew results in the new tank company MTOE of 16 NGMBT tanks per company, three platoons of five tanks and the company commander's tank. Bigger picture, this is an increase of four

tanks for a combined-arms battalion, increasing from 29 M1 Abrams tanks to 33 NGMBTs. Furthermore, this new MTOE would require 10 less 19K series Soldiers to operate all 16 NGMBT when compared to the current MTOE to operate all 14 M1 Abrams. Jump crews can be established within the headquarters sections to mitigate negative effects from the personnel losses. These jump crews can be aligned with platoons during garrison operations to assist with maintenance. In a tactical environment, these jump crews can rotate on tanks during security-rest cycles allowing the tank company some flexibility in its fighter management during continuous combat operations. My overall recommendation is that a minimum of two jump crews, four 19K Soldiers, are considered for any changes to the MTOE associated with changes from the NGMBT's manning.

Doctrine changes may occur because of the organizational changes. A tank platoon's durability and capabilities to maneuver are increased with an increase from four tanks to five tanks per platoon. Tank platoons are no longer rendered combat ineffective with the loss of a tank section. With the increase to five tanks per platoon, the loss of a tank section means that a tank platoon now has three tanks to

maneuver. The remaining three tanks in the platoon can still conduct all the platoon battle tasks associated with a tank platoon with little degradation. An M1 Abrams tank platoon using current doctrine would be assessed as combat ineffective after the loss of a tank section and its ability to conduct platoon battle tasks in support of the company's mission would be severely degraded.

Changes in current doctrine to accommodate five tanks per platoon can mirror old doctrine found in TC 17-15-11 **Tank Crew Drills for M60 Series Main Battle Tank** published in December 1977. The adjustment back to five tanks per platoons can be made quickly in aspects such as formation order of movement, standard direct fire control measures within formations and platoon battle drills. The most noticeable difference is that the platoon leader does not have to commit his/her tank into the fight with five tanks per platoon. The platoon leader can still have the two tank sections fight and remain uncommitted to fight to maintain command and control of the tank sections. The decision for the platoon leader's tank to join the fight can be a deliberate action to mass fires on the decisive point of the operation. As a result of doctrine changes to how a tank platoon of five tanks fights, section sergeants retain enough fires and maneuver capability with their two NGMBTs to affect the enemy at the decisive point while not fully committing the entirety of their platoon.

In conclusion, organization, and doctrine changes with three-person crews on the NGMBT provide options to change the MTOE and allow for more combat power at the company and platoon level. These changes can also alleviate the strains that occur when reducing the crew size from four to three while also allowing companies to fully operate more tanks with less required Soldiers from the current MTOE.

Training

The last DOTMLPF factor considered in this article is training. The current tank crew member's training progression begins at the loader position, then the crew member progresses to the driver



Figure 3. Mechanics from Assault Company, 1st Battalion, 8th Cavalry Regiment's field maintenance team conduct battle damage assessment repair on an M1A2 SEPv3 Abrams tank during Operation Lock, May 2023. (Army photo by 1LT Raven Parker, battalion unit public affairs representative)

position, then gunner, and then the final step if to become a tank commander. The mindset behind this progression is that a brand-new Soldier, fresh out of advanced individual training (AIT), can be placed in the turret first as a loader. That Soldier's responsibility to maintain the radios can be taught easily, and loading a main gun round is already taught at AIT. They are in the turret with their gunner and tank commander who can provide hands on training in the turret and the new loader can see and hear all actions that goes on in the turret. This allows for better development of the Soldier's technical and tactical skills on their MBT platform. That crew member transitions to the driver position knowing everything that the tank commander and loader does in the turret. The driver's role is much more important because the driver's action has implications that can lead to the survival of the crew. Referring to the *Defense Technology's* article on tank crew's workload, the driver has the second highest workload in both a three-person and four-person crew behind the tank commander. An experienced driver and tank commander who have a relationship working together can reduce the workload for both parties with communication that only results from multiple field training exercises together. I was lucky enough to have the same driver throughout the collective training period leading up to Combined Resolved VIII in 2017. The effective communication between my driver and myself allowed me to manage the movement of my tank, assist my gunner with scanning and engaging targets, and communicate with my platoon and company commander. That effective communication is not built without an experienced crew member in the driver's position.

A three-person crew on the NGMBT changes this progression become a new Soldier would move immediately to the driver's position and their actions can mean the difference between life and death of a crew. Training management and crew stability becomes even more important when the NGMBT is operated by three crew members. Retaining crew integrity, to include the driver, results in even



Figure 4. A tank from Assault Company, 1st Battalion, 8th Cavalry Regiment conducts a wet gap crossing during Operation Lock, May 2023. (Army photo by 1LT Raven Parker, battalion unit public affairs representative)

more lethal crews who have effective communication while maneuvering. Realigning crews must be done at the onset of collective training and should be avoided once collective training starts. This mirrors what some of our NATO allies apply to their tank crews. In my experience, while I was conducting interoperability exercises with NATO allies in 2017 and 2023 in the U.S. European Command theater, it was not uncommon for me to talk to a NATO ally's Leopard tank crew who have been together for more than two years.

One last note to highlight as a potential friction point for the NGMBT, training must be done on the autoloader and troubleshooting procedures to ensure crews know how to get their tank back into the fight when faced with issues with the autoloader. The M1128 Stryker Mobile Gun System (MGS) provides a reference for the use of autoloaders on U.S. Army platforms. The

technical manual for the MGS platform cites multiple troubleshooting procedures that the crew needs to be proficient on. As prescribed in the TM, the crew can troubleshoot the autoloader based on the stage at which the autoloader failed to load the round. Otherwise, level 20 assessment by unit maintenance is required.

The main consideration at the tactical level for the implementation of an autoloader is the limitations and training requirements necessary for operation. Crew members require training so that they can continue to fight the tank when the autoloader becomes inoperable. Like three-person operations in an M1 Abrams platform, the gunner will have to transition to the loader role, and the tank commander assumes responsibility of identifying and engaging targets. The training required on the Abrams X is complicated since the crew will have to move from the hull into the turret. The crew

member will then stay in the turret to manually load rounds. This ability to continue to fight the tank with an inoperable autoloader is also dependent on the point in the loading process that the autoloader failed to load the round. The NGMBT may be combat ineffective if the capability to shoot is taken away due to an inoperable autoloader.

Conclusion

Overall, the implementation of three-person crews on the NGMBT has effects at the tactical level that needs to be considered as competition continues to develop between the NGMBT platforms.

The cost benefit analysis conducted on the personnel, organization, doctrine, and training from the DOTMLPF framework strives to highlight changes at the tank company level and below that I believe can shape the development of the NGMBT, while also setting conditions for the seamless integration of that platform once production begins.

Changes within personnel will affect how ABCTs throughout the U.S. Army expand the time necessary for weekly PMCS and services for the NGMBT. Additional stress to fighter management with a three-person crew reduces the length in which a tank company can sustain continuous combat operations. Organizational changes may manifest as MTOE changes increase the number of tanks per tank company and balance the shortcomings of personnel changes by adding additional jump crews.

Lastly, training changes must occur with the three-person crews to ensure new NGMBT drivers are prepared for the most workload demanding position within a three-person crew.

The Armor community needs to continue identifying tactical level effects as the NGMBT is determined to set conditions for the platform's integration into the U.S. Army. The U.S. Army must replace the M1 Abrams before

the next LSCO erupts to win on the battlefield against our adversaries who have already identified their new MBT for the long term.

CPT Larry D. Tran, commander, Company A, 1st Battalion, 8th Cavalry Regiment, 2nd Armored Brigade Combat Team (ABCT), 1st Cavalry Division, Fort Cavazos, TX. His previous assignments include assistant S-3, 4th Squadron, 9th Cavalry Regiment, 2nd ABCT; commander, Headquarters and Headquarters Company (HHC), Task Force Sinai, Sharm el-Sheikh, Egypt; executive officer, HHC, 1st Battalion, 66th Armor Regiment, 3rd ABCT, 4th Infantry Division; and tank platoon leader, Company A, 1st 66th Armor Regiment. CPT Tran's military schools include the Cavalry Leaders Course; Maneuver Captain's Career Course; Army Reconnaissance Course; Armor Basic Officer Leaders Course. All schools were at Fort Moore, GA. CPT Train has a bachelor's of science degree in human biology from the University of Texas at Austin. His awards include the Meritorious Service Medal.

Notes

¹ Dan Heaton, "Combat Vehicles Developments to Propel the Army 2030 – and Beyond," *ARMOR*, Fall 2022, <https://www.dvidshub.net/publication/issues/66234>.

² Kyle Mizokami, "This Dramatic Upgrade to the M1 Abrams Could Help the Tank Soldier on Until the 2050s," *Popular Mechanics*, Oct. 12, 2022, <https://www.popularmechanics.com/military/weapons/a41575061/abramsx-tank-concept/>.

³ CPT Mike Newell, "Survivability Is the Best Argument For a Two-Man Tank," *ARMOR*, March-April 1992, https://www.benning.army.mil/Armor/eARMOR/content/issues/1992/MAR_APR/Armor-MarchApril1992web.pdf.

⁴ Robin Fletcher, "The Crewing and Configuration of the Future Main Battle Tank," *ARMOR*, May-June 1995, https://www.benning.army.mil/Armor/eARMOR/content/issues/1995/MAY_JUN/Armor-MayJune1995web.pdf.

⁵ Andrew E. Kramer, "In an Epic Battle of Tanks, Russia Was Routed, Repeating Earlier Mistakes," *New York Times*, March 1,

2023, <https://www.nytimes.com/2023/03/01/world/europe/ukraine-russia-tanks.html>.

⁶ Ming Mao, Fang Xie, Jian-jun Hu, Bo Su, "Analysis of workload of tank crew under conditions of informatization," *Defence Technology*, Volume 10m Issue 1, March 1, 2014, <https://www.sciencedirect.com/science/article/pii/S2214914713000597>.

⁷ COL Richard Kolasheski, "A Battalion Commander's View Division Restructuring," *ARMOR*, November-December 1978, <https://mcoecbamcoepwprd01.blob.core.usgovcloudapi.net/library/CavalryArmorJournal/1970s/1978Jan-Dec.pdf>.

⁸ Alfred Bowen, "Smaller Crews," *ARMOR*, November-December 1980, <https://mcoecbamcoepwprd01.blob.core.usgovcloudapi.net/library/CavalryArmorJournal/1980s/1980Jan-Dec.pdf>.

⁹ LTG Arthur Collins, *Common Sense Training: A Working Philosophy For Leaders*, Presidio Press, April 18, 1999.

¹⁰ MG Walter F. Ulmer Jr, "Book Review: Common Sense Training," *ARMOR*, November-December 1979, <https://mcoecbamcoepwprd01.blob.core.usgovcloudapi.net/library/CavalryArmorJournal/1970s/1979Jan-Dec.pdf>.

ACRONYM QUICK-SCAN

AIT – advanced individual training
ABCT – armored brigade combat team
AMPV – Armored Multi-Purpose Vehicles
DOTMLPF – doctrine, organizations, training, materiel, leadership and education, personnel and facilities
FSR – field service representative
HTA – Hohenfels Training Area
LSCO – large-scale combat operations
MGS – mobile gun system
MTOE – modified table of organization and equipment
NGMBT – Next Generation Main Battle Tank
PMCS – preventive-maintenance checks and services

Armored Fighting Vehicles of the World

BTR-82A



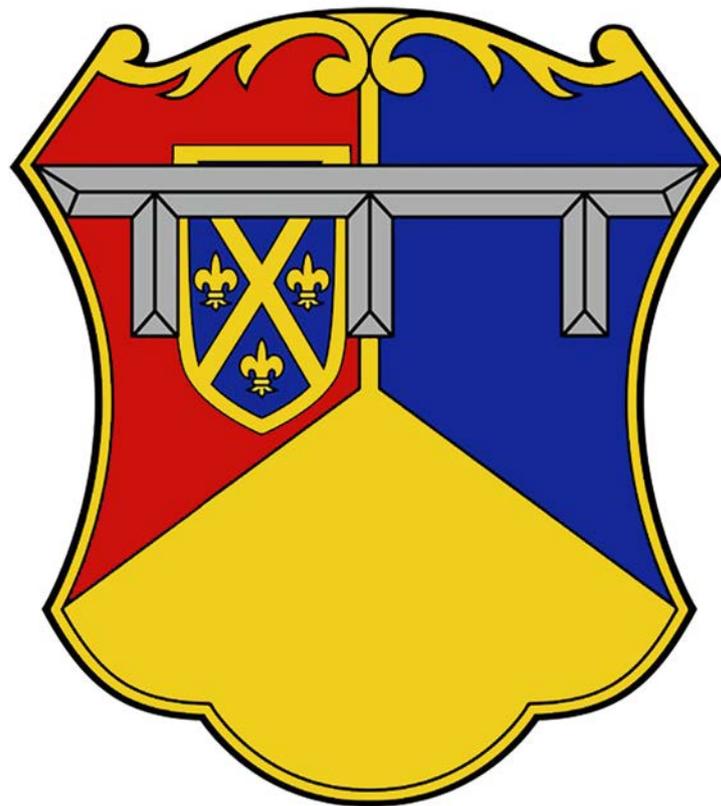
Russian Infantry fighting vehicle, first fielded in 2013 and is the latest version of the BTR-80 APC series. Three man crew, with room for seven fully equipped troops. Main armament is a fully stabilized 30mm auto cannon, laser range finder. Advanced crew protection and armor shielding, 16 tons vehicle weight. Maximum speed, 55 mph top speed. Other variants include the amphibious naval BTR-82AM and up-armored BTR-82AT. In service with Russian ground and naval forces, Kazakhstan and Azerbaijan.

Donovan Research Library Maneuver Center of Excellence

hosts Armor student papers on various subjects,
<https://www.moore.army.mil/Library/Virtual.html>,
and back issues of *ARMOR* magazine,
<https://www.moore.army.mil/Library/CavalryArmorJournal/index.html>

Back-issue archiving shared with e*ARMOR* (1983 through current edition),
<http://www.moore.army.mil/armor/earmor/>

66TH ARMOR REGIMENT



The insignia was originally approved for 15th Tank Battalion, part of which was in the old 304th Tank Brigade. Therefore the shield and crest of 304th Tank Brigade were used, with the label added for difference. The shield is of the colors of the Tank Corps' shoulder-sleeve insignia. The brigade was organized at Langres, France, in 1918, so the arms of that place are shown on an inescutcheon differenced by a gold border and by changing the cross from red to gold. The distinctive unit insignia was originally approved for 15th Tank Battalion Oct. 11, 1923. It was reassigned to 1st Tank Regiment July 11, 1930, and further reassigned to 66th Infantry (Light Tanks) Nov. 16, 1932. The insignia was redesignated for 66th Armored Regiment April 25, 1942. It was redesignated for 66th Medium Tank Battalion Dec. 27, 1950. The insignia was redesignated for 66th Armor Regiment Sept. 26, 1958.

