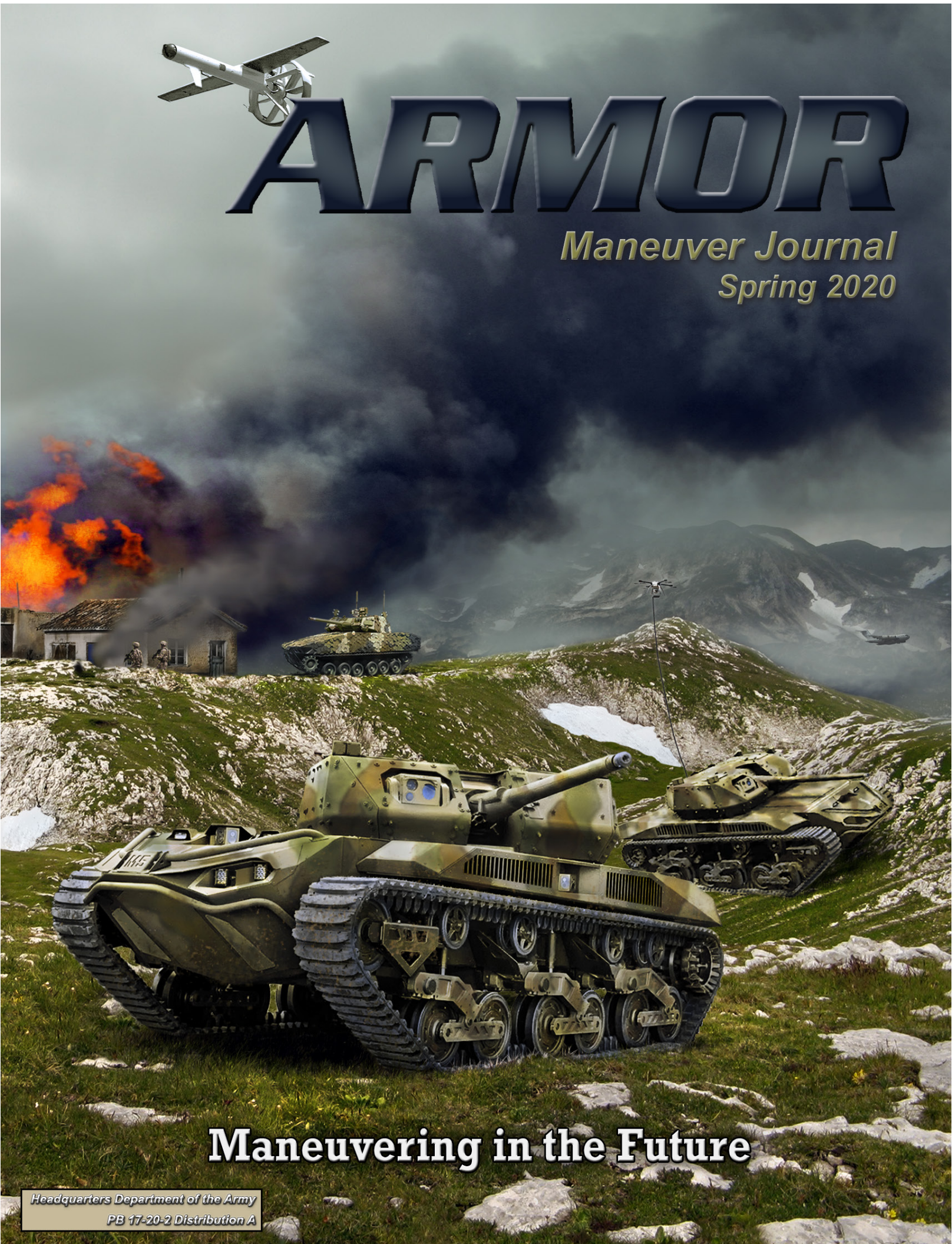

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Maneuvering in the Future

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BG Kevin D. Admiral
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Ongoing Modernization

It has been an honor to see the world-class cadre and faculty of the U.S. Army Armor School professionally navigate the uncertain times over the past few months, given the COVID-19 situation. Our instructors and their staffs implemented safe ways to continue training future Armor and Cavalry leaders and Soldiers. The cadre enabled the Armor School to continue its mission of training, developing, educating and inspiring the world's most agile and adaptive Armor and Cavalry leaders, Soldiers and formations to win in complex environments.

The Armor School also supports multiple ongoing modernization efforts with the Next-Generation Combat Vehicle Cross-Functional Team as well as the other eight centers of excellence, Combined Arms Center, Training and Doctrine Command and Army Futures Command. In January, the Army realigned its focus on the Optionally Manned Fighting Vehicle (OMFV) program by canceling its solicitation for OMFV prototypes and entered a new phase in the program. The Army's choice allows us to find a system capable of growth on future battlefields.

The Army is also determining the best way forward on effective manned-unmanned teaming (MUM-T) through the continued efforts in the Robotic Combat Vehicle (RCV) program. The RCV team designed, built and tested the first set of RCV surrogates and control vehicles quickly. The next step of experimenting in a live environment during the first MUM-T Soldier Operational Experiment at Fort Carson, CO, is on hold due to the COVID-19 pandemic. Initial system training and orientation was effective and well-received by Soldiers of 4th Infantry Division, and I look forward to a successful experiment. The Armor School team is already building plans for integrating this new technology into our courses and formations to make our Soldiers, leaders and formations more lethal and ready.

In the near-term, the Army is on-track to replace the M113 family of vehicles with the Armored Multi-Purpose Vehicle (AMPV), with the first full brigade combat team (BCT) fielding expected to be complete in 2022. This will allow enablers in the armor BCT to have improved mobility and be capable of keeping pace with the tracked combat platforms they are supporting. The AMPV program made many improvements after last year's AMPV limited user test (LUT) and continues on its glide path. The Soldiers who took part in the LUT provided positive feedback on all five variants of the vehicle, and I anticipate seeing these vehicles maneuvering alongside our Abrams and Bradleys soon.

On a separate note, thank you to our outstanding Armor/Cavalry Soldiers and leaders who continue to serve our country and succeed on the COVID-19 battlefield.

Lastly, in May we farewelled CSM Kevin J. Muhlenbeck with a combined change of responsibility/retirement ceremony. CSM Muhlenbeck has been a tremendous asset to the U.S. Army Armor School and our Army, and will be missed. He's worked closely with the senior noncommissioned officers (NCOs) across the Maneuver Center of Excellence to ensure that the Armor School delivers trained, disciplined and ready NCOs and Soldiers. I'm looking forward to seeing the great things that CSM Tony Towns – who is joining us from 1st Armored Brigade Combat Team, 1st Armored Division, Fort Bliss, TX – will bring to the table as the new Thunderbolt 7.

Forge the Thunderbolt!

Acronym Quick-Scan

AMPV – Armored Multi-Purpose Vehicle
BCT – brigade combat team
LUT – Limited User Test
MUM-T – Manned-Unmanned Teaming
NCO – noncommissioned officer
OMPV – Optionally Manned Fighting Vehicle
RCV – Robotic Combat Vehicle

GUNNER'S SEAT

CSM Kevin J. Muhlenbeck
Command Sergeant Major
U.S. Army Armor School

Training the Armored Force in the COVID World

A lot has changed across the country and globe since the last Gunner's Seat article was published in the Winter 2020 edition of ***ARMOR*** magazine, but one thing that hasn't changed is that our adversaries continue to operate to undermine the sovereignty and strength of our country and our allies, both covertly and overtly. Our ability to deter threats is truly based on any country or non-state players understanding that Armor Soldiers are still prepared and stand ready to defend our country, our allies and security partners at any time and place. This ability is built on the foundation that our Armor Soldiers and leaders at all levels are proficient in their warrior tasks and battle drills and in their appropriate skill-level tasks. This foundation is then built upon with stable and proficient combat-platform crews and scout squads, which builds lethal platoons, companies and battalions.

Even in the Coronavirus-19 world, this truth has not changed. In fact, it should be clearer than ever that the world is a dangerous place, and excuses for a lack of readiness are not forgiven. Even with social distancing and wearing of masks, officers and noncommissioned officers must continue to be creative when planning and conducting training. An example is that, if simulators are closed due to virus spread, then find an open piece of ground outside on which to conduct section and platoon maneuver walkthroughs. Another example may be that, if Soldiers are sheltering in place, leaders can print out sections of the tank- and scout-platoon manual and use digital conferencing to have a discussion about what they read or to correct how they would react to a tactical problem.

It may not be ideal, and some will call it a waste of time, but it is training, and most Soldiers will appreciate the effort leaders put into it as long as it is based on doctrine and is tactically sound. Not only will I guarantee units will be better at collective training and maneuver, but NCOs will be better postured to succeed and excel at the Advanced Leader's Course and Maneuver Senior Leader's Course if the fundamentals are taught, even if by rudimentary means. Which was how all our predecessors did it before simulators came into play as a training resource; it reminds me of the saying, "What was old is new again!" Remember: individual, crew/squad and platoon training doesn't always have to be mind-blowing and complex to be effective at getting after the fundamentals – we just need to be creative.

Finally, it is with a heavy heart that I write that this will be my last Gunner's Seat article, as I pass off the duties and responsibilities of the Armor School to CSM Tony Towns. I will be retiring this fall and starting the next chapter for Team Muhlenbeck. It has been an honor to serve as a Soldier and NCO in the world's best Army for the last 28 years, and I am blessed to have served as the command sergeant major of the Armor School. CSM Towns comes to the school headquarters with an array of experiences, is a stellar leader of character and a passionate Armor NCO, and I know he will continue to push the school forward into the future.

Change brings new energy, new energy continues to enhance organizational excellence, excellence builds pride and **PRIDE IS CONTAGIOUS!**

See Page 31 for a look at how one armor training battalion dealt with COVID and maintained training standards

Back to the Future: Unit Training Management

by GEN Paul E. Funk II

Training and Doctrine Command's (TRADOC) ultimate responsibility to the Army and the nation is to build readiness – for the force of today and the multi-domain operations (MDO) capable force of tomorrow. Central to this responsibility is not only providing trained Soldiers and leaders, but Soldiers and leaders who can continue to train our operational forces.

It is vital that these Soldiers and leaders understand and practice unit training management (UTM). While UTM is clearly defined in our doctrine (Army Doctrinal Publication (ADP) 7-0 and Field Manual 7-0), it has atrophied in our current generation of field-grade officers, company-grade officers and senior noncommissioned officers (NCOs), primarily due to lack of practical experience during their formative years. It is incumbent on us to place a renewed emphasis on the education of this critical army population – both formally and informally – to drive the tenets of UTM back into the force.

Figure 1. PFC Baker of 572nd Brigade Engineer Battalion, 86th Infantry Brigade Combat Team (Mountain), Vermont National Guard, participates in a brigade warfighter exercise at Fort Drum, NY, in June 2017. The unit participated in the brigade tactical exercise as part of its ARFORGEN-cycle training. *(Photo by SPC Avery Cunningham, 172nd Public Affairs Detachment)*

ARFORGEN effect

The year 2001 marked the beginning of the longest period of continuous warfare in our country's history. Operations Enduring Freedom and Iraqi Freedom stretched the force at unprecedented levels, requiring multiple deployments and a strict, centrally managed force-generation process that ensured units were trained and ready to deploy. Enacted in 2006, Army Force Generation, or ARFORGEN, was a phased readiness model designed to provide ready forces on a specific schedule to meet the required demand.

ARFORGEN met the requirements of the time, but a byproduct of this centralized process was the atrophying of UTM skills in a generation of commissioned and NCOs. ARFORGEN and the supporting manning timeline was so stringent that training schedules were effectively dictated top-down so that brigade combat teams could meet all the required gates for certification and deployment within the allotted time. Junior commanders were not required to analyze training shortfalls, nor were they required to have commanders' dialogue to determine priorities. They were handed a task list and resources, and told when and where they needed to be to knock down the next target on their particular path to deployment.

Let us now fast-forward to the present. The leaders who experienced this readiness assembly line are now operations officers, operations NCOs and battalion commanders. During nearly two decades of deployments, these leaders routinely dealt with the utmost complexity under arduous conditions. They are now faced with equally complicated problems – only the fight is much different.

The Army has readjusted its manning cycles to one that is more equitable across units. There is much greater competition for combat-training center rotations, so brigades can go multiple years without a Forces Command-directed culminating training event. Simultaneously, the fielded force is transforming into the Army of the future – one with MDO capabilities that requires training on all the tasks previously understood as mission critical as well as tasks to support new capabilities being developed daily.

Management of these myriad tasks and requirements necessitates an organized, deliberate approach – an operational approach. In this case, to move into the future, we must look back to the past – to UTM.

UTM within ALDM

The fundamentals of UTM have generally remained unchanged over time. While some of the verbiage is different – "Army Training and Evaluation Program" is no longer used, for example – other terms survived – such as "Training and Evaluation Outlines" – and yet others are new ("Combined

Arms Training Strategies"). The existing problem, however, is that we as an Army are not well-versed in our own doctrine. The first step in going "back to the future" is to instill in the current generation of leaders the fundamentals of UTM.

TRADOC has identified this shortcoming and is attacking it head on in our professional military education (PME) programs. From the Basic Officer Leader Course to the Pre-Command Course for our commanders, our commissioned officers receive a total of 59 hours of formal instruction on UTM. Similarly, our warrant officers receive 25 hours of instruction across three PME courses, and our NCOs receive about 30 hours of instruction across their six PME courses. This is enough to teach the fundamentals of doctrine to the leaders and future leaders of our Army, but it is not enough to become experts in the science, much less the art, of training management.

The Army Leader-Development Model (ALDM) is predicated on three pillars of learning – education, training and experience – across three domains – institutional, operational and self-development. The formal instruction mentioned above is almost exclusively education and exists in the institutional domain – TRADOC's purview. To reinstitute UTM as a core competency requires full-immersion in the other two pillars of learning across the remaining two domains.

First, leaders can gain the doctrinal knowledge of what is supposed to happen through institutional education and self-development, but true understanding will only be achieved through training, leader development and execution in the operational domain. To educate our leaders on UTM, we cannot just pay lip service to it, we have to live it. It must be enforced, practiced and part of how we do business every day. In an era of immediate feedback and constant change, this can be very difficult, but it is doable.

An essential component is the commanders' dialogue. I have often heard young leaders state that they would be much more effective if they only knew the priorities of their boss. While deployed, we routinely interacted with leaders at echelon at a higher frequency so that every member of the team understood priorities, targets, messages, intelligence, logistics – virtually everything. In the training environment, the commanders' dialogue is the doctrinal construct for leaders at every level to prioritize and nest the many tasks they are required to accomplish – both individual and collective – with their higher echelon leadership.

ADP 7-0 describes the commanders' dialogue as a "continuous dialogue with their higher and subordinate commanders about training priorities,

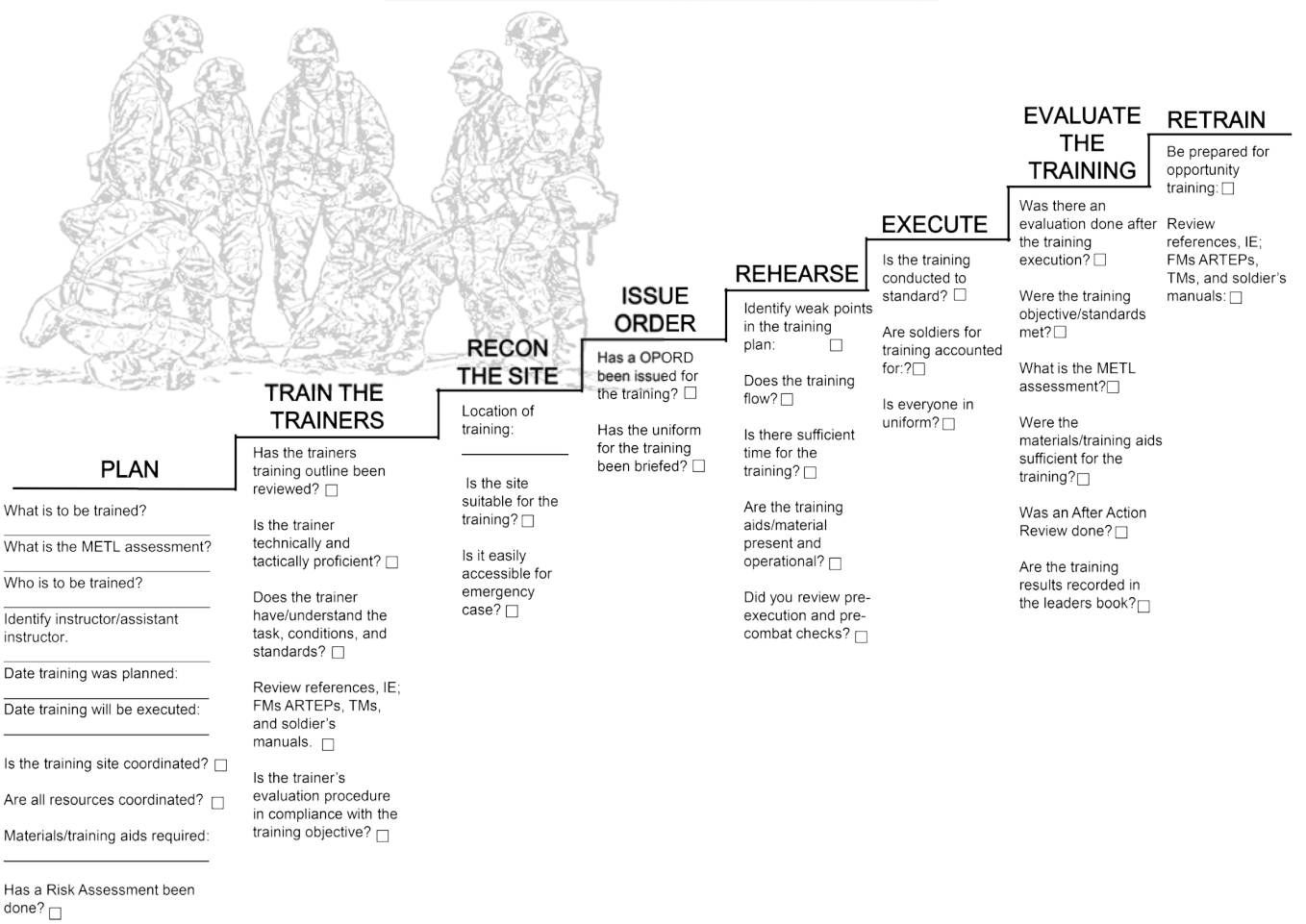

Figure 2. Eight-Step Training Model. *(Graphic from Office Chief of Armor Website, https://www.benning.army.mil/Armor/OCOA/content/References%20and%20Guides/8%20Step%20Training%20Model.pdf)*

techniques, resources and results." The key is actually conducting the dialogue; being disciplined enough to place it on the training calendar as a scheduled event and sticking to it. We all need guidance to row in the same direction.

Second, leaders can continue to build a UTM environment by enforcing the Eight-Step Training Model. This is the framework over which all training is built and is a requirement for consistent training success. The Eight-Step Training Model is a blueprint – a fill-in-the-blanks model for leaders at every level to ensure completeness in planning, preparation, execution and assessment. It is based on the troop-leading procedures (TLPs), which we all learned as young officers or Soldiers and use for everything we do operationally. Perhaps for this reason, we assume that our subordinates know and understand the benefits of using this tool. Make it explicit; trust but verify; and teach your subordinates the importance and the benefits of this structured approach to training, just as you teach them utilization of the TLPs for operational missions.

Third, do Army things in an Army way. The Combined-Arms Center maintains a network of tools under the umbrella of the Army Training Management System (ATMS) to assist us in carrying out our training obligations. The Army has standardized mission-essential task lists that simplify the process of identifying the tasks on which we will train. The key is disciplined use. While we love PowerPoint and Outlook, these programs are not integrated training solutions – ATMS and its supporting suite of applications are, and they can be easily accessed through the Army Training Network.

If we enforce the use of Army systems, we will reap the results of the synergy that comes from their built-in integration. Imagine how great it would be for the long-range calendar to be integrated with the daily training schedule; for identified training tasks to be automatically linked to the training schedule, where proficiency can be updated upon completion of training; this is the reality of the ATMS – but we must enforce its use.

Finally, and perhaps most importantly, exercise temporal discipline. One of the most violated principles of UTM that I have observed over the years – and have violated myself on occasion – is that of the time horizon. Every echelon has a time horizon to which it is supposed to adhere. Higher echelons have longer horizons than shorter, but discipline is the key to success.

At the brigade and battalion level, timely training guidance is absolutely essential. Equally as important, however, is respecting the subordinate unit's time. From a true UTM perspective, the company is the level at which we most often focus, where the training lock-in time is six weeks out (for Regular Army units). Quite often, however, we become paralyzed when an event out of our control – at a higher echelon – interrupts our training schedule. For that reason, company training meetings are the center of gravity for UTM. We cannot allow interruptions to have a negative effect, and we resolve these at company training meetings.

Remember that training schedules are priorities of work tied to a timeline – key to this is the word ***priorities***. If priorities are understood up and down the chain of command, it will be easier to adapt and overcome the externalities that interrupt our planned training. Take advantage of the time you have to accomplish your priorities. Think in terms of multi-echelon training – nest your unit's training inside of higher-echelon training events that "invade" your whitespace. This is the ***art*** to training management, and something we all must master because time is our greatest limiting factor. Therefore it is incumbent that we as leaders maintain our respective time horizons, publish our training guidance to communicate our priorities, hold training briefs to ensure understanding of our priorities and approve, lock in and, when necessary, adjust training events at company training meetings to achieve our priorities.

Great units master basics

Effective training is decisive to maintaining readiness in our Army. Like combat operations, planning, preparing, executing and assessing training is complex and should follow the operations process – in this case the process of UTM. Unfortunately, the demands of the Global War on Terrorism

Figure 3. An M1A2 Abrams tank from Company B, 1st Battalion, 8th Cavalry Regiment, 2nd Armored Brigade Combat Team (ABCT), 1st Cavalry Division, Fort Hood, TX, conducts a situational-training exercise Nov. 13, 2017. Refining the fundamentals of Army doctrine through training – like Company B is doing here in preparation for its upcoming gunnery qualification tables – and building experience in the operational force will enable the Army to regain proficiency. *(Photo by SGT Patrick Eakin, 2nd ABCT Public Affairs)*

dictated a readiness model that effectively stripped us of our proficiency in UTM. We are charged with providing the Army and the nation a trained and ready force and with maintaining the capability of that force through training. We must understand training – the art of analyzing and thinking about it as well as the science of managing it – to achieve this imperative.

I often say that great units master the basics, and training management is no different. Remember that training is a journey, not a destination. By embracing the fundamentals of our doctrine through education in our institutions and refining them through training and building experience in the operational force, we will regain this important proficiency. Through the disciplined execution of UTM, we will gain and maintain readiness in the fielded force and set the conditions for our transformation to the MDO capable force of the future.

Leave the jersey in a better place than you found it!

GEN Paul E. Funk II commands TRADOC, based at Fort Eustis, VA. As TRADOC commander, GEN Funk is responsible for 32 Army schools organized under eight centers of excellence that recruit, train and educate more than 500,000 Soldiers and service members annually. Commissioned as an Armor officer, GEN Funk has commanded at every level, company through corps, including Company A, 2nd Battalion, 32nd Armor Regiment, 1st Brigade, 3rd Armored Division, Kirchgoens, Germany; Headquarters and Headquarters Company, 4th Battalion, 67th Armor Regiment, 3rd Brigade, 3rd Armored Division, Kirchgoens; 1st Squadron, 7th Cavalry Regiment, 4th Brigade, 1st Cavalry Division, Fort Hood, TX; 1st Brigade Combat Team, 1st Cavalry Division, Fort Hood; 1st Infantry Division, Fort Riley, KS; and III Armored Corps, Fort Hood. GEN Funk's combat and operational experience includes six deployments in support of Operations Desert Shield and Desert Storm, Operation Iraqi Freedom, Operation Enduring Freedom and Operation Inherent Resolve. Operational assignments include observer-controller with the Live-Fire Team (Dragons), National Training Center, Fort Irwin, CA; squadron operations officer, 1st Squadron, 3rd Armored-Cavalry Regiment (ACR), Fort Carson, CO; regimental operations officer, 3rd ACR, Fort Carson; division operations officer, 1st Cavalry Division, Fort Hood; chief of staff, III Corps, Fort Hood; deputy commanding general, Combined-Arms Center for Training, Fort Leavenworth, KS; deputy commanding general (maneuver), 1st Infantry Division, Fort Riley; and assistant deputy chief of Staff, G-3/5/7, U.S. Army, Washington, DC. Joint assignments include chief, Joint Exercise Section J-37, North American Aerospace Defense Command, U.S. Space Command, Peterson AFB, CO; deputy commanding general (maneuver), Combined Joint Task Force-1, Afghanistan; commander, Combined Joint Forces Land Component Command-Iraq, Baghdad, Iraq; and commander, Combined Joint Task Force - Operation Inherent Resolve, Baghdad. GEN Funk holds a bachelor's of arts degree in speech communications from Montana State University and a master's of science degree in administration from Central Michigan University. He is a graduate of the Armor Basic Officer Leader's and Advanced Courses, the Command and General Staff College and completed his Senior Service College as a fellow at the Institute of Advanced Technology, University of Texas at Austin.

Acronym Quick-Scan

ABCT – armored brigade combat team
ACR – armored cavalry regiment
ADP – Army doctrinal publication
ALDM – Army Leadership-Development Model
ARFORGEN – Army Forces Generation
ATMS – Army Training Management System
MDO – multi-domain operations
NCO – noncommissioned officer
PME – professional military education
TLP – troop-leading procedure
TRADOC – (U.S. Army) Training and Doctrine Command
UTM – unit training management

Army Modernization in Next-Generation Vehicles Will Change the Battlefield

by MAJ Cory W. Wallace, MAJ George M. Morris, MAJ Scott Stephens and MAJ Shawn D. Pardee

The Army must maintain combat-vehicle overmatch in close combat against current threats while taking necessary actions to ensure overmatch through 2050 and beyond. Therefore the Next-Generation Combat Vehicle (NGCV) cross-functional team (CFT) is the Army's No. 2 modernization priority. Established in 2017 by then-Secretary of the Army Mark Esper and Chief of Staff of the Army GEN Mark Milley, the NGCV CFT drives combat-vehicle modernization priorities to rapidly provide Soldiers with the most advanced combat platforms.

Our peer threats have studied our equipment and tactics. They have developed increasingly capable systems and armaments that include, but are not limited to, advanced kinetic-energy ammunition, improved anti-tank guided missiles, explosively formed penetrators, underbelly-mines rocket-propelled grenades, loitering munitions, unmanned aerial systems and cyber-electromagnetic activities.

To meet these threats, the NGCV CFT prioritizes the Army Science and Technology efforts for ground-combat vehicles and works with its acquisition partner to field the Armored Multipurpose Vehicle (AMPV), mobile protected firepower (MPF), Optionally Manned Fighting Vehicle (OMFV) and Robotic Combat Vehicles (RCV). The CFT is also assessing the need for a main-battle-tank replacement and is working on cutting-edge technologies in automation, artificial intelligence and machine learning. Overall, the CFT synchronizes, coordinates and resources government science and technology projects, analytics, academic and industry developments; Soldier assessments and experiments with prototypes; and acquisition efforts to speed the development of the next generation of combat vehicles for our Soldiers.

As BG Ross Coffman, director of the NGCV CFT, consistently reminds our modernization partners within the Defense Department and industry that "we cannot modernize to parity. We must modernize to overmatch our enemy."

NGCV portfolio

AMPV: Is a one-for-one replacement for the M113 at the unit level of armored brigade combat team (ABCT) and below. AMPV will be able to match the pace of an ABCT, have improved survivability and force protection over the M113, and be able to incorporate future technologies and the Army's future network. These capabilities will allow units to operate more securely and efficiently with the tanks, infantry fighting vehicles and self-propelled artillery pieces of the ABCT.

When fielded, AMPV variants will

replace more than 30 percent of the ABCT's aging tracked-vehicle fleet. The mission-command vehicle facilitates enhanced command-and-control for commanders and staff. The mortar carrier provides immediate, responsive fire support to the BCT to conduct fast-paced offensive operations. The medical-evacuation vehicle provides the maneuver units and the brigade-support battalion the ability to transport casualties with en-route care for four litter or six ambulatory casualties. The medical-treatment vehicle provides a workspace for the surgeon or physician's assistant to care for Soldiers. The general-purpose vehicle supports logistics and non-standard medical evacuation at the company level.

The first units within an ABCT will receive AMPVs beginning in Fiscal Year (FY) 2022.

MPF: In 2013, 82nd Airborne Division submitted an operational-needs statement identifying an urgent, operational, warfighting need for an MPF capability for conducting Joint forcible entry. To meet this requirement and support infantry BCTs (IBCTs), the Army will field the MPF, a light tank that provides precise, large-caliber, long-range direct fires for IBCTs. The MPF will boast a 105mm main-weapon system, 7.62mm coax, commander weapon station and a roll-on/roll-off, C-17-transportable capability. The MPF will neutralize enemy prepared positions, heavy machineguns and lightly armored vehicles.

"We cannot modernize to parity. We must modernize to overmatch our enemy." -BG Ross Coffman

The first IBCT to be equipped will be in FY 2026.

Integrating an armored vehicle into the IBCT will require adjustment to the current doctrine, organization, training, materiel, leader development, personnel, facilities and policy (DOTMLPF-P) domains. To understand the DOTMLPF-P implications, XVIII Airborne Corps completed two exercises using U.S. Marine Corps Light Armored Vehicles as MPF surrogates. In FY21, XVIII Airborne Corps will execute a Soldier vehicle assessment and limited user test of MPF prototype vehicles. Both events will have two MPF platoons, each composed of a vendor-specific prototype set of vehicles. These Soldier-focused events will include new-equipment training, gunnery and field exercises to provide further refinements to DOTMLPF-P insights and the Army's decision on which vendor-prototype vehicle the Army will select for production in FY22.

Figure 1. Soldiers from 4th "Dark Horse" Squadron, 9th U.S. Cavalry Regiment, 2nd Armored Brigade Combat Team, 1st Cavalry Division, complete field testing of the AMPV at Fort Hood, TX. *(U.S. Army photo)*

OMFV: As part of an ABCT, OMFV will replace the Bradley Fighting Vehicle (BFV) to provide the capabilities required to defeat a future peer competitor's force. The Army is seeking a transformational increase in warfighting capability, not simply another incremental improvement over the current BFV. Like the Bradley, the OMFV will fight as part of a combined-arms team but will support cross-domain maneuver and readily defeat pacing threats while maneuvering Soldiers to their tactical objectives. The OMFV will be loaded with advanced sensors and mission-command capabilities for the vehicle crew and dismounted Soldiers.

To generate a more transformational approach, the Army is asking traditional and non-traditional industry partners to participate in a series of digital design reviews and selections before the Army settles on up to three vendors to develop prototype vehicles for Soldier evaluation and testing. This revolutionary approach will allow greater innovation and competition in developing a fighting vehicle.

The Army plans to equip its first units with OMFV in FY28.

RCV: Has two fundamental purposes: deliver decisive lethality on future battlefields and offload the risk associated with extremely dangerous missions from Soldiers to unmanned platforms. RCVs will expand the geometry of the battlefield, rapidly develop a common operating picture and enable commanders to employ external assets before first contact with Soldiers. Instead of a Soldier, RCVs will also enable commanders to place robots in the most dangerous locations of the future battlefield to take on complex breaches, long-duration operations and subterranean space in dense urban environments.

The RCV suite includes three variants: light, medium and heavy. The RCV (L)

Figure 2. General-purpose and medical-evacuation-vehicle variants of the AMPV.

Figure 3. OMFV, right, illustrated in use on the battlefield.

supports a robust sensor array to enable reconnaissance-focused missions, while the RCV (M) provides a medium-caliber weapon system and anti-tank guided missiles to augment a unit's organic direct-firepower capability. These variants can support modular mission payloads such as electronic warfare, counter-unmanned aerial systems and smoke obscuration. The RCV (H) vehicle fights as a decisive-lethality wingman that maneuvers in tandem

Figure 4. RCV (L), left, and RCV (H), right.

with its manned-vehicle counterparts or as part of a robotic platoon to destroy all threat targets with its onboard weapon systems.

All RCVs variants must keep pace with their organic units during both movement and maneuver, thus requiring robust semi-autonomous capability and aggressive mobility characteristics. All three variants have the potential of integrating into multiple, if not all, types of BCTs within the Army's force structure.

To develop RCVs, the NGCV CFT and Combat Capabilities Development Center's Ground-Vehicle Systems Center (GVSC) have conducted multiple live and virtual experiments with Soldiers. GVSC is leading a virtual experimentation effort focused on deriving feedback on proposed capabilities and operating concepts at the company and platoon levels. The CFT is working with the Maneuver Battle Lab at Fort Benning, GA, to conduct more experiments with Soldiers to understand the RCV's DOTMLPF-P impact at the battalion level and above. These experiments collect Soldier feedback and influence vehicle requirements, thus creating a platform "designed by the Soldier for the Soldier."

The NGCV CFT's three-phased RCV experiment will lead to an Army-level decisions in FY22 and FY23 to field RCVs to the operational force, starting around FY28.

Conclusion

The NGCV CFT is developing both modern, replacement combat vehicles and transformation capabilities for the close fight to support multidomain operations against our peer threats. The CFT is committed to Soldier-centered design for developing system and component technologies. The officers and noncommissioned officers of the CFT were selected from – and at the completion of their tour will return to – the operational force, so they understand the challenges platoons and brigades face every day.

The CFT is making a difference and speeding delivery of these ground combat vehicles to the operational force. If you would like to contribute your ideas, contact us at the following address: usarmy.detroit.ccdc-gvsc.mbx.ngcv-cft@mail.mil.

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MAJ George Morris is the deputy chief of staff for NGCV CFT, Detroit Arsenal. Previous assignments include brigade executive officer, 3rd ABCT, 1st Armored Division, Fort Bliss, TX; brigade S-3,

Figure 5. Experiments are collecting Soldier feedback and influencing vehicle requirements.

3/1 Armored Division, Fort Bliss; squadron S-3, 2nd Squadron, 13th Cavalry Regiment, 3/1 Armored Division, Fort Bliss; and G-35 chief, HHBN, 1st Cavalry Division, Fort Hood. MAJ Morris' military schooling includes Command and General Staff College, Infantry Mortar Leader's Course and Ranger, Jumpmaster, Pathfinder and Air-Assault Schools. He has a bachelor's of arts degree in history from Harvard University and a master's of arts degree in international relations from Webster University.

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MAJ Shawn Pardee is also a requirements officer with NGCV CFT. Previous assignments include squadron executive officer, 6th Squadron, 1st Cavalry Regiment, Fort Bliss, TX; squadron operations officer, 6-1 Cav, Fort Bliss; capability integrator, Joint Modernization Command, Fort Bliss; and deputy branch chief, Operational Architecture, Combined-Arms Support Command, Fort Lee, VA. MAJ Pardee's military schooling includes Command and

Figure 6. 1st Cavalry Division Soldiers participate in an NGCV experiment.

Figure 7. A Soldier puts an RCV through its paces during an experiment.

General Staff College, Army Intermediate Program Manager's Course, CLC, MCCC and Armor Officer Basic Course. He has a bachelor's of science degree in integrated science and technology, concentration on energy systems, from James Madison University and a master's of science degree in public administration from Central Michigan University.

Acronym Quick-Scan

ABCT – armored brigade combat team
AMPV – Armored Multipurpose Vehicle
BCT – brigade combat team
BFV – Bradley Fighting Vehicle
CFT – cross-functional team
CLC – Cavalry Leader's Course
DOTMLPF-P – doctrine, organization, training, materiel, leader development, personnel, facilities and policy
FY – fiscal year
GVSC – Ground-Vehicle Systems Center
HHBN – Headquarters and Headquarters Battalion
IBCT – infantry brigade combat team
MCCC – Maneuver Captain's Career Course
MPF – mobile protected firepower
MSM – Meritorious Service Medal
NGCV – Next-Generation Combat Vehicle
OLC – oak-leaf cluster
OMFV – Optionally Manned Fighting Vehicle
RCV – Robotic Combat Vehicle

Robots and Reconnaissance: We May Never Be Stealthy and Deliberate Again

by COL J. Frederick Dente and CPT Timothy Lee

From iron blades and crossbows to armored vehicles and precision-guided munitions, the character of war is constantly evolving. Nations expend massive amounts of energy and capital to present new dilemmas for adversaries across multiple domains. Often these technical advances occur in a vacuum, and we fail to develop the tactics and doctrine to fully leverage the new capability. At an even more fundamental level, we often fail to examine how these new technical capabilities change the underlying assumptions about the character of war in the first place.

Semi-autonomous ground-based robots, once a dream of the past, are the next change in warfare the U.S. military and its adversaries are developing to gain and maintain dominance on the battlefield. However, the proliferation of advanced technology such as the Robotic Combat Vehicle (RCV) on the battlefield at the lowest level will fundamentally change the way Soldiers fight tomorrow's battles, and it will call into question the very doctrine and methodology the Army uses to train its warfighters. While there are varying opinions on whether the use of RCVs will ultimately enable or hinder reconnaissance and security (R&S) operations, the Army must continue to address the inadequacies of its ability to execute ground R&S operations to fight and win the next major ground war.

This article will highlight the foreseeable changes in doctrine that must be considered by first examining the advantages and disadvantages of three long-standing ideas in cavalry doctrine and then describe how these ideas will inevitably change with the integration of the RCV to effectively move forward into the 21st Century.

Tactical mobility

Cavalry formations have long served as a catalyst to transform the concepts of maneuver warfare into a battlefield capability. As maneuver is the essence of U.S. fighting doctrine, it requires the means to seize or retain the initiative and to create or exploit offensive opportunities.

Commanders require a high degree of situational awareness and the time to mass and concentrate superior combat power against the enemy at the right time and place for maneuver to be successful. For centuries, the power of mobility has enabled cavalry formations to accomplish this task. By remaining mobile and retaining freedom of maneuver, cavalry formations can provide a continuous flow of combat information and intelligence to

commanders, helping them cope with uncertainty, make contact under favorable conditions, prevent surprise and facilitate timely decision-making. Serving as the brigade commander's "eyes and ears," cavalry formations can deploy quickly, fight for information and secure key terrain far in front of the main body to provide it with reaction time and maneuver space.

However, commanders are frequently forced to sacrifice the amount of detail collected about the operational environment to maintain their speed, as formations never seem to maneuver fast enough. Moving quickly increases the risk by forcing Soldiers to potentially expose themselves to enemy contact while trying to develop the situation. Yet moving more slowly may increase the risk to the mission, as the cavalry may not secure key terrain before opposing forces begin their initial attack. This problem has plagued commanders for centuries.

Stealth

While reconnaissance doctrine includes the capacity for cavalry formations to fight for information, the best way to perform reconnaissance has long been argued to be by stealth. By remaining hidden and maximizing the use of cover and concealment to conduct R&S tasks, cavalry formations can detect and observe enemy developments well forward of the brigade combat team's (BCT) main body while also retaining their mobility. Stealthy reconnaissance prevents the cavalry formation from becoming decisively engaged and greatly enhances its survivability. By only engaging the enemy when absolutely necessary, cavalry formations can gain and maintain contact with the enemy from a position of relative advantage before executing a reconnaissance or battle handover as the relative priority between BCT elements shifts.

Yet despite these advantages, even stealthy reconnaissance requires an ability to survive a chance contact or an ambush that may occur with little warning. Historical examples such as Operation Desert Storm provide an excellent study for this. Divisional cavalry organizations at the time lacked the combat power to conduct their traditional R&S roles. Because tanks were not organic to the squadrons, many commanders were forced to task-organize tank companies from the maneuver brigades to provide the division's primary reconnaissance asset with the resources needed to fight for information and survive on the battlefield.

The experience in Desert Storm reinforced the lesson of the North Africa campaign during World War II – effective reconnaissance must often include fighting. Commanders in the deserts of North Africa in 1943 suffered heavy casualties while employing light-reconnaissance formations to fight for information. With that historical lesson in mind, some commanders in the deserts of Iraq in 1991 simply chose not to use them.

Economy-of-force

Cavalry formations have long protected and preserved the BCT's combat power during security operations, allowing the commander time to decide where to concentrate forces. This time provided by cavalry formations provides the BCT with a critical capability based on a principle of war: economy-of-force. Economy-of-force is the principle of employing all available combat power in the most effective way possible. The flexible capabilities of the cavalry allow commanders to conserve the combat power of their BCTs to use at a time and place of their choosing. By expending minimum essential combat power on secondary efforts, commanders can maximize the most combat power on primary efforts. In other words, by serving in an economy-of-force role, cavalry prevents premature deployment and attrition of combat power before the BCT reaches its objective.

However, because an economy-of-force, by definition, is to expend the minimum amount of combat power on secondary efforts, the ability of a cavalry formation to shape the battlefield, influence key actors and consolidate gains and efforts is severely limited. Although properly task-organized cavalry formations can produce effects that far outweigh the diversion of combat power from the main body, dedicating these additional capabilities comes at the risk of fewer capabilities for potential follow-on operations. As a result, cavalry formations often find themselves limited in what they can do for the BCT, reacting to the enemy instead of creating the conditions to create and exploit the initiative.

Integration of RCV

The proliferation of the RCV on the battlefield at the lowest level will fundamentally change these long-standing core beliefs in cavalry doctrine. They will potentially enable commanders to push past these previous restrictions that have plagued BCTs for centuries while also imposing restrictions of their own.

First, commanders have been frequently forced to sacrifice the amount of detail collected about the operational environment to maneuver quickly; RCVs can effectively mitigate this gap entirely. Commanders, once limited not only by the enemy and terrain but also by the human dimension, both physically and mentally, now find themselves able to consistently maintain their overall operational tempo. Unlike their manned fighting vehicle (MFV) counterparts, RCVs are not limited by Soldiers' lack of sleep or endurance to maintain speed. The RCV can move ahead of the MFVs and quickly secure key terrain, while scouts can move more deliberately behind the forward-line-of-robots (FLOR) and forward-line-of-unmanned-aerial-vehicles (FLUA) to collect on terrain, civilian and even infrastructure information requirements. (See Figure 1.)

By allowing RCVs to make first contact with the enemy and secure key terrain in front of the BCT, commanders ultimately can mitigate both the risk to force and to mission that was previously identified. Yet, while the RCV does enable commanders to maintain tactical mobility, it comes with its own mobility limitations that will fundamentally change how reconnaissance doctrine, specifically intelligence preparation of the battlefield (IPB), is taught. Traditional instruction on IPB at the reconnaissance schoolhouse focuses on how to best use terrain and how to use intervisibility (IV) lines to conceal movement – whether mounted, dismounted or even aerial to retain a position of relative advantage.

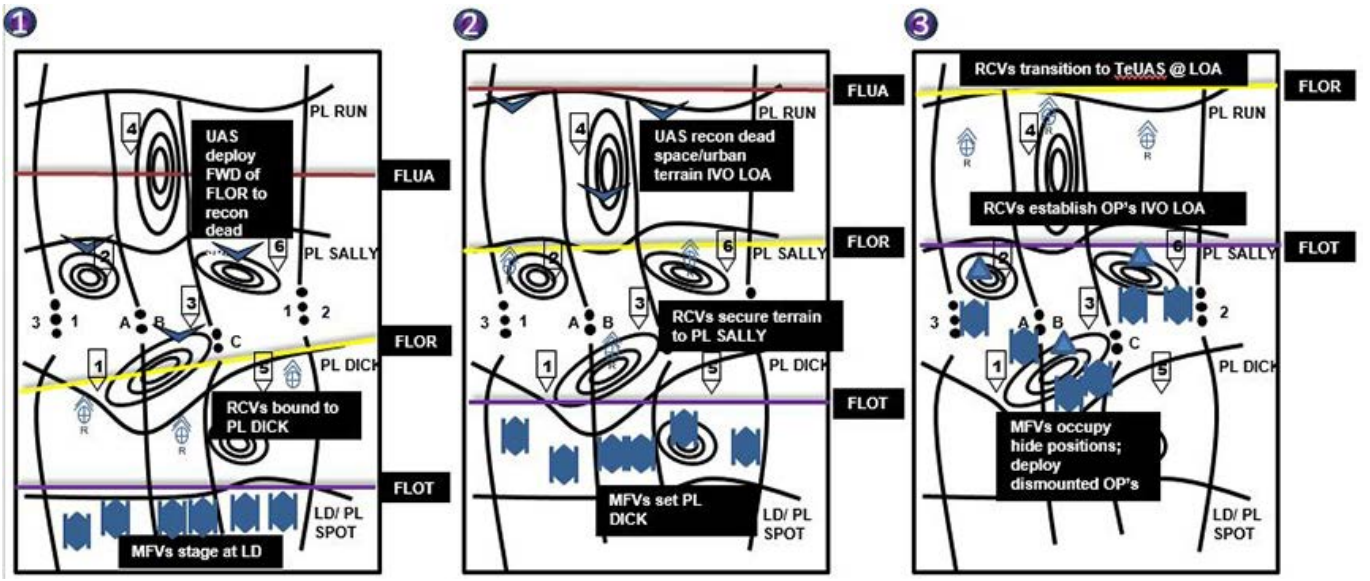

Figure 1. RCV zone reconnaissance.

However, as stated, RCVs are being used in front of formations to reduce risk and increase situational awareness. As a result, IPB on the type of terrain that best suits robots may need to be more emphasized than IPB for traditional mounted and dismounted maneuver. Furthermore, as these RCVs must operate within line-of-sight to the control vehicle, a greater emphasis must be placed on the three-dimensional aspect of the terrain and how it affects not just frequency-modulation communications but also connectivity from the RCV to the control vehicle. This essential change in the way scouts are taught IPB may not only be relevant, but it's absolutely necessary.

Finally, because the basic capabilities for the RCVs used by the Army's Next Generation Combat Vehicle-Robotic Combat Vehicle (NGCV-RCV) team include artificial intelligence-assisted target detection/recognition and anti-tank guided-missile capability, the ability for a cavalry formation to fight for information is greatly increased. Commanders may never need to operate "stealthy" again, as the RCV essentially mitigates the risk for a commander to expose his Soldiers to enemy direct fire. The RCV ultimately provides the squadron commander with his own reaction time and maneuver space and negates the need to be "stealthy." Whereas current doctrine uses dismounts in front of vehicles in a covert manner to make first contact with the enemy, the RCV enables the commander to make first contact with robots. By operating in a more "forceful" capacity, these RCVs develop the situation through action and can potentially suppress or fix the enemy while the commander maneuvers his scouts to a position of relative advantage to engage and destroy the enemy. Also, the RCV provides the cavalry commander with more firepower while still maintaining economy-of-force to prevent decisive engagement.

However, despite these advantages, RCVs operating in a "forceful" manner are not without their own inherent limitations. While future RCV capabilities must adhere to stringent requirements and at least mirror their manned counterpart in terms of mobility and thermal signature, using RCVs ahead of Soldiers and MFVs in a "stealthy" manner may not even be possible. While the RCV may possess the same or even less thermal and noise signature of their manned counterparts, it becomes extremely difficult to mimic the same physical and electromagnetic signature as a dismounted scout moving in front of his vehicle to observe an IV line. Consequently, the cavalry commander may never actually be able to specify "stealthy" as a reconnaissance tempo because he must account for the RCVs. The impacts of this change would be astronomical; forcing cavalry formations to operate solely in a forceful tempo increases the risk that RCVs were designed to mitigate. Furthermore, organic task-organization to cavalry formations may also need to be reconsidered, as they may need more firepower to serve only in a forceful tempo.

Conclusion

When rifled muskets were first introduced, no army recognized how the dramatic increase in range and lethality would impact massed formations of infantry. Few armies recognized the impacts of the telegraph and railroad on modern war until it was too late. Too often, our tactics and doctrine lag far behind the dramatic advances in lethality and mobility. Like these previous advances, the integration of RCVs into our scout platoons and cavalry troops must fundamentally change the way leaders conduct R&S operations in the near future.

To win the next major ground war, our R&S doctrine must adapt. Not only should we incorporate these new systems into our current organizations and our existing training models, but we must also be prepared to challenge the underlying assumptions that drive our current tactics. It is only through this rigorous and professional dialogue that we can fully leverage the new capabilities and opportunities the RCV offers.

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Fort Irwin, CA; commander, 1st Squadron, 4th Cavalry Regiment, Fort Riley, KS; executive officer, 1st Squadron, 89th Cavalry Regiment, 10th Mountain Division, Fort Drum, NY; operations officer, 1st Squadron, 89th Cavalry Regiment; and commander, Company A, 1st Battalion, 63rd Armor Regiment, Fort Riley. COL Dente's military schools include the U.S. Army War College, Command and General Staff College and Armor Captain's Career Course. He holds a master's degree in adult education from Kansas State University and a master's degree in strategic studies from the U.S. Army War College. COL Dente's awards include the Bronze Star Medal (four oak-leaf clusters), Defense Meritorious Service Medal and the Meritorious Service Medal (four oak-leaf clusters).

CPT Timothy Lee is the Cavalry Leader's Course (CLC) director, assigned to 3rd Squadron, 16th Cavalry Regiment, 316th Cav Brigade, Fort Benning, GA. His previous assignments include CLC instructor, 3-16 Cav; commander, Headquarters and Headquarters Troop, 6th Squadron, 1st Cav Division, Fort Bliss, TX; commander, Troop E, 6-1 Cav, Fort Bliss; assistant S-3 (Plans), 6-1 Cav, Fort Bliss; and platoon leader, Troop C, 1st Squadron (Airborne), 40th Cav, Fort Richardson, AK. CPT Lee's military schools include CLC, Ranger School, Maneuver Captain's Career Course and Airborne School. He holds a bachelor's of science degree in systems engineering from the U.S. Air Force Academy. CPT Lee's awards include the Bronze Star Medal (with oak-leaf cluster) and Meritorious Service Medal.

Figure 2. The Army's Ground Vehicle Systems Center and NGCV cross-functional team demonstrate the mission-enabling technologies demonstrator and RCV surrogate at Camp Grayling, MI, Aug. 22, 2019. *(From a video by Douglas Halleaux, Combat Capabilities Development Center's Ground-Vehicle Systems Center)*

Acronym Quick-Scan

BCT – brigade combat team
CLC – Cavalry Leader's Course
FLOR – forward-line-of-robots
FLOT – forward-line-of-own-troops
FLUA – forward-line-of-unmanned-aerial-vehicles
FWD – forward
IPB – intelligence preparation of the battlefield
IV – intervisibility
IVO – in vicinity of
LD – line of departure
LoA – line of advance
MFV – manned fighting vehicle
NGCV-RCV – Next Generation Combat Vehicle-Robotic Combat Vehicle
OP – observation post
PL – phase line
R&S – reconnaissance and security
RCV – Robotic Combat Vehicle
UAS – unmanned aerial system

Figure 3. RCVs on display at Camp Grayling, MI.

Fire and Maneuver in the Cyberspace Domain

by COL Michael D. Schoenfeldt, CPT Matthew L. Tyree and CPT William Malcolm

The armored brigade combat team (ABCT) is the most lethal formation the world has ever seen; no other force can match the firepower and maneuverability an ABCT can bring to bear on the decisive-action battlefield. However, where our adversaries lack in attributes inherent to an ABCT, they are gaining the edge in areas that include cyber, signals intelligence (SIGINT) and electronic warfare (EW).

With that in mind, a dynamic strike by our adversaries to our communications and intelligence systems, digital and frequency modulation (FM), can be a catastrophic blow to ABCT operations. Protecting our communications, exploiting those of our adversaries and supplying maneuver commanders with real-time and actionable intelligence will determine the difference between victory and defeat.

Army EW and tactical SIGINT are progressing through significant updates and restructuring in an effort to meet this threat. In the past, troop and company commanders had been assigned Prophet (a 24-hour, all-weather, near-real-time, ground-based, tactical SIGINT/EW capability organic to the BCT) and EW teams that, due to lack of necessity, planning or understanding, had been a shackle rather than an enabler to their operations. The Army had all but abandoned EW in 1993 after the end of the Cold War. During the height of counterinsurgency (COIN) operations in 2009, the EW branch was finally reinstated for counter-improvised-explosive-device jamming. The only contact many maneuver leaders had with EW during that time was with the bulky "dukes" that sat in the back of our vehicles.

Current global events have shown an emergence of both state and non-state actors who are not only capable of waging war on land but also of competing in the electromagnetic spectrum (EMS). To meet these new and complex threats, the Army is rapidly replicating the same environments to test leaders at the combat-training centers. Every echelon of our Army must be ready to meet the rapidly changing world and be confident in their ability to "fire and maneuver" in the EMS.

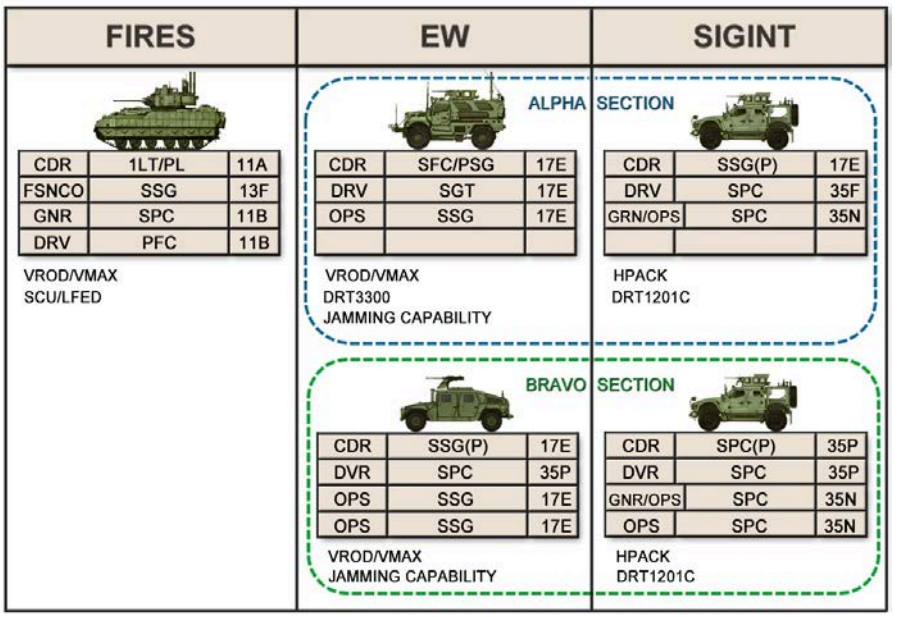

Figure 1. Current manning.

'A way' to compete in EMS

During the past year, the Ironhorse ABCT of 1st Cavalry Division has recalled forgotten skills of the pre-Gulf War years, including a platoon called combat EW and intelligence (CEWI). CEWI was once one answer to competing in and gaining an advantage in the EMS of the Cold War. Some in the SIGINT and EW circles will tell you the two capabilities are like oil and water. Ironhorse views the two as sides of the same coin called information.

Information is the medium that links the purpose and direction of leaders to maximize the warfighting functions' capabilities. Information is a living environment, and it needs to be analyzed much the same way as the physical one we are used to maneuvering in. There is key terrain in this environment such as radios and computer systems, as well as obstacles and avenues of approach that allow or prohibit access into the network. By fully accessing the information landscape, maneuver units can find new ways to exploit our adversaries to mass and concentrate "informational fires."

To gain the edge in the information battlefield and show that EW and SIGINT are better together than apart, Ironhorse founded the "Wild Bill" CEWI platoon to be a true organic fire-and-maneuver unit in the cyberspace domain. Since its inception, Wild Bill has sensed, collected, found, jammed, destroyed and disrupted enemy information networks in tough and realistic environments. The line of effort that Wild Bill has created is now tied to cyber-electromagnetic activities (CEMA), which is in turn tied to the intelligence section (S-2) collection assets. This chain of information will leave our adversaries exposed and helpless in the

EMS. Wild Bill is not a one-size-fits all solution to mastering the cyberspace domain, but it does provide Ironhorse the ability to shape it.

Creating Wild Bill

Wild Bill was not created overnight, nor is it complete. The platoon has grown through trial and error during complex training events. It was decided early that Wild Bill would primarily serve as the electronic reconnaissance platoon and the commander's eyes and ears in the EMS. It was tasked with sensing and direction-finding (DF) enemy communications, answering priority intelligence requirements (PIR) and, when able, destroying or degrading enemy emitters with either lethal or non-lethal fires.

An experienced infantry lieutenant was chosen and instructed to lead, equip and train the organization. Wild Bill was provided a Bradley Fires-Support Team (BFIST) Fighting Vehicle to allow the platoon to rapidly prosecute unobserved fire missions. This distinct inclusion is what makes the Ironhorse CEWI platoon different from other EW or CEWI platoons of the past. It is organically able of gathering targeting information from its sensors, rapidly clearing ground and digitally processing fire missions. The fires section makes Wild Bill a true fire-and-maneuver element rather than a simple collection asset.

To cover the electronics side of the formation, Ironhorse funneled all available military-occupation specialty (MOS) 17Es (EW specialists) and MOS 35P/Ns (cryptologic linguists/SIGINT analysts) to fill the ranks. These troopers operate host EW and SIGINT systems ranging from legacy and

Mission: Integrate and synchronize EW and SIGINT capabilities to maximize intelligence collection and enable the targeting of enemy emitters.	
Name	**Number**
34-CO-3004	**Conduct SIGINT collection**
34-TM-0700	Conduct voice communications intercept or radio DF at a collection site
34-TM-0701	Conduct voice communications intercept during movement
34-TM-0702	Process incoming SIGINT information
34-TM-0713	Conduct a SIGINT survey
34-TM-0724	Coordinate in determining tactical SIGINT taskings
34-TM-0800	Establish an ES collection site
34-TM-0820	Manage Prophet sensor missions
13-CO-2019	**Conduct EW**
13-TE-2012	Conduct EA
13-TE-2013	Conduct electronic protection
13-TE-2014	Provide EW support (ES)
13-TE-6019	Establish an EW site
07-PLT-1342	**Conduct tactical movement – platoon**
07-PLT-3036	**Integrate indirect-fire support – platoon**
06-SEC-5086	Observe friendly indirect fires

Table 1. Wild Bill METL.

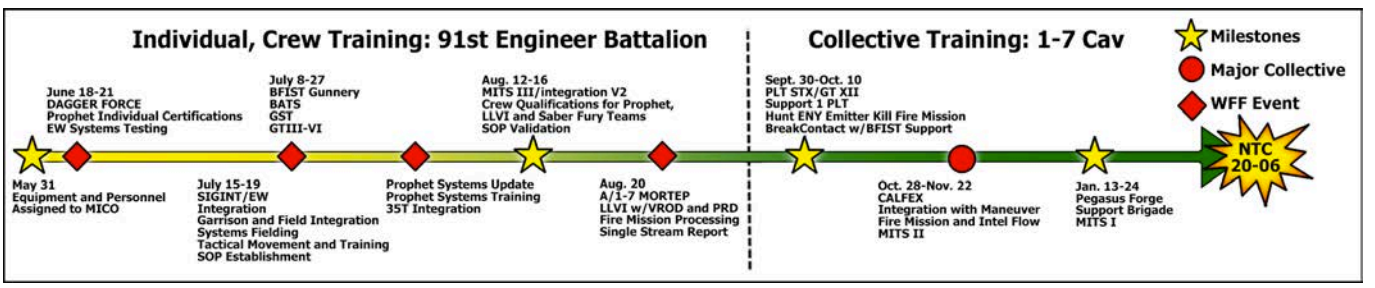

Figure 2. Training glidepath.

developing Army technologies to commercial-off-the-shelf (COTS) systems. The current arsenal includes Prophet, Sabre Fury (a modified version of the Duke V4/V5 EW system), EW Tactical Vehicle (EWTV), Versatile Radio Observation and Direction (VROD) system and the Herrick Pack. With the combination of systems and personnel from EW and SIGINT, the platoon also needs to delineate the legal and specialty differences between its troopers and equipment.

Wild Bill was initially assigned to the Ironhorse Military Intelligence Company, where a dedicated and informed SIGINT technician provided oversight and ensured the platoon remained in compliance with National Security Agency directives and procedures.

With an organizational structure and equipment assigned, Wild Bill's next task was to establish a modified table of organization and equipment (MTOE) and mission-essential task list (METL) to carry its troopers through individual, section and platoon training to meet their unique task and purpose. While training with a common understanding and nested purpose, the EW and SIGINT troopers began to integrate. Before long they were able to sense, find and report as a single unit.

The platoon applied these skills during the Wild Bill Gunnery Table XII platoon live-fire exercise and added the ability to shoot, move, communicate and accurately call for indirect fire. Following successful completion of their platoon-level gates, Ironhorse felt confident that Wild Bill could operate on the forward-line-of-own-troops (FLOT) and enable maneuver, intelligence and targeting.

Integrating Wild Bill with ABCT operations

With the concept proofed, Wild Bill was ready to operate with maneuver units, but it was not yet fully understood how much the platoon could provide to commanders and the brigade. Due to its nature as electronic reconnaissance, Wild Bill was naturally attached to support the Ironhorse Reconnaissance Squadron, 1-7 Cav. Therefore, Wild Bill was tested during both the Ironhorse company-level combined-arms live-fire exercise (CALFEX) operations and the brigade-level home-station decisive-action validation, Pegasus Forge V. During these complex operations, Wild Bill troopers revealed their unique capabilities and limitations as they were tasked to find, fix and destroy multiple emitters in the form of live and static opposing forces (OPFORs).

The Wild Bill leadership assisted maneuver commanders in planning during the orders process and during execution. The platoon semi-independently operated no more than one phase line behind the FLOT. The mission during these exercises was to provide the maneuver units with overwatch as they executed combat tasks; relay important combat information; and ultimately enable targeting and intelligence for leaders at echelon.

During the training events, the platoon proved its ability to integrate with maneuver units while also revealing its unique capabilities and limitations.

Wild Bill's main combat multiplier is its ability to conduct electronic-support (ES) operations, namely DF. Though this ability is limited on the move, when established in tactically and technically sound collection sites (hasty or deliberate) the platoon is able to sense, fix and destroy the enemy with speed and accuracy. Conducting CEWI requires understanding of how sensors receive signals from the EMS and how each sensor can mutually support the others through proper geometry. Much like an ambush, there are different formations that can be used to achieve the greatest geometry for an electromagnetic kill zone. In general, a concave shape yields the greatest chance to fix a target, while a linear or convex shape yields a greater area to detect but limits the chance to establish a fix.

With a proper collection site set, the sensors of Wild Bill received specific EMS bands to observe known as "spectrum sectors of fire." These sectors of fire were prepared in advance and coincided with the enemy electronic order of battle the S-2 prepares that lays out both the enemy equipment and frequency sets that may appear to Wild Bill operators.

Once an enemy emitter is detected, the operator develops the echelon, potential location and activity of the source. Throughout six weeks of CALFEX iterations, Wild Bill sensed more than 50 emitters. These emitters are a combination of OPFOR push-to-talk radios and Stratomists. The Stratomist is a signal emitter that is capable of replicating a myriad of single-channel plain text (SC/PT) and frequency-agile (such as frequency hop) communications. Also sensed and reported were helicopter navigation systems and dozens of other "out of play" frequencies.

Active emitters present a general azimuth to their location, known as a line of bearing (LoB). Just like a resection in land navigation, multiple LoBs from multiple sensors will achieve a cut or a triangulated fix on an emitter. These cuts and fixes are then reported and actioned by the platoon or other echelons. Wild Bill developed a reporting scheme that allowed free passage of both time-sensitive combat intelligence and detailed intelligence that directly supported targeting. Many

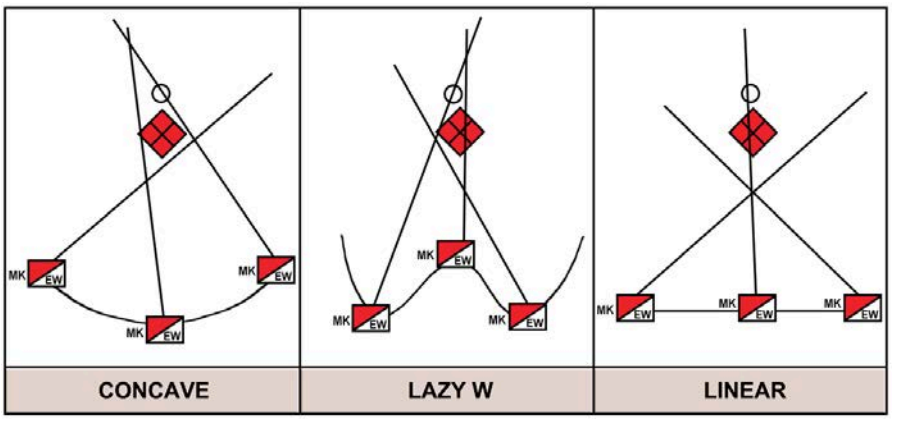

Figure 3. Collection-site formations.

Wild Bill SALT report	
Explanation	**Example**
S: Enemy size A: Activities of enemy reported by sensors. Frequency of enemy mission. L: 8-digit grid or high-confidence LoB to specific named area of interest (NAI)/key terrain. T: date-time group (local). PIR: PIR answered. WB: Actions taken by Wild Bill Platoon. a. Call for fire b. Electronic attack c. UAS d. Maneuver-unit assistance e. Continue to observe	S: Enemy observation post. A: Observing downed vehicle, preparing to call chemical munitions. Frequency ###.###. 10 watts. L: PV 1234 5678. T: 1525L. PIR: #5, enemy preparing to use chemical munitions in NAI 1. WB: a – battalion mortars.

Table 2. SALT report.

Figure 4. An M-ATV Prophet established in a collection site.

found emitters answered PIRs such as the location of high-value targets; chemical, biological, radioactive, nuclear and high-yield explosives targeting (commonly known as CBRNE); and obstacles.

Once the maneuver commander had this intel in hand, Wild Bill's troopers would action their modified size, activity, location, time (SALT) report, which detailed the information gathered and the way-ahead to leaders at echelon.

Fires: lethal and non-lethal

Wild Bill is free to prosecute the emitters with the lethal and non-lethal means available to it. Out of more than 15 digitally processed fire missions (both live and simulated), only one landed more than 100 meters from the target. Wild Bill even sensed and destroyed a live emitter with 120mm mortars from more than two kilometers away. While not as accurate as observed fires, Wild Bill was still able to achieve effects on the enemy and disrupt their operations.

Also available to Wild Bill is its non-lethal fires asset, electronic attack (EA). EA, "jamming," against an adversary's communications comes with an inherent risk to the jammer because of its EMS signature; essentially, it becomes like a flashlight in the dark to enemy sensors. Wild Bill had limited practice jamming, but when it did go "buzzer on," it achieved effects on Stratomist and live targets during the CALFEX.

Due to the risk to the force, Ironhorse uses this capability deliberately and in conjunction with other CEMA effects at a decisive point. Stacking effects like these on top of one another creates an electromagnetic dilemma. During one portion of Exercise Pegasus Forge, after the enemy tactical-operations center was destroyed, Wild Bill conducted EA against enemy FM communications, furthering the OPFOR's confusion and achieving dominance in the EMS.

Capabilities and limitations

Wild Bill has carved a niche for itself by being able to search, find and destroy emitters in parts of the EMS. Overall, the platoon can see almost every signal in the very-high-frequency and ultra-high-frequency ranges. Within these frequency ranges, Wild Bill is very capable of searching, finding and destroying SC/PT emitters at ranges up to 10 kilometers. With more

open terrain than the Fort Hood Training Area, it is expected that the platoon can see and affect results much further.

For signals that Wild Bill is unable to prosecute directly, it has been able to "tip" to more Ironhorse assets such as the Shadow unmanned-aerial-systems (UAS) platoon or the brigade intelligence-support element. Wild Bill's greatest strength is its ability to use these skills while operating on the FLOT. Unlike other EW and CEWI platoons, Wild Bill can conduct CEWI that directly enables maneuver, intelligence and targeting.

However, Wild Bill still remains limited in its ability to find and fix frequency agile communications, Joint Capabilities Release's (JCR) signatures and emitters in the super-high-frequency range. While Wild Bill and its assets are not wholly at fault, it should be noted that their Darkhorse and foreign-adversary counterparts can do this with lethal accuracy.

Jamming communications is as much a capability as it is a limitation because it is largely untested at the BCT level. As stated, it comes with a risk to the force that would need to be mitigated. Wild Bill will strive to find innovative ways around these complicated problems because its troopers understand that the lives of all Ironhorse troopers could depend on their ability to see and shoot first in EMS.

Improving Wild Bill

As stated, Wild Bill is not a complete product yet, and Ironhorse will continue to seek upgrades to its equipment, manning and vehicles to give it the edge in the electromagnetic and on the real-world battlefield. The current arsenal of sensing and jamming equipment is plagued with three major issues that need to be addressed if other CEWI or EW platoons are to be successful.

The first issue is the antennas attached to the Wild Bill sensors. The sensors housed in Wild Bill are some of the best available to any BCT. However, the antennas lack the sensitivity to detect emitters at ranges necessary to support large-scale combat operations (LSCO). An ABCT like Ironhorse is capable of affecting up to 30 kilometers with both organic and attached fires assets, and it has a line-of-sight of 20 kilometers with a BFIST's Fire-Support Sensor System A3. With more sensitive antennas and systems, Wild Bill will be able to sense enemy reconnaissance and main-body elements up to 30 kilometers and to provide early warning before the enemy moves into line-of-sight.

Figure 5. A BFIST provides security for the EWTV.

The second issue is the limited jamming capability of the jammers Wild Bill has at its disposal. The EWTV and Saber Fury jammers are the very same bulky dukes used during COIN that were not meant to defeat near-peer communications. Fielding new equipment with more sensitive receivers and stronger power outputs will be crucial in providing BCTs with a reliable system.

The third issue is the lack of a common graphical user interface (GUI). The multiple Wild Bill sensors do not have the ability to digitally share found frequencies, LoBs or enemy intelligence. To do this, operators must use another method, FM or JCR, to share information and fix the emitter with a map and protractor. With a common GUI and a meshed network, operators can put the protractors aside and more accurately fix a hostile emitter. Wild Bill and CEMA have access to the EW Planning-Management Tool (EWPMT), which is capable of linking the Defense Digital Service and sharing information with other battle-command common-services systems. However, many of the Wild Bill sensors use COTS systems that are not compatible with EWPMT. To be successful with future equipment fielding, the Army must adopt a common planning tool and GUI for all equipment before becoming a program of record.

As maneuver begins to adapt EW and SIGINT, EW and SIGINT must adapt to maneuver. The current platforms that Wild Bill is assigned – mine-resistant ambush-protected (MRAP) all-terrain vehicles and MaxxPro MRAPs – are not capable of maintaining the rapid and forceful nature of an ABCT. CEWI platoons of the future need to reflect the mobility of the unit they support, and in the case of Ironhorse, they will need tracks.

As it stands now, Wild Bill is 18 troopers strong, with only 14 of them EW or

SIGINT MOSs. Combine that with the dozen sensors and five vehicles they operate, and one can picture the physical problems that can arise while operating in a contested and continuous-operations environment. Updating the modified table of organization and equipment to task-organize cavalry-scout Bradley Fighting Vehicles and crews will allow the platoon to be self-sufficient at both security and maneuver while also operating continuously. These vehicles, both Bradley and Armored Multi-Purpose Vehicle variants, will need to be outfitted with EW and SIGINT equipment and systems to ensure that CEWI remains fully mission-capable.

Answer to dilemma

Platoons like Wild Bill are combat multipliers, shaping efforts within the cyberspace domain. As with any other shaping operation, their task and purpose must be nested to support the main effort. This begins with planning, in depth and in advance.

Wild Bill cannot be the only EW and SIGINT asset out there. By stacking the knowledge and effects that CEMA and the S-2 can bring to bear, we can undoubtedly create an inescapable electromagnetic dilemma for our adversaries. For example, an ABCT can better ensure the success of a combined-arms breach or the seizure of a city if it is able to simultaneously deny enemy air-defense artillery with an EA-18G Growler (jamming-capable aircraft), deny FM signals with an EC-130H Compass call, deny JCR with a cyberattack, and deny recon or third-party communications with Wild Bill.

If a BCT like Ironhorse is the primary battlespace owner in an LSCO environment, it must also extend its influence throughout the cyberspace domain on a scale greater than Wild Bill. Ironhorse foresees the creation of an entire EW company to better shape cyberspace at the BCT level. Under the command of a cyber and EW officer (Functional Area 17B), this company will be tasked to conduct information dominance within its brigade's area of operations (AO). Its primary tasks would include mapping the electromagnetic environment, locating key command-and-control (C2) nodes and denying, degrading or deceiving enemy tactical-information systems. The company would be fully nested with CEMA and the S-2 to accomplish cyberspace echelons of fire that are desperately needed in the decisive-action environments of the future.

Figure 6. VROD mounted on the Wild Bill BFIST in a collection site.

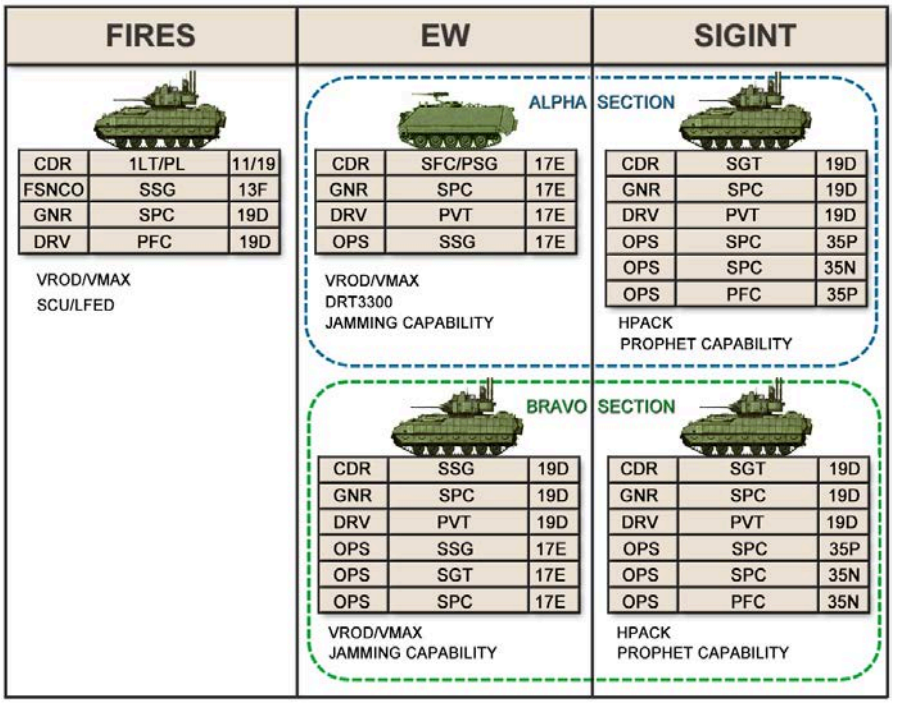

Figure 7. "A way" to update Wild Bill.

Accomplishing these tasks would require expansion of the current CEWI structure into three platoons as well as more capabilities task-organized to the company. The primary ES platoon would operate in tandem with a SIGINT section much like the current

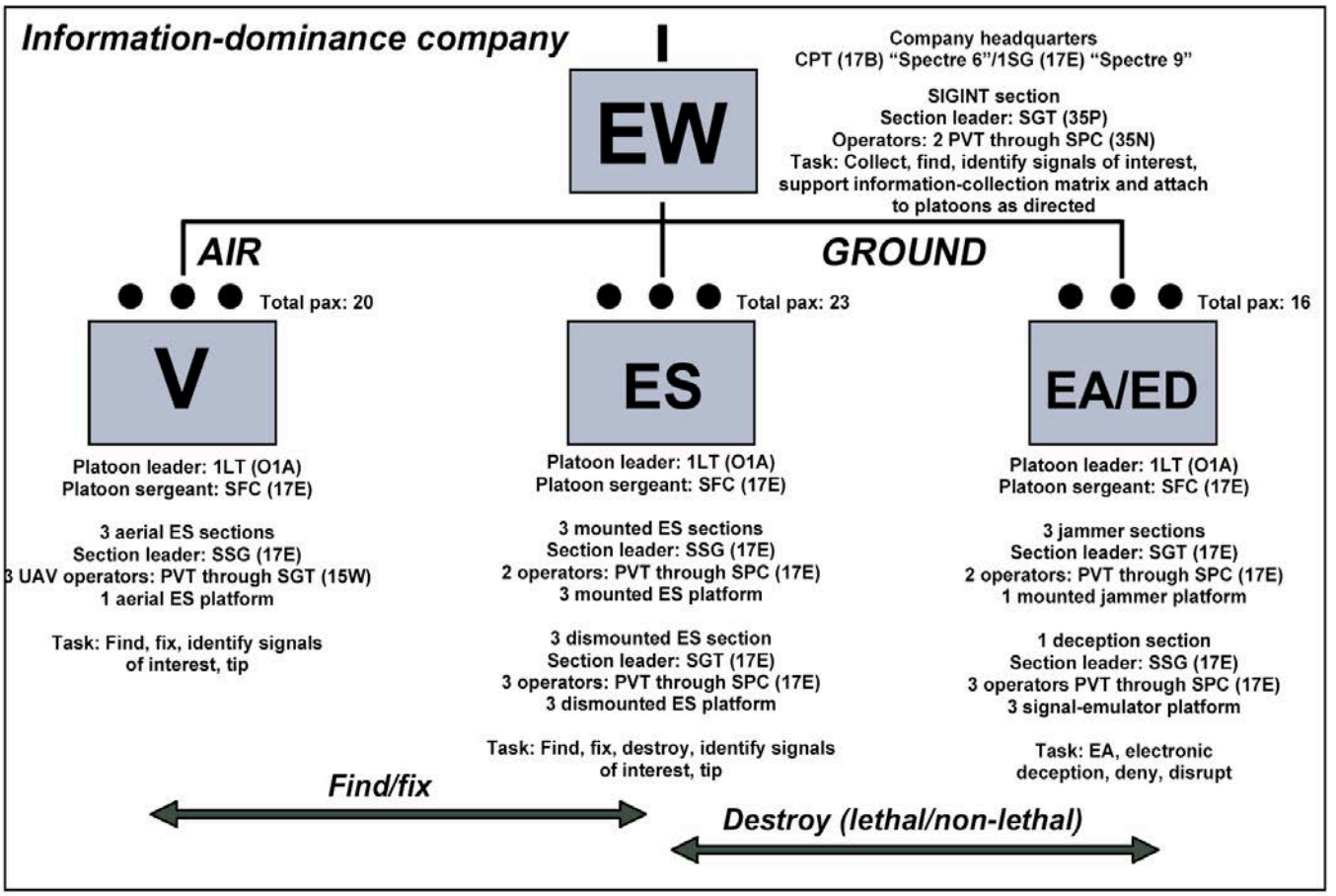

Figure 8. Projected information-dominance company.

Wild Bill structure. It would be tasked to conduct ES to find, fix and destroy enemy emitters and C2 nodes through DF. The second platoon would focus on conducting EA to degrade and deceive enemy information systems. Finally, the third platoon would conduct ES with organic unmanned aerial vehicles (UAV) armed with EMS sensors.

The two ground platoons can be fielded by acquiring more program-of-record systems to the BCTs, with the addition of more EW personnel who are projected in the current force-design update. The third aviation platoon will require fielding an ES-capable UAV platform and more operators. Fielding this third platoon would be decisive in shaping the cyberspace domain within a BCT's AO. This platoon will allow the sensors to get above terrain and see the EMS past the close fight and into the deep zone.

The late LTG Hal Moore said, "There is always one more thing you can do to increase your odds of success"; the Ironhorse ABCT is investing time and energy into one of those things. The progress accomplished in the Ironhorse ABCT is a step in the right direction toward competing in an increasingly disconnected, intermittent and limited environment. With initiatives like the Wild Bill CEWI platoon, Ironhorse will continue to fire and maneuver in the cyberspace domain.

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CPT Matthew Tyree is the brigade EW officer, 1st ABCT "Ironhorse," 1st Cavalry Division. His previous assignments include small-group leader at the Signal Captain's Career Course; weapons-company executive officer, Company D, Task Force 1st Battalion, 28th Infantry, 3rd Infantry Division, Fort Benning; assistant plans officer, Task Force 1-28 Infantry, 3rd Infantry Division; weapons-platoon leader, Company D, Task Force 1-28 Infantry; and rifle-platoon leader, Company B, 2nd Battalion, 69th Armor Regiment, 3rd Brigade, 3rd Infantry Division. CPT Tyree's military schools include the Infantry Officer Basic Course and the Signal Captain's Career Course. He has a bachelor's of science degree in physics from the

University of North Georgia. CPT Tyree also earned the Basic Army Instructor Badge.

CPT Bill Malcolm is the Wild Bill CEWI platoon leader, 1st ABCT "Ironhorse," 1st Cavalry Division. His previous assignments include scout-platoon leader, 2-5 Cav, 1st ABCT, 1st Cav Division; platoon leader, Company A, 2-5 Cav, 1st ABCT "Ironhorse," 1st Cav Division; and plans officer, 2-5 Cav, 1st ABCT "Ironhorse." CPT Malcolm's military schools include University of Connecticut Army Reserve Officer Training Corps (distinguished military graduate), Infantry Basic Officer Leader Course, Ranger School, Airborne School and the Bradley Leader Course. He has a bachelor's of arts degree in history with a concentration in American studies from Eastern Connecticut State University. CPT Malcolm also earned an Expert Infantryman Badge, Ranger Tab and Parachutist Badge.

For more information

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Figure 9. The EWTV takes the high ground.

Acronym Quick-Scan

ABCT – armored brigade combat team
AO – area of operations
ATCAE – Army Technical Control and Analysis Element
BCT – brigade combat team
BFIST – Bradley Fires Support Team Fighting Vehicle
C2 – command and control
CALFEX – combined-arms live-fire exercise
CEMA – cyber-electromagnetic activities
CEWI – combat electronic warfare and intelligence
COIN – counterinsurgency
COTS – commercial-off-the-shelf
DF – direction-finding
EA – electronic attack
EMS – electromagnetic spectrum
ES – electronic support
EW – electronic warfare
EWPMT – Electronic Warfare Planning Management Tool
EWTV – Electronic Warfare Tactical Vehicle
FLOT – forward-line-of-own-troops
FM – frequency modulation
FM – field manual
GUI – graphical user interface
JCR – Joint Capabilities Release
LoB – line of bearing
LSCO – large-scale combat operations
METL – mission-essential task list
MOS – military-occupation specialty
MRAP – mine-resistant ambush-protected
MTOE – modified table of organization and equipment
NAI – named area of interest
OPFOR – opposing force
PIR – priority intelligence requirement
SALT – size, activity, location, time
SC/PT – single-channel plain text
SIGINT – signals intelligence
UAS – unmanned aerial system
UAV – unmanned aerial vehicle
VROD – Versatile Radio Observation and Direction (system)

Reconnaissance in the Multinational Environment: Successful Integration of Allies and Partners into the Reconnaissance Fight

by CPT Jordan L. Woodburn and CPT Scott A. Drake

Timely and effective communication is paramount to mission success in reconnaissance operations. Commanders require accurate reports to make decisions and adjust their plan to best fit the problem sets the battlefield presents.

At the Joint Multinational Readiness Center (JMRC) in Hohenfels, Germany, many North Atlantic Treaty Organization (NATO) allies and partners come to train alongside American units. Often multinational elements find themselves under a common headquarters. With limited means of communication due to differing platforms, the transfer of data and valuable priority intelligence requirements (PIRs) becomes a unique challenge that must be solved to achieve key tasks and succeed in multinational operations.

During the past seven rotations, effective methods of multinational integration at the company and battalion levels into reconnaissance operations have emerged.

Plan

The first step in integrating a unit comprised of multinational allies and partners is to understand the capabilities of their formations. The most effective way to do this is to demonstrate and explain the capabilities of forces (especially special-purpose forces) using briefings and static displays. This enables leaders and Soldiers to see what an ally or partner can bring to the fight and how they get it there. This is especially useful in reconnaissance operations, where the ability to observe named areas of interest is directly correlated to answering intelligence gaps and information requirements for the higher command.

To be effectively implemented throughout the planning process, units should focus on the following areas when explaining their capabilities: intelligence-collection procedures, resource constraints and additional support requirements. This will "encourage active collaboration among all organizations affected by the pending operations to build shared understanding"[1] and inevitably lead to a more synchronized operation.

Special considerations are made to command-support relationships between multinational allies and partners and their U.S. counterparts. With differing definitions among U.S. doctrine and NATO terminology, the actual mission-command authority can become convoluted. Commanders ensure that appropriate headquarters are assigned to multinational units to enable effective decision-making and incorporation into all levels of planning. "The unit leaders should come to a consensus on which command relationships the brigade will use (U.S. or NATO)"[2] to ensure all subordinate elements are effectively employed.

Command-support relationships become extremely important when considering sustainment planning. This is because of the unique problem set that differing vehicle variants create among formations. For example, a light-infantry battalion may not be equipped to handle the logistical requirements a tank-company presents. For this reason, leaders at echelon consider what effects a task-organization may have on the parent unit. These considerations are identified during planning and practiced at sustainment rehearsals.

Effective coordination in reconnaissance between multinational forces requires integrated planning. This begins during mission receipt and the military decision-making process (MDMP). All multinational forces should be included throughout the MDMP or comparable planning process. Though a liaison officer (LNO) can serve adequately as a representative for the unit throughout the planning process, the commander of the attached force should regularly attend key discussions/briefings of the MDMP, including wargaming and the course of action (CoA) approval briefing.

There is no replacement for commander-to-commander dialogue at all levels of operations. This will enable the commander to "assist in developing shared understanding and purpose"[3] and to ensure his or her unit is effectively being employed to aid in mission accomplishment and properly resourced to do so. Without being

Figure 1. Commanders discuss scheme of maneuver.

Authority	Full command	NATO operational command	NATO operational control	NATO tactical command	NATO tactical control
Direct authority to deal with nations, diplomatic missions and agencies	X				
Granted to a command	X	X			
Delegated to a command			X	X	X
Set chain of command to forces	X				
Assign mission/designate objective	X	X			
Assign tasks	X	X		X	
Direct/employ forces	X	X	X		
Establish maneuver control measures	X	X	X	X	X
Reassign forces	X				
Retain operational control	X	X			
Delegate operational control	X	X	X		
Assign tactical command	X				
Delegate tactical command	X	X	X		
Retain tactical control	X	X	X		
Deploy force (information / within theater)	X	X	X		
Local direction / control designated forces	X				X
Assign separate deployment of unit components	x	X			
Directive authority for logistics	X				
Direct joint training	X				
Assign / reassign subordinate commanders / officers	X				
Conduct internal discipline / training	X				
The national authority always retains FULL COMMAND by Allied doctrine.					
	Has this authority				
	Denied authority or not specifically granted				

Figure 2. Comparison of U.S. and NATO command relationships *(Adapted from Field Manual 3-16)*.

properly included in the CoA's initial development, multinational partners and allies cannot be fully implemented into the operation's unity of purpose.

Units conducting reconnaissance operations with multinational allies and partners pay special attention to developing and maintaining the task force's common operating picture (COP). This is imperative due to the increased risk of friendly-fire incidents from improper positive identification of enemy targets.

To maintain an effective COP, units ensure the appropriate maintenance and dissemination of analog graphics. "For clarity and risk reduction, units must use overlays with control measures from a scaled topographical map and distribute overlays to subordinate units."[4] Graphic control measures such as restrictive fire lines, boundaries, no-fire areas and reconnaissance hand-over/battle hand-over lines are crucial to successful integration of multi-national allies and partners. This is because of the risk reduction that they provide to the using force.

Also, operations such as forward-passage-of-lines and rearward-passage-of-lines are constructed using delineated lanes and coordination points to promote adjacent unit coordination and synchronized shifting of area of operations responsibility.

Prepare

Joint rehearsals are extremely important in ensuring the planning process has accomplished mission synchronization and shared understanding. All unit commanders should attend brigade- and battalion-level combined-arms rehearsals. During these rehearsals, staffs and commanders determine how the scheme of maneuver fits into time, space and terrain.

Also, commanders discuss how information will be transferred between units because of the importance PIRs play in an operation. "Commanders require timely and accurate information during the execution of operations to maneuver and direct future combat operations against the enemy."[5]

Figure 3. A French Leclerc tank maneuvers. *(Photo by Daniel Steger)*

Information flow is an especially delicate part of the operation due to the number of varying communications platforms that may be present throughout different formations. Many multinational forces do not have the capabilities to communicate with U.S. forces unless using a single-channel, plain-text frequency, which is much more vulnerable to interference and outside intelligence-gathering efforts.

This inevitably calls for the co-location of command posts (CPs) or the use of LNOs at both U.S. and multinational command nodes. In reconnaissance operations, timely reporting can directly lead to mission success or failure due to the ramifications of ill-advised decision-making by commanders. By co-locating CPs, commanders at multiple levels can maximize the use of available communication platforms to rapidly share information gathered by adjacent units. This is vitally important in missions such as the screen, where PIR dedicated to the identification of the main body may have a latest-time-information-is-of-value that expires quickly due the necessary repositioning of defensive forces to meet the advancing threat.

In a recent rotation, a Netherlands reconnaissance troop was overwhelmingly successful in providing information rapidly to their adjacent units because of the areas in which they emplaced their key leaders. The commander of the troop split from his CP to move to the TOC of his "reconnaissance customer." As information flowed from his surveillance sites, he was able to rapidly pass this

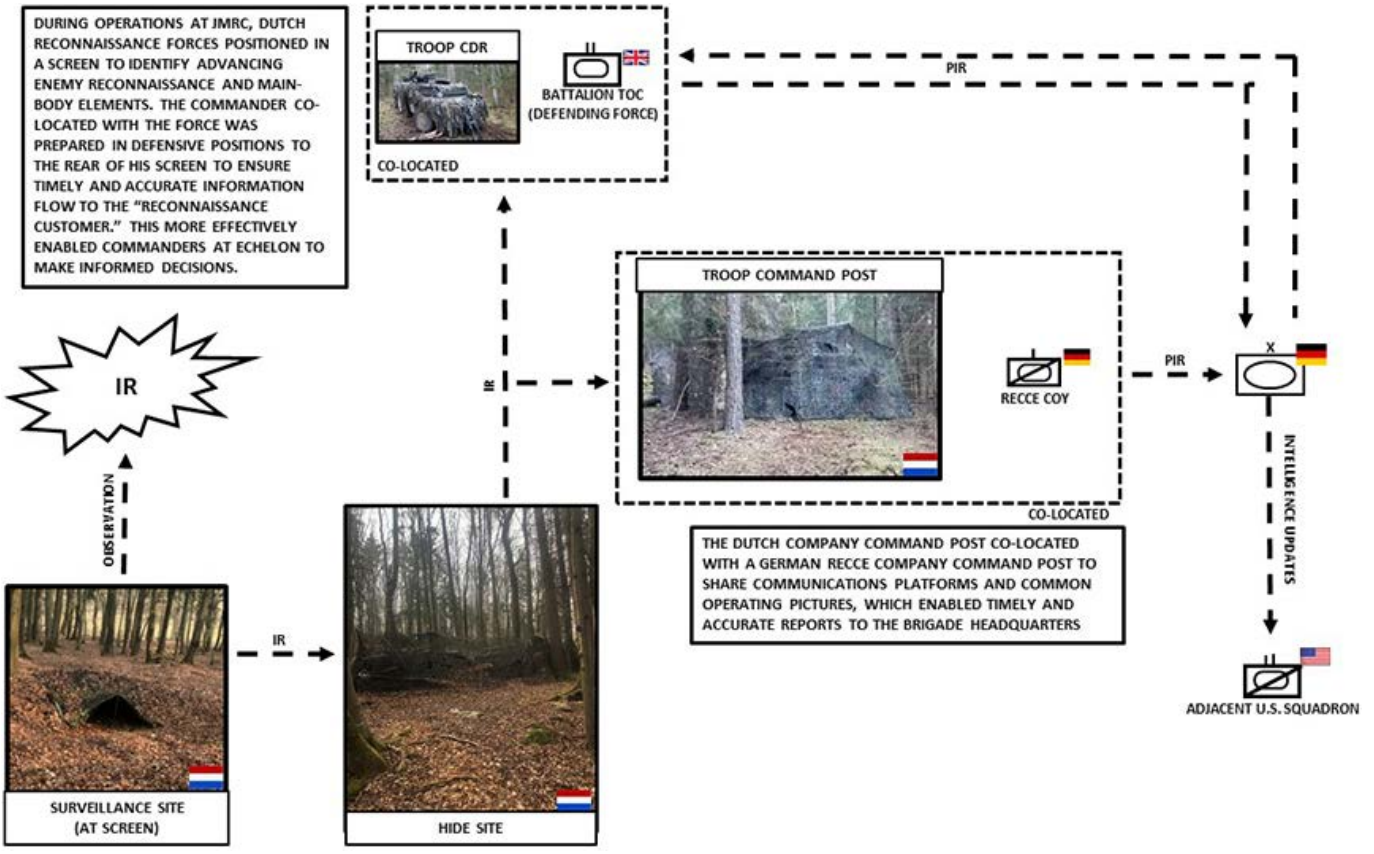

Figure 4. Example of effective information flow among multinational and U.S. reconnaissance forces.

information. This information went directly to the commander and staff of the unit that was prepared in a defense position behind the troop's screen.

This directly enabled timely decision-making and allowed the commander of the defending force to make decisions to reallocate forces to subsequent, alternate or supplementary battle positions based off the enemy's scheme of maneuver. This also gave the reconnaissance-troop commander the ability to compare COPs, coordinate emergency sustainment resupply (if needed) and maximize options for casualty care in the event of chance contact.

Units develop methods of marking to assist understanding of multinational vehicle identification at echelon. These methods of marking are created and refined during the unit's planning process and then employed to ensure that Soldiers at all levels and across formations can accurately identify friendly vehicles on the battlefield. Markings include both day and night identification means. In the European theater of operations, where many allies and partners share the same vehicle variants as some potential adversaries, this is a critical endeavor. Friendly-fire incidents are an inherent risk in multinational operations and require deliberate mitigation.

Execute

Following mission planning and preparation, operations including multinational and U.S. forces require constant communication and synchronization through the use of strategically placed liaison teams. These liaison teams must be involved in both current operations and future operations-planning processes. This enables calculated decision-making by commanders and staffs and ensures that multinational formations are employed where and when they can be most beneficial to the fight. This liaison team includes the multinational unit's communication platforms to enable timely and accurate reporting of applicable PIR and unit locations.

The upkeep and accurate depiction of the COP is important to ensuring that all subordinate elements have a shared understanding of adjacent unit locations. This may require more analog emphasis due to the lack of compatible digital communication systems in multinational formations. This requires more effort on the part of the commanding unit's staff to ensure that updates to multinational locations and movements are disseminated to all elements of the formation, and vice versa. "Development of the COP is ongoing throughout operations."[6]

To solve the issue of timely and accurate transmission of intelligence, units have historically employed the tactical voice bridge (TVB) within their command nodes. While this is a realistic solution, it does not replace the need for effective liaison operations at all levels due to the language barrier that can divide a U.S. and multinational force. Co-locating digital communication means such as Joint Battlefield Command-Platform (JBCP) and multinational systems may require changes to existing TOC layouts but enables timely and effective transfer of information.

Operators can ensure that as units move or changes are made to graphic control measures, they are perfected on both systems. Units preparing for operations with multinational partners also "establish a command post SOP for each configuration."[7]

Lastly, units "prepare draft communications exercises and digital-exercises plans with the intent of executing the systems validations" of the unit primary, alternate, contingency and emergency communications plan.

Conclusion

To be effective in a multinational environment, reconnaissance formations first maximize their understanding of attached multinational ally and partner capabilities. Effective operations among U.S. forces, allies and partners require implementation of adjacent units in the planning process as early as possible. In addition to using LNOs among formations, commander-to-commander dialogues and joint rehearsals can ensure shared understanding and operational synchronization.

Lastly, by employing systems such as the TVB, U.S. forces and multinational units can multiply the number of communication platforms they have at their disposal. Success in multinational operations begins before units arrive in theater and hinges heavily on critically thinking through where LNOs, TVBs and CPs should be placed to be most effective. By planning for and employing these considerations, reconnaissance formations enable more effective information flow and overall mission success.

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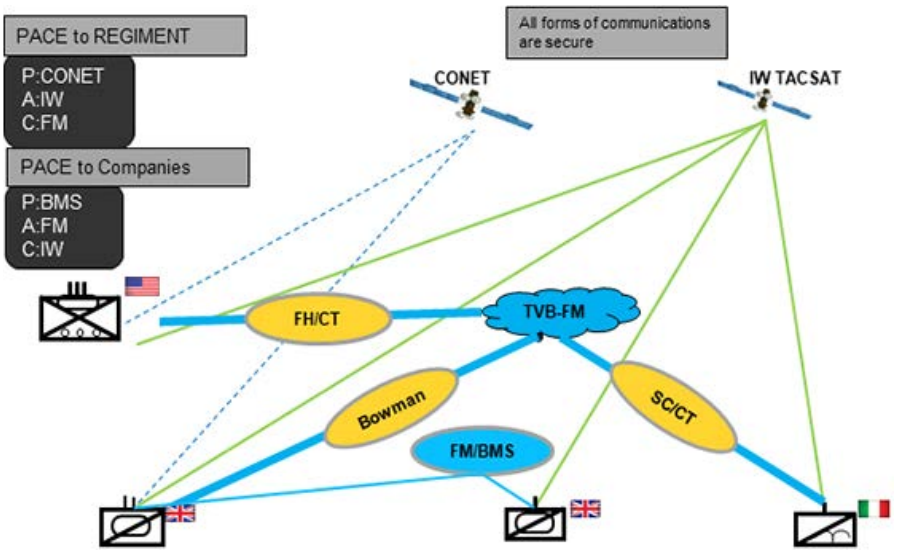

Figure 5. TVB. *(Graphic by MAJ Daniel Kempen)*

2nd Armored Brigade Combat Team (ABCT), 3rd Infantry Division, Fort Stewart, GA; commander, Company D, 1st Battalion, 64th Armor Regiment, 1st ABCT, 3rd Infantry Division, Fort Stewart; Long-Range Surveillance Detachment leader, Company C, 3rd Squadron, 38th Cavalry Regiment, 201st Battlefield Surveillance Brigade (BfSB); and cavalry-platoon leader, Troop B, 3-38 Cav, 201st BfSB. CPT Woodburn's military schools include the Cavalry Leader's Course, Maneuver Captain's Career Course, Ranger School, Armor Basic Officer Leader's Course (ABOLC), Air Assault School, Airborne School and Pathfinder School. He has a bachelor's of science degree in political science from The Citadel, The Military College of South Carolina.

CPT Scott Drake is the cavalry squadron/signal O/C/T at JMRC. His previous assignments include commander, Signal Intel and Sustainment Company, Headquarters and Headquarters Battalion, 1st Armored Division, Fort Bliss, TX; S-6, 1st Battalion, 36th Infantry Regiment, 3rd Stryker BCT, 1st Armored Division, Fort Bliss; scout-platoon leader, Troop A, 1-32 Cav, 1st Infantry BCT, 101st Airborne Division, Fort Campbell, KY; and executive officer, Security Force Advisory and Assistance Team, Headquarters and Headquarters Battery, 2nd Battalion, 320th Field Artillery Regiment,101st Airborne Division. CPT Drake's military schools include the Signal Captain's Career Course, ABOLC, Army Reconnaissance Course, Air Assault School and Airborne School. He has a bachelor's of science degree in history from North Georgia College and State University and a bachelor's of science degree in telecommunications management from DeVry University.

Notes

[1] Army Doctrine Publication (ADP) 5-0, ***The Operations Process***.

[2] Center for Army Lessons-Learned (CALL) Handbook 16-18, ***Multinational Interoperability***.

[3] ADP 5-0, ***The Operations Process***.

[4] CALL Handbook 16-18, ***Multinational Interoperability***.

[5] Field Manual 3-98, ***Reconnaissance and Security Operations***.

[6] Army Doctrinal Reference Publication 6-0, ***Mission Command***.

[7] CALL Handbook 16-18, ***Multinational Interoperability***.

Acronym Quick-Scan

ABCT – armored brigade combat team
ABOLC – Armor Basic Officer Leader's Course
ADP – Army doctrinal publication
BCT – brigade combat team
BfSB – battlefield surveillance brigade
CALL – Center for Army Lessons-Learned
CoA – course of action
COP – common operating picture
CP – command post
JMRC – Joint Multinational Readiness Center
LNO – liaison officer
MDMP – military decision-making process
NATO – North Atlantic Treaty Organization
O/C/T – observer/coach/trainer
PIR – priority intelligence requirement
SOP – standard operating procedure
TOC – tactical-operations center
TVB – tactical voice bridge

Defense of Harmony Church: 1-81 Armor Training in Coronavirus-19 Conditions

by LTC Bradley S. Nelson and CSM Brandon Petersen

The 1st Battalion, 81st Armor Regiment, as part of the 194th Armored Brigade strategy informed by the Armor School and Maneuver Center of Excellence (MCoE), shaped its response to the novel coronavirus (COVID-19) pandemic using the characteristics of the defense where applicable.

The battalion planned and prepared an area defense of its key terrain to create the conditions to conduct its operational mission.

The 1-81 Armor conducts 19K Armor Crewman one-station unit training (OSUT), 91A Abrams Tank System Maintainer advanced individual training (AIT), 91M Bradley Fighting Vehicle System Maintainer AIT and the additional-skill identifier (ASI) H8 Heavy Vehicle Recovery Course.

The battalion continues to execute and assess the COVID-19 area defense while generating trained tankers and mechanics for the Army.

Although comparing our COVID-19 response to combat operations can break down if attempted too literally, once we started thinking about the virus as an "enemy," the battalion's leaders responded quickly to the familiar language and concepts of the defense.

We found this framework gave us a commonly understood structure on which we could arrange and analyze multiple streams of information about the pandemic.

By early March 2020, our chain of command on Fort Benning, GA, focused on working through the best information available and designing the best courses of action.

One thing we knew: If COVID-19 widely infected the training base and prevented training, readiness for operational armor brigade combat teams (ABCTs) would decrease.

The battalion assessed mass infections (company-sized outbreaks) as the "enemy's" most-dangerous course of action (MDCoA).

Figure 1. Trainees thrived in the "bubble" and kept practicing crucial 19K10 tasks in the field. *(U.S. Army photo)*

Plan

Once we recognized those dangers, 1-81 Armor immediately planned against MDCoA. We developed a simple area defense. We knew we had to create specific conditions before our tank and wrench companies could conduct their OSUT and AIT training. We made a simple plan and published our operations order (OPORD) March 13. The plan essentially outlined social distancing, hand-washing and barracks-sanitization instructions.

Looking back on our efforts, we realized we still had a lot to learn. To highlight this point, recently we looked at the pictures from the OPORD brief where the battalion leaders were proudly standing together beside a National Training Center-grade terrain model, and all recipients stood shoulder-to-shoulder getting the order. We did pass around hand sanitizer, at least.

The battalion received confirmation and backbriefs and then conducted our rehearsal March 14, again shoulder-to-shoulder. Company commanders had several questions we could not answer, so we planned Fragmentary Order (FRAGO) 1 to follow shortly. Our U.S. Army Training and Doctrine Command (TRADOC) leadership disseminated all lessons-learned from U.S. Army leaders in Korea and Europe. We read and watched GEN Robert Abrams' press conference from March 13.

We watched BG Christopher Norrie's video address from Grafenwoehr, Germany, about why we must continue training. We learned from our sister training brigades like 316th Cavalry Brigade's published guidance.

We integrated those lessons and techniques into FRAGO 1, which was much more executable. FRAGO 1 contained the mission and commander's intent we used through May 2020.

Mission: 1-81 Armor defends Area of Operations (AO) Red Knight (all battalion buildings, training areas, ranges, facilities, vehicles, simulators, classrooms, break rooms, etc.) against the spread of COVID-19 from

March 17 to May 31 to allow companies to transition civilians into Soldiers in OSUT and AIT.

***Purpose**. The No. 1 priority is to prevent the spread of the virus that causes COVID-19 and prepare for COVID-19-infected Soldiers and Department of the Army civilians if prevention fails. These counter-COVID operations give us the cover we require as we conduct our operational mission: Generate combat power for brigade combat teams (BCTs) by transforming volunteers into ARMOR READY Soldiers.*

Key tasks

- ***Security is the first priority of work**. Before COVID-19, the gate guards established security at the gates of Fort Benning. Now, COVID-19 is our relentless and dangerous enemy. The new enemy must be engaged at every building and training area, at every workstation and vehicle, in every classroom and during every chow period. "Protect the bubble" with entry-control points (ECPs), screening and hand-washing before entry anywhere.*
- ***Protect the force.** If you are not ordered to work, then stay home and stay healthy. The battalion limited training to graduation requirements with few exceptions. We must have healthy trainers to carry on the operational mission. Screening, cleaning everything, hand-washing and seclusion – if required – protects our trainers, families, communities and trainees.*
- ***Nothing is "business as usual."** Use all your experience, discipline, intelligence and initiative to fight COVID-19 while conducting our operational mission. Our ABCTs will not get a second chance at being ready when and if our nation calls. We cannot stop training; we cannot afford to.*
- ***Don't ignore yourself**. We are fighting a state-of-mind hard-earned in combat – it is hard to change. However, if you are experiencing the symptoms, seclude yourself until we get a medical opinion. All of you are tough or you would not be here.*

***Endstate:** AO Red Knight remains clear of COVID-19 or is deliberately cleared of COVID-19. BCTs and Army National Guard units continue to receive trained 19Ks, 91As, 91Ms and ASI H8-awarded Soldiers. COVID-19 is unable to influence Red Knight Soldiers, Department of the Army civilians, families and trainees or our critical operational mission.*

Figure 2. Tank instructors mitigated risk with screening, masks and sanitation of all surfaces to continue training in the tank turrets. *(U.S. Army photo)*

Prepare

Logistics. The battalion S-4's expert running estimates were key to our logistics fight, especially for hand sanitizer, hand soap, bleach wipes, bulk bleach and other cleaning supplies. Our plan required emergency quarantine tents for each company, so the S-4 quickly added general-purpose medium tents, cots, light sets and company-level power-generation capabilities to the estimate. Finally, masks emerged as a technique to fight transmission of the virus, so we meticulously tracked masks as they moved from vendors across the world to the battalion. Critical to maintaining our screening was early ordering of "no-touch" infrared thermometers, which helped us monitor body temperatures quickly.

Risk assessment by task and event. Each OSUT company, the three divisions of the Ordnance Training Department (Abrams Training Division, Bradley Training Division and Ground Mobility Division), the Common Driver Trainer (tank-driver simulator in Wood Simulations Center) and the battalion headquarters conducted very deliberate, task-by-task assessments of the risks of infection transmission in our programs of instruction. Each unit's leader detailed when and where we had to train with Soldiers inside six feet, for instance, for every task or event.

The leadership examined all those risks, and we made some great adjustments. From the thousands of discreet training tasks or events, we cancelled combatives and pugil training.

That's it. Leaders created conditions and the "bubble" for us to conduct everything else. It took time and bridging techniques to implement all the control measures (we used gaiter necks until we got better masks, for instance), but we did not miss any graduation requirements.

Rehearsals. Fort Benning activated its Emergency Operations Center (EOC), among many steps, to prepare to respond to coronavirus. All units received COVID-19 screening questions and detailed flow charts that described how to react to various screening-question responses. Company

leadership practiced permutations of screening results and rehearsed company actions according to the medical directions.

Messaging. The 1-81 Armor and other training battalions emphasized communicating with family and friends of our trainees. By the second week of March 2020, our MCoE leadership learned enough to cancel graduations and family days on Fort Benning. Understandably this caused inconvenience and some angst among our trainees' loved ones. Along with all the training units, we disseminated information as quickly and clearly as possible. We used battalion and company Facebook pages and leveraged Twitter at the battalion level. "Ask the battalion commander and command sergeant major" was a question-and-answer series on Twitter that allowed family and friends to directly access the battalion leadership. Constant communication disrupted some rumors and brought some tranquility to the information environment.

Execution

Create conditions and positions of advantage. "Setting conditions" is often glossed over, briefed without substance or is ill-defined. Therefore we defined conditions that create and sustain the safe "bubble" to facilitate training. The battalion leadership had to either create or recognize safety conditions every day before we started training:

- **Control of the AO.** Companies and ordnance divisions changed behavior quickly. Entrances/exits used for years were placed off-limits. They established ECPs to control exactly who entered each building in battalion. This screening force cost the companies combat power, but the protection from vectors was worth it. Early on, especially in our large maintenance buildings and motorpools, first sergeants went on patrol, challenged anyone they did not know and asked if they had been screened for COVID-19 before entry. It took time to build the defense, and we fought complacency throughout.
- **COVID-19 screening.** Battalion teams screened each officer, noncommissioned officer (NCO), Soldier, Department of the Army civilian and trainee in 1-81 Armor for COVID-19 daily. Battalion teams screened every human at the entrance of every building, regardless of how many previous screenings. Fort Benning continued to update the questions and flow charts with the latest symptoms and techniques. The battalion equipped each screening table with infrared thermometers to measure temperatures. We screened privates to three-star generals during our defense.
- **Cleaning and sanitizing.** First Battalion, 81st Armor, increased its workspace cleaning to no less than twice daily. Before and after work, we cleaned our areas. Barracks cleaning became maniacal. Drill sergeants managed bleach drills and wipe-down drills constantly. We paid heavy attention to common areas, doors, desks, chairs, bunks, wall lockers, latrines, showers, floors and sinks. If the virus penetrated the defense, we destroyed the conditions required to live outside the human body. We cleaned combat-vehicle controls and switches in the tanks. We cleaned tools and toolboxes in the maintenance bays. We cleaned our tank-driver simulators incessantly.
- **Hand-washing.** We required handwashing with warm water and soap for 20 seconds every three hours or at least hand sanitizer if in the field. We trained and constantly reminded ourselves not to touch our faces.
- **No massing.** We quickly adopting social distancing, then renamed it tactical dispersion following TRADOC leadership. We stopped conducting company formations. We deemed platoon formations "suspect." Squad-size, double-arm interval "formations" were the rule. Physical training (PT) became squad PT, and it was better. Army Combat Fitness Tests (ACFTs) (we did not stop ACFTs for the trainees) took longer, but we achieved the standards. Leaders cleaned equipment after each use and spread out physically. We closed the dining facility's dining rooms and conducted field feeding from mermites for breakfast and dinner. We ate Meals-Ready-to-Eat for lunch, and all on-duty Soldiers ate meals outside and dispersed.
- **Masks.** The battalion initially wore neck gaiters as our face covering but migrated to manufactured facemasks as they became available. Cadre and trainees wore masks almost all the time. Whenever physically possible, we prevented droplets from spreading by wearing good masks.

Every day our leaders had to assess whether these conditions existed in their AOs. If yes, we could begin training. If no, we had to rectify the deficiencies before proceeding. Nothing was more important than protecting the force. The defense allowed us to train safely.

Assess

Constant assessment of our operations process and leader engagements at every level held the line against COVID-19. When the enemy did penetrate, our leaders were ready.

On April 17, a full month after our counter-COVID-19 operations order, a cadre member became sick at home overnight. By this time all personnel were well-trained in recognizing the symptoms of COVID-19; the cadre member called an ambulance, and the medical staff at the hospital tested him for COVID-19. The instructor contacted the chain of command, who took immediate, rehearsed action.

Battalion leaders identified all of that instructor's recent students, and the leadership secluded them in a prepared company seclusion area. The EOC activated Fort Benning's preventive-medicine team, who conducted contact tracing with the cadre member and inspected the workspace. The company commander closed the workspace while awaiting test results to let the situation develop.

We received notification that the instructor's COVID-19 test results were positive three days after the test. As planned and out of an abundance of caution, the leadership moved the instructor's four students into quarantine elsewhere on Fort Benning. The students spent several days there, and battalion leadership released those without symptoms back to the unit in a few days. The precautionary steps

the company took likely prevented a larger outbreak. All those trainees and the instructor wore masks. They observed correct distancing, never making close contact with each other. They washed their hands often and cleaned all the training aids before and after use. The instructor recovered, and battalion leadership cleared him to return to work.

In conclusion, during early March 2020, 1-81 Armor struggled to understand what the ramifications of the emerging pandemic would have on the battalion and its mission. We stumbled through the early days, finally settling on familiar and common language of defensive operations to organize our response. We knew we had to defend our key terrain to establish conditions for us to create world-class tankers and mechanics.

Eventually, we made contact with the COVID-19 enemy and successfully stopped its penetration due to detailed planning, preparation, execution and assessment by engaged leaders.

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Figure 3. 1-81 Armor M1 tank instructors never paused motorpool or field training. *(U.S. Army photo)*

Acronym Quick-Scan

ABCT – armor brigade combat team
ACFT – Army Combat Fitness Test
AIT – advanced individual training
AO – area of operations
ASI – additional-skill identifier
BCT – brigade combat team
COVID – coronavirus
ECP – entry-control point
EOC – Emergency Operations Center
FRAGO – fragmentary order
IBCT – infantry brigade combat team
MCoE – Maneuver Center of Excellence
MDCoA – most-dangerous course of action
NCO – noncommissioned officer
OPORD – operations order
OSUT – one-station unit training
PT – physical training
TRADOC – (U.S. Army) Training and Doctrine Command

Enablers at Echelon: Scouts and Mortars Task-Organized to Maneuver Company

by CPT Stephen J. Cumby

The following recommendations are based on personal experiences from National Training Center (NTC) Rotation 19-06, during which I commanded Company C (Tank), 1st Battalion, 5th Cavalry Regiment. The "Black Knights" are part of the infantry combined-arms battalion (CAB) for 2nd Armored Brigade Combat Team (ABCT) "Black Jack," 1st Cavalry Division.

This was our first "no order" rotation. We (at echelon) received two base operations orders: one prior to our start point from the rotational-unit bivouac area and one prior to the live-fire.

The rest of the orders came as fragmentary orders (FRAGOs) at varying degrees of "flash to bang" within the execution timeline.

Throughout the rotation, 1-5 Cav executed most of its operations in NTC's Northern Corridor. The battalion conducted several movements-to-contact due to the consistent reapplication of combat power by the opposing force (OPFOR), allocation of collection assets to other brigade priorities and uncertainty of the enemy situation.

Initially my company found itself executing Black Jack 6's (call sign for the battalion commander) intent as a brigade reserve in the defense, committing in and around the Matterhorn. Following, we resumed our role with 1-5 Cav, leading four offensive operations through the Northern Corridor with varied degrees of success.

However, by task-organizing the battalion scouts and mortars to my company, the battalion found success with our rapid ability to identify the enemy's location, composition and disposition; to develop the situation; and to defeat the formation with maneuver and fire.

For brevity, I'll address the first and second operations only (the third and fourth operations' task-organization was highly similar to their predecessors).

What doctrine says

Our doctrine currently defines movements-to-contact, their successful attributes and general tactical formation but overlooks potential task-organization (with the exception of combat engineers) to conduct the mission effectively.

The definitive purpose of establishing contact and developing the situation while maintaining freedom of action is highlighted by the executing unit's ability to quickly react to the enemy situation. While tempo is not mentioned in the movement-to-contact section of Army Techniques Publication (ATP) 3-90.5, ***Combined-Arms Battalion***, some form of speed is referenced several times in the discussion. For example, ATP 3-90.5 says that doctrine requires executing units to "quickly determine the size and activity of the enemy force" and place "fires on lead enemy forces. Speed of decision and execution is critical." Also, the advance-guard "commander maintains pressure on the enemy by fire and maneuver. He (or she) probes and conducts a vigorous reconnaissance … to determine the enemy's exact location, composition and disposition. The advance guard immediately transmits this information to the CAB commander."

The security force's mission, similarly, focuses its reconnaissance on the enemy, the named areas of interest (NAIs), routes and terrain, while retaining priority of fires, to gain and maintain contact without becoming decisively engaged. However, while not specified, it's generally assumed the security force's analysis and reports (as well as requests for fires, sustainment, evacuation and commitment of more combat power) are strictly reported to the battalion (in a CAB movement-to-contact).

This task-organization faces the problems of communication equipment failure or degradation, time for a staff to process and disseminate information, and time to deconflict organic fires with the advance guard and adjacent units. This can slow the CAB's reaction to and development of the situation. The following missions explore our refinement of the movement-to-contact task-organization to address those problems and best employ doctrine.

First mission

The first operation was an attack from Sadajan through Killer Escarpment and Echo Valley to establish a support-by-fire (SBF) oriented on Alpha and Bravo Passes, and then to pass an infantry company forward to seize key terrain. Ahead of the battalion was one troop from the cavalry squadron oriented on the objective and on Granite Pass; the battalion scouts were in the vicinity of Observation Post (OP) Hill to screen Refrigerator Gap. The company was "pure," with the battalion mortar platoon following to preset mortar firing points (MFPs) to provide coverage. We had two priority 155mm howitzer targets on anticipated enemy defensive positions in and around both Alpha and Bravo Passes.

During this mission, the forward cavalry troop suffered heavy losses from actions with emplaced anti-tank (AT) teams and *boyevaya mashina pekhoty*s – Russian-made infantry fighting vehicles – in defensive postures. The cavalry troop identified more AT locations but could not influence them with direct fire. The troop did not retain the combat power to reconnoiter enemy on our objective.

Upon crossing Killer Escarpment, I requested that the mortars establish an unplanned MFP to cover our movement to Echo Valley due to the troop's limited capability to influence forward enemy positions. We took contact from AT teams, losing one tank, but eliminated the teams with the established mortars. Following that success, and with communication problems with battalion fires, the mortar platoon dropped to our net. In effect, the mortar platoon fell under us until we'd passed the infantry forward.

We confirmed the locations of the remaining cavalry troop and adjacent units. Then, we requested notification of assets entering our area of operations to deconflict fires. We then began a movement-to-contact toward our objective to re-establish contact with the enemy.

The company got very comfortable bounding platoons into overwatch positions and leading with a single platoon, covered within mortar range, then pulling forward the mortars into a new MFP and continuing the maneuver toward key terrain. As we approached Bravo Pass, we made contact with a mechanized-infantry company in the defense and suffered two casualties. Having previously deconflicted fires, our mortars fired smoke and high-explosive rounds within minutes, shaping my lead platoon's and 3rd Platoon's establishment of an SBF, and the subsequent maneuver by myself and my 2nd Platoon. We eliminated the OPFOR company, triggering enemy commitment of tanks and attack aviation to reinforce the pass.

Unable to identify the OPFOR tanks' positions, we awaited resupply of mortar ammunition while we kept busy shooting down helicopters. We also awaited our priority 155m howitzer targets to shape our maneuver against the tanks. The lull cost us tempo as the OPFOR's tanks established an SBF and the 155 missions were reallocated to another battalion.

Despite destroying a few tanks and helicopters, we took significant losses and were unable to successfully pass the infantry onto the objective. The takeaways during this operation were 1) our limitations with no element forward to establish contact with the enemy and 2) shaping maneuver with fires at the company without having to deconflict through battalion and brigade (timely and personal).

Extending security

Immediately following reconstitution of my company, we received a FRAGO to extend the battalion's security posture by 10 kilometers to OP Hill to hold gains made in previous operations while the battalion executed a hasty-planning cycle. Again we were tasked to lead the operation, which I briefed to my leaders as a movement-to-contact given the uncertain enemy situation.

Given the operational tempo and battalion planning cycle, the scouts weren't currently employed following displacement from OP Hill due to enemy counteractions. Knight 6 and Knight 3 agreed to let me "borrow" the scout platoon for our mission, and we were also task-organized with the mortars after our success employing them in the previous operation.

Following aggressive troop-leading procedures, we departed as a robust company team of a scout platoon (still

Figure 1. An M2 Bradley Fighting Vehicle provides security for 2nd ABCT, 1st Cav's tactical-operations center during the brigade's 19-06 decisive-action rotation at NTC, Fort Irwin, CA. *(U.S. Army photo by MAJ Carson Petry, 2nd ABCT, 1st Cavalry Division Public Affairs)*

5x3 with Long-Range Acquisition System trucks and M2s), three degraded armor platoons (Slant 11 during this fight due to maintenance and our executive officer's absence to meet other requirements) and a mortar platoon. The scouts' reconnaissance guidance for this mission was enemy-focused, rapid and forceful, and oriented on NAIs in which I presumed the enemy had hastily emplaced weapon systems and platforms during our reconstitution.

Our scheme of maneuver was simple. The mortars immediately established an MFP to cover the scouts in their initial five kilometers of reconnaissance. (The scouts would set in OPs oriented on my NAIs.) We then bounded our platoons by fightable terrain features and pulled forward the mortars to the next MFP to deploy the scouts and repeat the process.

This task-organization allowed us to organically identify enemy positions and maintain contact with them, and to deploy my tanks under the cover of mortar fires and obscuration to eliminate the enemy formation. It was simple, quick-reacting, synchronized and extremely effective. Further, it gave us the capability to seize and exploit the initiative. After eliminating the enemy security element and owning OP Hill, we continued the same maneuvers through Refrigerator Gap down to the east side of Alpha and Bravo Passes.

We destroyed another mechanized company that was holding the terrain, and we passed our infantry forward to clear the passes, ultimately meeting our commander's intent of owning the passes to prevent envelopment as we extended our lines of communication through Refrigerator Gap.

Second mission

The task-organization of the second mission allowed our company team to meet all requirements of both the security force and the advance guard in a movement-to-contact while rapidly leveraging fires, deploying the formation and developing the situation.

Our scout platoon in later missions proved capable of still answering battalion's priority information requirements while task-organized under us.

Figure 2. U.S. Army Soldiers assigned to 2nd ABCT, 1st Cav Division, patrol an area beside a mountain during Decisive-Action Rotation 19-06 at NTC April 6, 2019. *(U.S. Army photo by SPC Carlos Cameron, Operations Group, NTC)*

Further, the task-organization let the scouts gain, maintain and hand over contact at an accelerated rate directly to the advance guard it impacted. We in turn provided the scouts with responsive mortar fires, sustainment, communication relay and security.

Similarly, by cutting out the multiple-echelon coordination for and deconfliction of the battalion mortars, our fire missions impacted the fight within minutes or shifted within seconds. The significant reduction in processing times for fires missions facilitated an aggressive tempo well suited to the movement-to-contact. Also, it synchronized sustainment efforts with mission timeframes since we owned their operational reach, as we did our tanks.

The net architecture admittedly was cluttered at times. The company command net became home to scouts passing targets directly to platoon leaders, platoons calling for mortar fires and myself issuing orders to two more elements. However, simple radio etiquette and discipline prevented clutter on all but a couple of occasions.

Generally, scouts would lose frequency-modulation communications with battalion quickly into the mission. In response, the scout-platoon leader monitored our company command and his platoon nets, but provided his analysis to battalion through Joint Capabilities Release or relayed through me if the message required articulation.

Our mortars also monitored the company command and platoon nets, and, when necessary, the mortar crews processed missions digitally or through relay with our Bradley Fire-Support Team (BFIST) given the distance from battalion fires.

Despite the additional mission-command requirements, owning the assets allowed us to own the tempo of the fight and apply combat power at the right place and at the right time.

The result was evident in the second mission, when we faced nearly the same enemy situation but only suffered a single casualty (the BFIST got too excited observing fires).

Future CABs conducting a movement-to-contact and leading with a single company should consider a similar task-organization.

Providing the lead company the organic ability to aggressively gain contact,

deploy its formation, develop the situation and rapidly cover maneuver with swift and accurate fires offers the CAB potential to quickly win the initial contact, maintain combat power and exploit the initiative.

The follow-on phases of the operation after the meeting engagement will likely require adjustment of the task-organization to support follow-on operations. As Knight 6, LTC Timothy P. Meadors, stated, "Getting the task-org right is a simple solution to a complex problem."

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Acronym Quick-Scan

ABCT – armored brigade combat team
AT – anti-tank
ATP – Army techniques publication
BFIST – Bradley Fire-Support Team
CAB – combined-arms battalion
FRAGO – fragmentary order
MFP – mortar firing point
NAI – named area of interest
NTC – National Training Center
OP – observation post
OPFOR – opposing force
SBF – support-by-fire

On the Headquarters

by MAJ Amos C. Fox

On the morning of Dec. 16, 1944, disaster struck the U.S. Army. The Germans, in a last-ditch effort to pull victory from the jaws of defeat, launched the opening salvo of what became known as the Battle of the Bulge.

The German operation was predicated on surprise — attacking in deplorable weather through a nearly impregnable forest at a time when the U.S. Army thought German forces were on their heels. They did so to overwhelm and isolate American and other Allied forces, grab the critical road network at Bastogne and secure the port city of Antwerp, all in hopes of bringing the Allies to the bargaining table.[1] The initial phase caught the Americans off guard and left the Allies reeling for several days.

Figure 1. Third U.S. Army commander LTG George S. Patton (left) speaks with BG Anthony McAuliffe, acting commander of U.S. 101st Airborne Division troops defending Bastogne, Belgium, during the Battle of the Bulge in World War II. Patton's and his headquarters' preparation enabled Third Army to conduct a sweep across France and play an instrumental role in defeating the German counteroffensive in the Ardennes. Patton commanded Third Army from 1944 to 1945. (*U.S. Army photo by SFC Luke Graziani)*

However, days prior to the German assault, Third Army's intelligence officer, COL Oscar Koch, had picked up signs the Germans were repositioning forces around the Ardennes, potentially preparing for a large offensive through the region.[2] Koch sounded the alarm to then-LTG George Patton and Third Army headquarters Dec. 7, 9 and 11. After visiting several of his divisions Dec. 12 and coming to a similar conclusion as a result of those visits, Patton directed his headquarters to develop options in the event that Third Army was instructed to reorient operations from its current location around Metz to the north in the vicinity of the Ardennes forest.[3]

On Dec. 16, Patton received a phone call from his superior, then-GEN Omar Bradley, the Twelfth Army Group commander. Bradley, alarmed, informed Patton that the Germans had indeed attacked and that several American divisions were in dire straits.[4] As historian Antony Beevor notes, "All major American headquarters lacked information on the true state of affairs."[5] Patton, having taken heed of his staff's analysis, took Bradley's phone call in stride.

As one analyst noted: "As a consequence of the Third Army's aggressive staff work, Patton was not overly surprised by Bradley's phone call during the evening of the 16th. He was disappointed that he could not continue his offensive toward the Rhine but not surprised by the German offensive. The continuing analysis and planning by his staff and Patton's recognized tactical intuition had allowed him to anticipate the offensive and even draw up contingency plans."[6]

As a result of Bradley's call, Patton directed Third Army's headquarters to develop three possible lines of attack:

- Neufchateau to St. Hubert;
- Arlon to Bastogne; and
- Luxembourg to Diekirch to St. Vith.[7]

Patton's faith in his headquarters and his own tactical foresight proved providential when he was summoned to

the Supreme Allied Commander's (then-GEN Dwight Eisenhower) headquarters in Verdun the morning of Dec. 19.[8]

When Eisenhower queried Patton on what Third Army could do to help, Patton replied that he could attack north with 4th Armored Division, 26th Infantry Division and 80th Infantry Division Dec. 21. Patton's response generated incredulity within the room. Few leaders or staff officers in the room believed that, given the current environmental conditions and Third Army's contact with the enemy, Patton could turn his force 90 degrees to the north and drive straight into another attack.[9]

However, Beevor rightly notes what enabled Patton's aggressiveness during the meeting. Beevor contends, "Third Army staff had not wasted a moment."[10] To be sure, as Patton was meeting with Eisenhower and the assembled Allied commanders and staff representatives, Third Army's headquarters had already started a corps headquarters and combat command from 4th Armored Division moving north, with the rest of Third Army prepared to move by the end of that morning.

Once the meeting drew to a close, Patton telephoned his headquarters, gave the pre-arranged code word indicating which of the three options Third Army was to execute.[11] Through the course of the battle, Third Army's headquarters, in conjunction with Patton's leadership and decision-making, resulted in his force rescuing the beleaguered 101st Airborne Division at Bastogne and subsequently defeating the Germans in Belgium. In doing so, Third Army's exploits during the Battle of the Bulge have gone down in history as one of the U.S. Army's high-water marks.

Third Army's success was a blend of Patton's skill as an officer, coupled with splendid staff work and a bit of luck. Dissecting Third Army's headquarters success during the Battle of the Bulge results in three findings:

- The headquarters understood its purpose, enabling its subordinate units' fighting capacity while maintaining the flexibility to adapt to changing battlefield conditions;
- It was soundly able to control operations, coordinate plans and future operations, and sustain Third Army throughout;
- While wrestling with current operations, the headquarters was able to think, plan and resource into the future, enabling the headquarters to bring time to heel.

Although Army doctrine provides six functions common to all command posts, these functions do not capture a headquarters' *raison d'être*. Therefore, it logically follows that Third Army's performance throughout World War II, but more specifically during the Battle of the Bulge, provides a good point of departure in thinking about the how, why and what of headquarters operations.

Understanding role

To be successful, a headquarters must understand its role. To put it another way, a headquarters must understand its purpose and why it exists in the first place. However, given contemporary headquarters doctrine and operations, it is important to begin the discussion by highlighting what a headquarters is not. First, a headquarters does not exist to legitimize the officers and staff sections within it. Next, a headquarters does not exist to mindlessly churn out slides. Further, it does not exist to facilitate or generate irrelevant meetings. Nor does it exist to field-test ***Harvard Business Review*** concepts and ideas.

A successful headquarters' purpose is to enable and maintain the fighting faculty of its subordinate units. The headquarters accomplishes this by balancing the interplay of three functions: control, coordination and sustainment.

These functions are balanced in deference to time because, as theorist J.F.C. Fuller reminds the student of war, "Time is an all-embracing condition, and in war, even more so. ... One of the greatest problems of generalship is how to use time to the best advantage, and this demands a perfectly organized instrument in which friction, which is the enemy of military time, is reduced to its lowest possible level."[12] Furthermore, a headquarters enables and maintains the fighting capacity of its subordinate commands by reducing organizational chaos, disorder and impediments to mission accomplishment. To put it another way, a headquarters that keeps its subordinate elements tangled in the minutia of staff bureaucracy and irrelevant battle-rhythm events reduces those formations' flexibility, thus making them more prone to mission failure.

However, purposeful alignment allows a headquarters increased flexibility, which helps not only itself but its higher headquarters and those that work beneath it. To attain purposeful alignment, a headquarters must ruthlessly remove impediments to its *raison d'être*. That, in turn, will free it to effectively manage the interplay among coordination, control and sustainment in a time-sensitive manner to achieve purposeful activity. A trained and trusted staff, like that of Patton's Third Army, is the centerpiece of an effective headquarters.

Commander's role

As Third Army's work leading up to the Battle of the Bulge illustrates, an adroit headquarters is a force multiplier that allows it to punch above its weight. Historian Allen Millet notes that Patton's staff was brilliant and perhaps one of the best in Europe during the war.[13] This wasn't by chance. Patton's Third Army staff was largely the one he enjoyed throughout the war, especially when he was at the helm of Seventh Army during the Sicilian Campaign.[14] Those many months Patton and his staff worked together served as the crucible for their operational relationship – during the period leading up to the Battle of the Bulge, Patton had been indirectly training his staff. This is where the essence of Third Army's success at the Bulge can be found.

A staff is the heart and soul of any headquarters, and for a staff to be good — efficient, forward-thinking and coordinating — it must be trained, disciplined and possess good esprit de corps. While the chief of staff or executive officer is nominally responsible for developing the staff, the onus truly resides with the commander. The commander develops the staff by holding it accountable, running it through incisive and rigorous process-

es, and respecting it.

Respect is what's hidden within Patton and Third Army's working relationship. Patton's relationship with his headquarters suggests he not only respected good officers, noncommissioned officers and Soldiers, but he also respected staff work. Despite lessons like this, all too often today staff work is denigrated, cast in a miserable light or offered as something that must be "survived."

A cottage industry has sprung up offering tips, tricks and pithy bromides to assuage the poor soul that must serve on staff. To be sure, a recent offering at ***The Military Leader*** Website is instructive. The post states, "Staff time is usually viewed as the trough in the career … a holding pattern … the purgatory before one's time in the spotlight. But as with anything, it is what you make of it."[15] This mindset regarding an assignment on staff is counterproductive and undercuts headquarters across the force.

Further, commanders who speak disparagingly of their staffs, do not spend time with their staffs or tout how little time they themselves spent on staff inflict a deleterious effect on their own staff and thus work against the effectiveness of their own headquarters. Routine, respectful interaction between the staff and the commander allows the staff to identify how best to present information to the commander, understand how his or her mind works and develop a good working relationship. Patton understood this, and it worked not only to his advantage during the Battle of the Bulge, but also to the advantage of the thousands of men and women trapped in and around Bastogne in December 1944.

Eliminating low-value work from staff

To tackle purposeful work that increases the combat capability of its subordinate units and allows itself to positively manipulate time toward its advantage, a headquarters must remove the weeds and underbrush that inhibit productivity. To put it another way, a headquarters must eliminate low-value work. This type of work shows itself in many forms, whether that be:

- Battle-rhythm inertia;
- Mission creep;
- Higher-level staff officers' attempts to justify their jobs;
- Staff not being able to think beyond legacy processes; or
- Staff assuming every meeting or reporting requirement from a higher headquarters must be foisted on one's subordinate commands.

Chiefs of staff, executive officers and whoever else plays a part in assigning work to a headquarters must ensure the headquarters is oriented on what matters: work that contributes to the headquarters' purpose. The first step in this process is to understand what the headquarters is for.

The second step is understanding that to properly support a headquarters' purpose, it must generate good staff work. Good staff work requires space and time. Leaders of a headquarters are responsible for ensuring good staff work. Therefore, they are responsible to fight for time and space for their staff.

The third, and perhaps the most challenging step, is stepping beyond the "find a way to get to yes" mindset and embrace the word "no." While headquarters often find it easy to tell their subordinate units no, telling lateral units and higher headquarters no is often challenging, especially in the Army's "go along to get along" environment. However, telling others no is not a bad thing, especially when it is supported by data. Continually saying yes decreases a headquarters' ability to look beyond the current situation because it bogs down the headquarters and staff with superfluous work. Saying no, on the other hand, buys back time and space, creating room for a headquarters to think deep about a problem and deep into time. This makes it operate in a way more aligned with Third Army at the Bulge.

Therefore, leaders within a headquarters must ruthlessly find and eliminate low-value work that drives sub-optimization. They should do so with the expressed intent to generate more time and space for the staff to think, analyze, coordinate and develop products that support the command, create opportunities and improve fighting capacity.

Enabling fight

Napoleon Bonaparte is noted to have said, "The secret of war is to march 12 leagues, fight a battle and march 12 more leagues in pursuit."[16] Third Army at the Battle of the Bulge and afterward lends credence to Bonaparte's theory. Third Army's agility and ability to punch above its weight illustrates what a headquarters can do when it understands its purpose and is not bogged down with superfluous, sub-optimizing work. Its ability to rapidly react based on forward-looking staff work and a receptive and equally forward-looking commander is the epitome of how a good headquarters enables the fighting potency of its subordinate units to create useful options for its higher headquarters.

One must assume that the situation in and around the Bulge would have been far more dire for the men trapped there had Patton and Third Army headquarters allowed Bradley, LTG Courtney Hodges and others to dissuade them from their initial situation assessment in early December 1944.[17] However, Third Army's dogged persistence and ability to convey the potential importance and ramifications of its assessment sparked a planning dynamic that helped Eisenhower quickly staunch the bleeding around Bastogne, bring up additional reinforcements and rectify the situation for the Allies. Further, Patton and Third Army's clear and concise orders to their subordinate corps and divisions, and previous coordination, were the impetus for the success of units such as III Corps, 4th Armored Division and others.[18]

It is fair to suggest that this model should be the goal of any headquarters – to move beyond the foggy realm of reaction and to get firmly ensconced within the world of forward-looking, proactive plans and operations. Doing so, as illustrated by Third Army during December 1944 through January 1945, better enables the fighting potency of subordinate formations while providing agile, tailorable options to the higher headquarters.

Conclusion

In summation, Patton's Third Army is an instructive model for how a headquarters should operate. A headquarters is an organization's most vital element. It is that formation's central nervous system. It is the thinking and coordinating element that allows the "doers" to do. Yet this doesn't come to fruition on its own.

A handful of principles on the headquarters are offered as principles to help guide commanders, chiefs of staff and executive officers as they tirelessly work to improve their respective headquarters and supporting staff:

1. A headquarters' purpose is to enable its subordinate commands by reducing chaos, disorder and other impediments to mission accomplishment.
2. Purposeful headquarters activity increases flexibility for its higher headquarters.
3. Ruthlessly remove the weeds and underbrush of bureaucracy and staff inertia to create a productive and efficient environment.
4. Generate realistic and useful options that enable the commander, the subordinate commands and one's higher headquarters.
5. A headquarters manages the interplay among coordination, control and sustainment in a time-sensitive manner.
6. The immediate is the enemy of prepared; forward-reaching, disciplined plans and operations processes are critical to moving beyond operating in the right now space.
7. Moving beyond operating in the right now is critical to generating agility, synchronization, informed plans and operations, and realistic options.
8. A headquarters must always vigorously coordinate (for example, make the appropriate connections with people and resources) and then diligently synchronize (for instance, streamline their employment in time and space) capabilities; a headquarters should never pass on an opportunity to showcase its ability to do hard staff work.
9. Time is one of the most valued commodities in war and in a training environment; do everything possible to protect time from those who attempt to consume it.

Commanders, chiefs of staff and executive officers must develop their headquarters. They do so by putting their staffs through rigorous training on purposeful staff processes, holding it accountable and creating a culture of high standards. Also, leaders must knock down barriers to high-value work while removing the weeds and underbrush of low-value work that slows a headquarters and pulls it into the quagmire of routine battle-rhythm requirements.

Commanders, chiefs of staff and executive officers must also cultivate appreciation and mutual respect in their headquarters. Far too often today, Army culture and narrow-minded leaders denigrate the role of a headquarters and that of its staff. But even Patton, for all his vainglory, never demurred from extolling the primacy of his staff and advocating the central position it played in all he accomplished as a commander. Following the war, Patton remarked, "The remarkable movement of Third Army from the Saar to the Bulge was wholly due to the superior efficiency of the Third Army staff. ... Those who desire to inform themselves on how an army should be moved should study this operation as set forth in meticulous detail in the 'After-Action Operations Report' of Third Army."[19]

Culturally, commanders, and the Army as a whole, would be wise to practice more appreciation because doing so will likely increase productivity within their respective headquarters.

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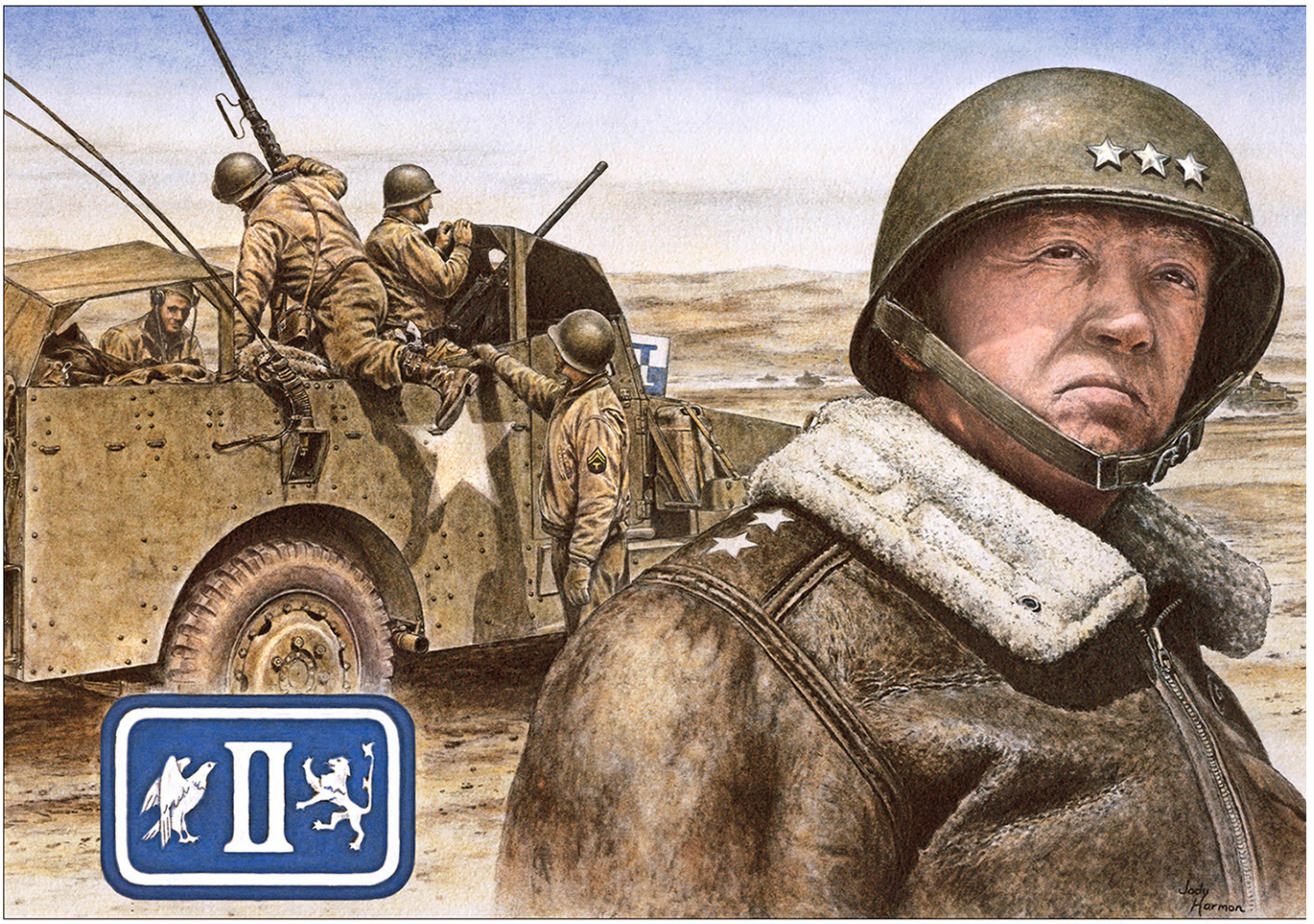
Acronym Quick-Scan

ACR – armored cavalry regiment

LEGENDS OF ARMOR



LIEUTENANT GENERAL
GEORGE S. PATTON JR.

BATTLE OF EL GUETTAR
1943

Security-Force Assistance Brigades Looking for a Few Good Soldiers

by MAJ Karl M. Harness

What is a security-force assistance brigade (SFAB), and what is its mission? Many Soldiers interested in volunteering for one ask these questions.

Army Training Publication (ATP) 3-96.1, ***Security Force Assistance Brigades***, defines an SFAB as "the Army's dedicated conventional organization for conducting security-force assistance around the world.

While each SFAB has a regional focus, its unique capabilities enable it to perform wherever it is needed with minimal cultural and regional orientation."

The SFAB organization is a hybrid of conventional brigade combat teams (BCT) and Special Forces teams. Organized as BCTs, the brigade headquarters provides mission command over six battalions: three maneuver battalions (two infantry and one cavalry squadron), an artillery battalion, an engineer battalion and a logistics battalion. Further aligning with BCTs, each battalion has subordinate companies, troops and batteries, all of which have three subordinate adviser teams (ATs).

ATs are the core of the SFAB, and they are led by a post-command captain. The 12-Soldier team consists of four maneuver advisers who have an 11- or 19-series military-occupation specialty (MOS) and eight "enabler advisers," consisting of intelligence, communications, explosive ordnance disposal/engineer, logistics, fires, medical, operations and maintenance Soldiers in the ranks of sergeant and staff sergeant. These teams primarily advise battalions.

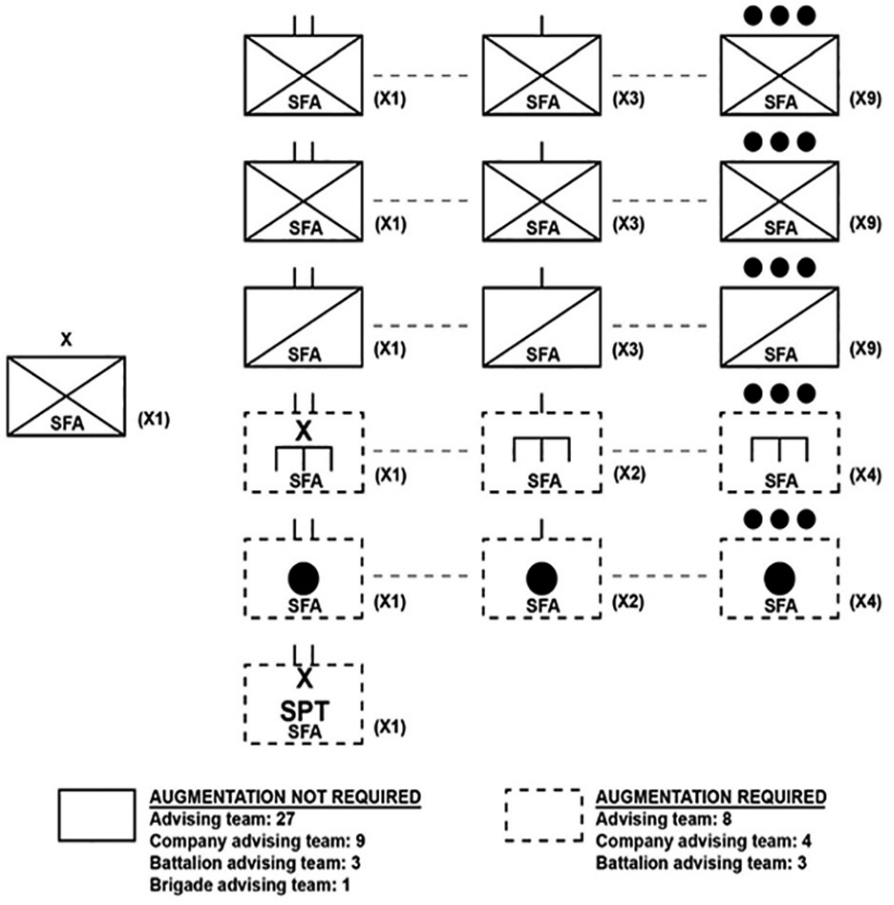


Figure 1. SFAB adviser teams from brigade to team level. *(Adapted from Figure 1-5, ATP 3-96.1, May 2018)*

The company adviser teams (CATs) are organized the same way but are led by a key-developmental-complete major (who is also the company commander). A pre-command captain serves as the operations adviser/executive officer, and a master sergeant serves as the team sergeant/first sergeant. The other members of the team are the same MOS as the ATs but are staff sergeants and sergeants first class. CATs advise battalions and brigades.

Battalion adviser teams (BATs) are a little more complicated. The battalion headquarters contains all the same staff sections/warfighting functions as a standard BCT and provides two adviser teams, led by the battalion commander and the executive officer, respectively. In addition to the staff functions required of standard battalions, BATs advise at the brigade and corps level.

The three support battalions (fires, engineer and logistics) are organized similarly to the maneuver battalions, but their adviser teams only have four Soldiers. These teams focus more on partnership within their areas of expertise at echelon rather than with the larger maneuver formations.

The SFAB organization maximizes flexibility for the unit. They are capable of deploying as companies through the entire brigade, or, much like 2 SFAB, as separate task forces especially task-organized to meet mission requirements for the combatant command.

This inherent flexibility allows the SFAB to achieve its core mission as outlined in ATP 3-96.1, "which is to assess, train, advise and assist foreign security forces (FSF) in coordination with joint, interagency and multinational forces to improve partner capability and capacity, and to facilitate achievement of U.S. strategic objectives," thus making it a unique organization in the Army.

Advisers in the SFABs are ***not*** Special Forces and are ***not*** part of Special Operations Command. They are

conventional Soldiers selected to advise partner-nation conventional security forces. They are not intended to advise a partner nation's Special Operations Forces (SOF), even though they may coordinate with them (through allied SOF) on the battlefield.

Adviser attributes

The SFABs desire particular attributes for the advisers. For example, selfless service is paramount to the adviser's success. An adviser's success is not based on personal actions but on the actions and success of the partner force. Service in the SFAB requires a certain type of personality and provides an excellent backdrop for the unique purpose and mission of the Assessment and Selection (A&S) Branch. A&S is not just looking for the ***most*** qualified candidates, they are looking for the ***right*** qualified candidates.

The Security Force Assistance Command (SFAC) chose 11 adviser attributes outlined in Field Manual (FM) 3-22, ***Army Support to Security Cooperation***, which are "disciplined, mature, displays sound judgment, initiative, cool under pressure, tolerance for ambiguity, open-minded, empathetic, situationally aware, patient, morally straight." These are the attributes the A&S Branch seeks to identify and assess in each potential adviser. A&S conducts this assessment through the execution of the SFAB A&S Course held at Fort Bragg, NC.

The SFAB A&S Course places Soldiers in an environment that challenges individuals and assesses their ability to work within a small team, and it provides an opportunity to observe the adviser attributes. The SFAC A&S Branch continually reviews and updates each event to ensure the course provides an accurate assessment of a candidate for the selection board. While A&S looks at and reviews in detail a candidate's official military-personnel file, the file alone is not a true indicator of a candidate's ability to operate as an adviser.

The current selection rate for the A&S Course is 73 percent, which indicates that Soldiers who are successful in the conventional force are not necessarily the right fit as an adviser. Advising FSF is a complex task that does not suit all

Figure 2. SFC Lockett observes SFAB candidates conducting the Leader Reaction Course as part of the SFAC A&S Course in July 2019. *U.S. Army photo.*

Army leaders. Many candidates attend the course with strong files but are not selected based on their demonstration of the adviser attributes.

Soldiers desiring to serve in the SFAB must consider a very important question: Why should I volunteer for this organization? Many Soldiers volunteer for the duty station or the bonus, or they think assignment to the organization will lead to more success in their careers. These reasons, though valid, are selfish in nature and do not serve the organization, the Army at large or the SFAB mission. As stated, selfless service is the adviser's benchmark.

Volunteers should not base service solely on personal desires but on a desire to serve the nation and to enable FSF to defeat the enemies of the United States before the country must intercede with military might. In the SFAB, Soldiers will do more with less (troop-to-task ratio) and be expected to know their jobs to teach it to others while providing expert analysis and advice so their partners can accomplish the mission.

Prep for assessment, selection, success

Preparing for SFAB A&S requires discipline and self-study on the part of the candidate (the discipline attribute). Candidates must arrive physically prepared for the course. Failure to complete the Army Physical Fitness Test with a minimum score of 240 (with at least 70 points in each event) is an automatic drop from the course. Candidates must also prepare for various other physical activities, which include varying-length foot marches and other physically demanding tasks, all of which are calculated as part of the assessment.

Physical fitness is only one aspect of service in the SFAB. Advisers must know their MOS, so study, study, study. There is no time given the current deployment schedules for the brigades to hire noncommissioned officers (NCOs) and officers who do not know their jobs. Not only should NCOs and officers clearly understand their MOSs inside and out, Soldiers should study the regulations and FMs so they are confident in their craft and can find answers when they do not know them.

Soldiers must understand the differences between teaching and advising, along with the ability to balance one over the other. Teaching focuses on the "how to do" something, but an adviser explains why doing a certain task is more advantageous than another.

Advisers must look at the broader picture and consider the second- and third-order effects of an action, yet accept that their partner may decide to do something differently.

SFAB officers must be technically and tactically proficient with the ability to think critically while seeing the larger, more complex picture. Officers in particular advise partner forces on planning and synchronizing effects. If officers do not clearly understand the military decision-making process or the Army Design Methodology, they need to start studying. Advisers are expected to know how to solve problems – not just by the SFAB leadership, but by their FSF counterparts as well. They look to the U.S. adviser as a subject-matter expert, so advisers must be one!

Soldiers who desire to serve in a SFAB must also prepare mentally. Serving on a small team requires significant mental flexibility. The long hours required, along with the guarantee of deployments, will place significant stress on the adviser and his or her family. Soldiers must prepare themselves and their families for the assignment by effectively communicating with each other and clearly understanding expectations. Prospective SFAB Soldiers should seek out SFAB veterans to gain a holistic view of what the units are, what the mission set is and what to expect in the assignment.

After preparing themselves and their families for potential service in the SFAB, Soldiers should seek out the SFAB recruiting team for more information and details about joining. Soldiers may connect with the SFAB Recruiting and Retention Team via the team's Website at www.goarmy.com/sfab or by calling the team: officers at (910) 570-5159 and enlisted at (910) 570-9975/5131. Soldiers who are interested in the SFAB may also contact the team via email at usarmy.bragg.forscom.mbx.g1-ag-sfab@mail.mil.

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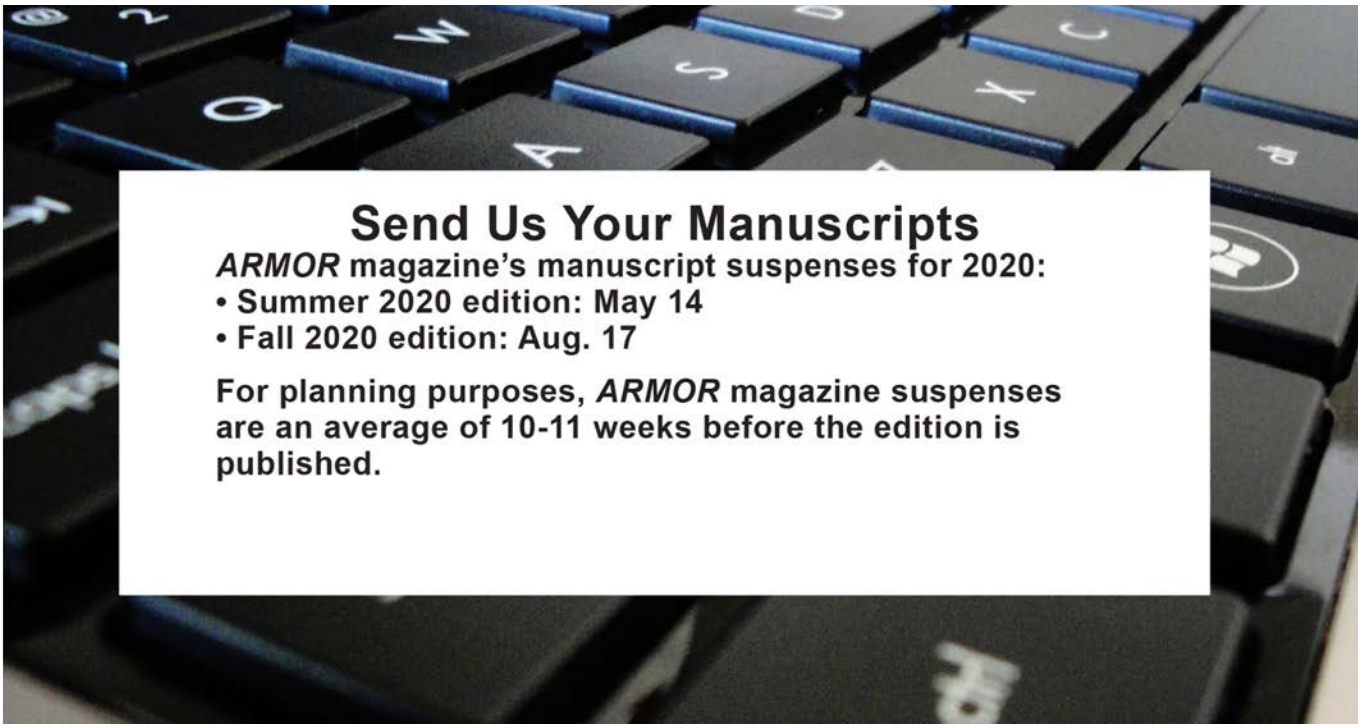
Acronym Quick-Scan

ATP – Army training publication
A&S – assessment and selection
AT – adviser team
BAT – battalion adviser team
BCT – brigade combat team
CAT – company adviser team
FM – field manual
FSF – foreign security forces
MOS – military occupational specialty
NCO – noncommissioned officer
SFAB – security-force assistance brigade
SFAC – Security Force Assistance Command
SOF – Special Operations Forces



Gas! Gas! Gas! I've Buttoned Up; Now What?

by COL Esli T. Pitts and CPT Meaghan E. Kelly

Airburst artillery was exploding in the distance as White 4 keyed the net. "Black 6, this is White 4. Observing red rain at MR 465 776. No change to slant. 0615. Continuing mission. Over."

Axeman 6, the tank-company commander, acknowledged the report. Looking at his map, he noted that White's platoon was closest to the point of impact. He called the company: "Guidons, this is Black 6. Assume we are observing enemy prep fires. No change to defend time at 0700."

White 4 dropped down in his hatch. Artillery was nothing new, but the volume of fire in this particular mission was intense. The rounds were bursting about 500 meters to the north, but since they were beyond an intervisibility line, he thought there was limited likelihood of damage unless a round hit significantly outside the apparent sheaf. (Lucky they had been doing survivability moves!) White 1 chose to remain in position but directed all four tanks to close their hatches to the open-protected position. He shuddered, picturing a hot fragment slicing into one of the crew.

Turns out it wasn't shrapnel they had to worry about.

Having massed their guns long enough to deliver a chemical strike, the enemy artillery displaced. With the wind blowing at about three mph, it took about six minutes for the first traces of nerve agents to hit White 3 on the company's right flank.

A chemical alarm 100 meters out would have given them 72 seconds' warning, but there was none. As it was, White 3 was the first to detect the strike, feeling the effects within a minute of breathing it in. Lacking respiratory protection, they died quickly, and the rest of White soon followed. Some crewmembers were already wearing protective overgarments, but none had their protective mask readily available, so the chemical agent rapidly attacked their nervous systems. White 4's loader was typical. He tried to hold his breath while digging his mask out of the sponson box, but his mask was just too deep, having slipped beneath a can of oil, a spare barrel and the muzzle-boresight device. Fully exposed to the agent, he died while stretched across the top of the turret and then slipped to the floor. His Antidote Treatment Nerve Agent Auto-injectors (ATNAAs) remained in his protective-mask carrier.

White 2, on the farthest flank, lived the longest. White 2 Golf managed to key the platoon net and announce "Gas!" but nobody else had enough remaining motor functions to relay it on the company net. Unlike most, White 2 Delta had his mask with him in the driver's station. Medics eventually found him dead in the seat with the mask in his hands. The new filter, still wrapped in plastic, sat in the mud and leaves at his feet.

The chemical strike drifted into Blue's battle position with only slightly better results. Blue 4 called a warning on the company net, allowing both Red and the command post to take action. Blue's crews buttoned up and turned on their chemical, biological, radioactive and nuclear (CBRN) overpressure systems. Unfortunately, systems of 31 and 32 hadn't been serviced in years and were inoperative. Those crews died believing they were sealed in their tanks. Blue 3's system actually functioned, but without a round in the tube, the seal was not intact – they were the last to die. Blue 4, a former drill sergeant, got his crew into masks, administered ATNAAs to two of the Soldiers and followed up with Convulsive Antidote, Nerve Agent for the loader. He saved their lives, but the lack of microphone cables for their masks kept them off the net for almost 20 minutes. While searching for cables, they experienced a fire in the old CBRN filters, forcing them to shut down. Blue 4 was combat ineffective.

Things were no better at the company command post. The first sergeant grabbed the battalion command net and announced "Flash, Flash, Flash, Gas!" but failed to identify the calling unit before succumbing to the deadly air. He keyed the net again but was unable to speak clearly and began vomiting. Axeman 6 sprinted from his truck to get his mask from his tank's sponson box but never made it. The executive officer was more fortunate since he had his mask with him while talking with the mechanics. However, upon returning to his tank, the crew refused to unbutton, and he was forced to remain outside on the ground. The mechanics were effective at donning their masks and, in one case, administering their ATNAAs.

Red Platoon, on the left flank, was largely unaffected by the strike due to the wind direction. However, it was unaware of this and tried to react. It fought through the same problems the other platoons had with similar, though less lethal, results. Red's crews dug out their masks, buttoned up, turned on the overpressure systems and then sat alone in their tanks, unaware that they were not actually downwind or that their CBRN systems were also inoperative. The extent of actions-on-contact in Red Platoon was that Red 1 dropped a chemical strike icon on his Joint Capabilities Release (JCR), which was enough for Lancer Main to identify that they had been struck.

The enemy regimental commander had successfully disrupted friendly forces with a non-persistent chemical strike at his planned point of penetration. The company's lack of readiness had done the rest. Now the regiment's lead elements were 45 minutes from assaulting that position, taking advantage of the ensuing chaos while knowing the area would be clear of contamination by the time they arrived.

Battle, a tank company tasked as the brigade reserve, was set in a tactical-assembly area several kilometers to the rear. Unknown to them, they had previously been located by enemy reconnaissance efforts and targeted with a persistent chemical strike to fix them in their assembly area. Proving that everybody struggles with synchronization, the enemy's second strike began two minutes after the non-persistent strike. Those two minutes, plus Battle's training proficiency, proved invaluable.

The brigade would defend in mission-orientated protective posture (MOPP) Level 2, but not everybody was there yet. Battle Company's White and Blue Platoons were still in the middle of upgrading from MOPP 0 to MOPP 2 for the defense when Axeman's Red 1 posted the strike. Seeing the icon, Battle's crew began to hurry. Blue 4's insistence that MOPP 0 really did mean having your gear inside the tanks at individual crew stations (and not in the bustle rack) likely saved lives that morning. It isn't easy to don MOPP gear inside the tank, but it's better than getting caught outside during a chemical strike, which is what happened to White. White's crews were scrambling to get their gear from bustle racks and sponson boxes as the strike arrived in a high concentration of airbursts upwind of the assembly area. The first volleys were on target and Battle's multiple chemical alarms immediately began to blare as the oily chemicals fell toward Battle.

Battle's reactions were evidence of their good training. Unlike Axeman, Battle 6 had identified (and reiterated) the line "auto masking is in effect" from the operations order, and they recognized the incoming artillery as a trigger to automatically don their protective masks. Battle 6 had also directed that chemical defensive gear be checked during pre-combat inspections. Not all the Soldiers were fully proficient in donning their masks, and a lot can happen in nine seconds, but the Battles had a good head start. It helped that they were carrying their masks rather than storing them.

Unlike the vapor hazard to Axeman, Battle's primary threat was liquid contamination. Battle's first action was to seek overhead cover to avoid exposure to it. Red Platoon, already in MOPP 2, buttoned up. As part of the battle drill, they assumed there was also a vapor hazard and so they battle-carried a main gun round, turned on their overpressure systems and continued to MOPP 4 under the assumption that the overpressure systems were inoperative. Blue continued to don MOPP gear while taking similar precautions as Red. White, still with Soldiers exposed on top of turrets, was in the worst shape.

Figure 1. Soldiers dismount to recon in MOPP 4.

With the gentle reminders of their noncommissioned officers (NCOs), exposed Soldiers automatically decontaminated their skin. They were familiar with the drill: don protective mask and get undercover. Then pull out the Reactive Skin Decontamination Lotion (RSDL) and decon their faces or other contaminated skin. Hold breath, break the seal on the mask and pull it out and away from the face. The decon technique left slippery lotion on their hands and faces. Wipe away from the eyes. Scrub down. Don't forget to get the recesses in the skin such as the nose, corners of mouth and between the fingers. Don't forget to turn your hand away and decon the inside of the mask as well.

Unfortunately, several Soldiers in White and the company trains did not initially realize they were already contaminated. Continuing to MOPP 4 protected them from more exposure, but it did nothing for the persistent agent already on their skin. Underneath their protective garments, the agent did its work and those Soldiers were soon in agony.

Battle's commander and executive officer quickly reacted to the strike. Once his own crew had responded, he came up on the net. "Guidons, this is Black 6, radio check in sequence, over." After a few moments, all three platoons had responded, and he continued. "Come to REDCON [readiness condition] 1 and give me a slant report." Meanwhile, the executive officer focused on reporting to higher. He had already called up a report of "red rain" (observing artillery) and, on recognizing it as a chemical strike, dropped an icon on the JCR. The CBRN 1 report was one of several he kept laminated to the inside of his hatch, and he quickly filled it out.

"Hammer Main, this is Battle 5; CBRN 1 report follows, over."

"Battle 5, this is Hammer Main, send it, over."

"CBRN 1 follows:
Line Bravo/ MR465735/-//. Break.
Line Delta/ 270630LOCT2019. Break.
Line Foxtrot/ MR465735/AA//. Break.
Line India/ Air/Substance Name: HD

Blister/Persistent /Manned Point Detection System//
Line Mike Romeo/Liquid/Puff. Over."

Step 2, develop situation

At this point, Axeman has largely failed to execute Step 1 to actions-on-contact: deploy and report. Meanwhile, Battle has reacted appropriately. His Soldiers deployed by seeking covered positions, upgrading their protective-posture level and initiating immediate decon efforts. While there were some casualties, they were minimal. They also reported effectively, using both the JCR and the radio to submit a CBRN 1 report. Let's look at how they conducted Step 2, develop the situation.

Red Platoon, Axeman's only remaining combat power, sat in their tanks. Red 4 had dropped off the net, and Red 1 was not sure what to do next. Finally, he called Red 2 and asked if he'd emplaced his Joint Chemical Agent Detector. The answer was no. Not only had he not emplaced it, he hadn't even brought it on the operation. Nor had he brought an M256 kit. Nor had Red 3. Not that it would have done any good in this particular instance, but his check also revealed a lack of M8 or M9 paper. (He laughed bitterly at the strips of 100 mile-per-hour tape he had wrapped around the wrist and ankle of his wet-weather gear to simulate M9 paper.) Red was unable to determine the type or nature of the chem strike. Why hadn't he heard from Black 5, 6 or 7 since the attack? He tapped out a message to the battalion tactical-operations center on the JCR. As Red 1 realized he was now the company commander, the red horde was closing on their battle position. Outside, the wind and the rising temperatures were already doing their best to disperse the vapor.

Blue 4's filter fire had gone out, fortunately with no injury to the crew. They had all evacuated the tank, trading the fear of death by fire for one by nerve agent. Sitting helplessly on the blowout panels, Blue 4 recalled the box of M256 kits the CBRN NCO had issued him prior to the deployment. He had stuffed it into the bustle rack instead of giving it to the CBRN tank. He had never trained with them but had seen they had printed instructions on them. Awkwardly, working with his gloves on, he pulled one out and began to work it. As he read the instructions, he quickly realized that his wristwatch was underneath his thick rubber gloves. He yelled for the gunner to give him times from the JCR, and for the loader to check the other platoons' frequencies to see if anybody else was still up. Minutes later, he was in communications with Red 1. The next thing he heard on the radio was "Contact, tanks, West. Out," followed by the report of a main gun firing. The crew looked at each other and, as one, slid toward their hatches. Axeman (-) was in contact.

Battle 6 had re-established communications within the company. By his count, they still had 13 operational tanks, but the platoons had identified four Soldiers showing serious chemical-agent symptoms. These would require evacuation to the dirty aid station, using the designated dirty route.

He sent his guidance. "Guidons, Guidons, Guidons, this is Black 6. Maintain REDCON 1. Have your CBRN tanks initiate chemical survey; let's confirm what we were attacked with. Report your results to Black 5. Break. All others, maintain security but continue immediate decon of remaining skin and essential individual equipment. Report completion to Black 5. Break. Be prepared to move in the event that we are targeted for a follow-on strike. Considering we'll be tracking contamination across the brigade's rear area, we'll get their approval before we move. Five, once you've got platoon reports, call an initial CBRN 4 report to brigade. Acknowledge, over." All stations acknowledged, and he settled back in the turret for a minute. If there was enough time, he could also mark the extent of the contamination on the ground.

From what he'd seen, it appeared that they had been attacked with a liquid agent of some kind. That would imply an existing but limited vapor hazard. However, the liquid would spread if touched. Battle would need to identify the agent, then decontaminate key equipment to prevent the spread of the agent from equipment to personnel. With everybody buttoned up, this could be problematic. Fortunately they had emplaced fresh M9 paper on different parts of the tank, even though it was difficult to see through the vision blocks.

The platoons' designated CBRN survey teams slowly came out of their hatches, checking the visible M9 paper hanging from their vehicles for signs. Then they transitioned to the M8 paper, blotting it on suspicious areas. The M8 paper matched the results of the M9 paper: Liquid, H, blister agent. Having done an initial check with the paper, each CBRN tank's crew also started an M256A1 kit. That was nearly a 20-minute process, but in the end, it would give a definitive reading as well as indicate whether the strike was persistent or non-persistent. While this was going on, the platoons continued their immediate decon. Most had already decontaminated their skin, and tank commanders continued to assess their crews for signs and symptoms of contamination. Several crewmembers decontaminated their skin again, just in case. Despite their identification of the strike as H, blister agent, the Soldiers were more familiar with the symptoms of nerve agent, leading to some false assumptions. One nervous loader injected himself with his ATNAA.

After the three platoons each reported their contamination findings as blister agent to the company command post, the executive officer finished the initial CBRN 4 report and submitted it to brigade. As before, he did so both by radio and over the JCR.

"Hammer Main, this is Battle 5. CBRN 4 Report follows, over."

"This is Hammer Main, send it."

"Line India / SH1/TS: Blister/Persistent (P)//. Break."
"Line Quebec / MR465735/Liq/ Manned Survey (MSVY) /SCD//. Break."
"Line Sierra / 270700LOCT2019//. Over."

Decontaminating their skin was just a battle drill, but surprisingly, training had prepared them well for the next step: the reality of decontaminating skin and individual equipment. About two-thirds of the company had varying amounts of chemical agents on the tanks or exposed gear outside the

Levels of Decontamination		
Levels	**Purpose**	**Who**
Immediate decon	Rapid decontamination of skin and individual equipment necessary to save lives or prevent the initial spread of contaminants.	Contaminated element
Operational decon	Consists of vehicle spraydown to remove gross contaminants and minimize spread of contaminants. Also consists of MOPP-gear exchange to provide short-term or temporary relief from MOPP 4. Uses organic decontamination apparatus. Requires high volumes of water.	Battalion operational decon team
Thorough decon	Thorough decon consists of two simultaneous lanes: - Detailed troop decon (DTD) provides complete decontamination of troops and individual equipment. -Detailed equipment decon (DED) provides decontamination of vehicles and equipment. At the conclusion of thorough decon, units are considered clean. Units will decontaminate all salvageable equipment. Unsalvageable equipment will be left in the contaminated sumps, marked and reported to higher as dirty.	-DTD is the responsibility of the supported unit -DED is provided by divisional chemical company / decon platoon

Table1. Levels of decontamination.

vehicles. The crews would continue immediate decon (see Table 1)*, the most basic level, which would only address a portion of the contaminants. First, they would dump contaminated external stowage. (Fortunately, properly covering it before the mission prevented too much loss.) Even so, there was one joker: "Black 6, this is White 4. Who's going to sign the statement of charges for all this gear we're throwing out?"*

Immediate decontamination focused on those things the crew needed to fight their tanks, such as the external machineguns or the insides of those hatches that had still been open when the strike happened. Crewmen used M334 wipes to decon all contaminated individual equipment by wiping the surface, using sweeping motions away from the body. The crew took care not to spread any contamination to any area that had been visually determined as clean. As they decontaminated the equipment, they were careful to also redo their gloves.

Halfway through decontamination, the CBRN teams began to complete their M256 kits and call the results up to the executive officer. They all indicated H, mustard (a form of blister agent). The executive officer reported the update to brigade: "Hammer Main, this is Battle 5. We've completed our M256 kits with no change to our CBRN 4."

Shortly after, Battle 6 sent a situational report (sitrep) to the brigade. "Hammer Main, this is Battle 6, SITREP follows." He paused for an acknowledgement before continuing. "Our slant is 13 and zero with nine vehicles having enough to stop the onslaught. Lancer 6 contacted brigade and recommended release of the brigade reserve to his battalion." Hammer 6 approved, and Battle soon got the call: "Guidons, Guidons, Guidons, this is Hammer 3. [Fragmentary order] follows. …."

Lancer was tasked to assume attachment of Battle and establish an attack-by-fire (ABF) position to prevent penetration of Lancer's positions. It didn't take Battle long to enter Lancer's net and establish the ABF. In the distance, they could see the hulks of Axeman's White and Blue Platoons – victims of surprise and their own lack of training. Red also died, though they had delayed the enemy regimental attack long enough for Battle to establish the ABF. Ultimately, Battle's training enabled them to survive a chemical strike, maintain themselves as viable combat power despite contamination and destroy the enemy's lead battalion.

Only after the fight did Battle 6 move his company to a decon point, where

Figure 2. A Soldier decontaminates his vehicle.

they linked up with the division's chemical company, conducted thorough decontamination and finally come out of MOPP 4.

Prior to 2003, Soldiers generally trained in MOPP 2, and there was a high probability they would be in MOPP 4 before it was over. Sometimes they performed like Axeman during training and sometimes more like Battle. Then came the wars in Iraq and Afghanistan, and chemical proficiency was replaced, rightly so, by different training requirements.

Operating in a chemically contaminated environment now is less likely than it was, but it is still a possibility that should drive training as the Army's focus returns to near-peer competitors. Some leaders bring the habit of training for CBRN proficiency into battalion command – with mixed results at best, mainly due to a lack of time. Subsequently, battalion/task-force maneuver trainers see units challenged to operate in a chemical environment due to constraints in training and equipment. CBRN proficiency is fairly easy to achieve provided leaders and their Soldiers have enough time. Lacking time, there are other considerations that can still build CBRN readiness over time.

Mindset

First is a mindset for CBRN proficiency. Leaders at any echelon can create an expectation they will train to operate in a chemical environment, which can be communicated to the unit through training guidance, training schedules or just by walking up behind a squad and announcing "Gas, gas, gas!"

Training and operating in MOPP gear is hard. It's different. It is debilitating. And, yes, it can be risky. Putting a battalion into MOPP 2 (and MOPP 4 as necessary) is not popular in the hot months, but it is nothing that previous generations didn't do routinely.

The first step is to require Soldiers to carry their protective masks as part of the field uniform during the next training event. Critical to the mindset is a commitment to do CBRN tasks correctly, such as wearing full MOPP gear properly, or that Soldiers don't "take a knee" or set down equipment in contaminated areas.

Individual protective equipment

Gone are the days when the company executive officer maintained sizes for CBRN gear and a basic load of chemical defensive equipment. For deployable units, this facilitated building Individual Chemical Equipment (ICE) packs, with one built for issue upon alert and a second one carried in the company trains. (Question: Where do you store 60-70 2nd ICE packs in the company trains? Answer: Build racks in the supply sergeant's truck. And don't forget to move them when platoons task-organize.)

It also means that boxes of contingency chemical equipment must be stored throughout the company area. However, at a minimum, all Soldiers in a company should be issued appropriate equipment for training. This includes a complete training Joint Service Lightweight Integrated Suit Technology (JSLIST) with a protective mask that has been properly fitted using the M41 Protective Assessment Test System (PATS) and the correct alcohol.

Units should stock enough M8 paper, M9 paper, RSDL and M100 decon kits to get them through the next several collective-training events.

CBRN equipment

All of a company's CBRN detection equipment should be assigned to the platoons' CBRN survey teams and properly maintained through command maintenance, scheduled services and calibrations under the supervision of the CBRN NCO and CBRN officer. Even if they lack proficiency, crews should bring their CBRN detection equipment to the field for all training events so they can learn to employ and stow it per the load plan.

All these items should be inspected routinely during pre-combat checks (PCCs) and pre-combat inspections (PCIs), in priorities of work and during recovery operations. The CBRN NCO should maintain all equipment not assigned to the platoons' teams. The CBRN NCO should maintain an appropriate bench stock of repair parts for masks and other unit equipment.

Leader training

At minimum, platoon leadership and above should know how to react to a chemical attack – it is a battle drill that requires training to gain and maintain proficiency. If Soldiers know how to get into MOPP gear, leaders can lead them through most of the other tasks and preserve combat power. Leader training should address all required leader actions during actions on contact.

Step 1 – deploy and report – focuses on immediate actions to protect individuals from attack and includes submitting a CBRN 1 report.

Step 2 – develop the situation

Figure 3. Soldiers in MOPP 4 gear.

– focuses on confirming the nature and extent of attack, marking, continued immediate decontamination and updating CBRN reporting with CBRN 4.

Steps 3 and **4** will largely be externally directed. However, leader training should also include operating in a contaminated environment, how to conduct MOPP-gear exchange and unmasking procedures, and participation in operational decontamination as the supported unit. Also, leaders must understand the rules of engagement for chemical play at combat-training centers. Confusing purple smoke (indicates the Family of Scatterable Mines) with yellow smoke (usually indicates CBRN) is awkward at best.

Vehicle maintenance, operator training

Take a look at unit vehicles' service packets. Were the CBRN systems fully serviced? Do the overpressure systems work? Are they being checked during monthly preventive-maintenance checks? Are crews actually taking a coax and a dummy round to the motorpool to do so properly? Do the crews know how to operate the system?

CBRN survey-team training

At least one, but ideally two, tanks per platoon should be designated as CBRN tanks. These crews should be trained to detect, identify, report and monitor chemical contamination and how to mark it. They should also be able to lead the platoon through MOPP-gear exchange, unmasking procedures and operational decontamination. They should maintain and employ the platoon's CBRN equipment. They should also be the platoon's experts in individual task training, including immediate decontamination.

Build this CBRN training at company- or battalion-level to maximize resources.

Operational decontamination teams

The operational decontamination team represents the battalion's ability to conduct minor decontamination of vehicles and equipment to provide temporary relief from the contaminated environment, conduct MOPP-gear exchange and get the affected Soldiers and equipment back into the fight. It is not "thorough decontamination." It requires organization, practice and a lot of water.

Once both the decon apparatus and the operational decon team (generally mechanics and the support platoon) resided in Headquarters and Headquarters Company (HHC) and lived in the field trains unless postured forward. The company's executive officer often trained and employed the team. Now, with the decon apparatus assigned to HHC, it is not co-located with an available manpower source during operations; it requires guidance and coordination across two companies to establish and train the team's Soldiers.

First, leaders should challenge the chemical officer and NCO to demonstrate the decon apparatus in operation, with water blivets filled, operational pumps and the equipment actually spraying water. Then leaders

should identify a leader for the team, build a battle roster and then train an operational decon team.

The battalion should also train the same team to support the detailed-troop decon lane as part of thorough decontamination. Once the team is trained, leaders should exercise the team's Soldiers frequently during or after other collective training.

Individual training

Depending on a unit's circumstances, individual-training proficiency will be either the easiest or most difficult to achieve. There was a time when maneuver units did a day of CBRN task training every quarter. There is a long list of individual tasks to train on.

Round-robin training is an effective methodology (see Figure 4), but don't forget the gas chamber and mask-confidence tasks. Select some tasks and build a quality training event. Individual training should also include firing CBRN tables during individual and crew-served weapons qualifications.

Collective training

Having gained individual and leader proficiency, it is time to put it all together and incorporate CBRN conditions into collective training.

Situational-training exercise (STX): Whether a unit is just beginning to build proficiency or already incorporates CBRN conditions into training, a focused lane allows its leaders to emphasize all aspects of the battle drill in a way that often gets cut when training other collective tasks (for example, if the M256 kit was completed in less than 20 minutes, somebody faked it).

See Figure 5 for an example of a company CBRN STX executed at the platoon level. A platoon establishes an assembly area near the gas chamber. After occupation, they experience a chemical attack and respond accordingly. After initial-response actions were complete, Soldiers would take an admin pause to pass through the gas chamber for mask-confidence training. Following that, they remount and conduct a basic mission while buttoned up, then continue monitoring and eventually unmasking procedures.

This is a perfect opportunity to exercise the operational decon team as well.

Mission command: While this training describes maneuver-unit training, do not neglect the tactical-operations centers, command posts or unit trains when building unit proficiency with CBRN tasks. Ideally, these nodes can not only react to a chemical strike on their position, but they guide their units through those reactions. They can also manage the fallout from those strikes; for instance, they can move decon assets, designate dirty routes, and prepare and submit CBRN reports and chemical-downwind messages. The graduate level is when they can do so while continuing ongoing operations without impact.

Tactical standard-operating procedures (TACSOPs): TACSOPs are a great mechanism to establish accountability for the way leaders want to conduct CBRN operations in their units.

CBRN proficiency used to be the standard. Now it is more of a graduate-level skillset. Given the current increased focus on readiness across the Army, integrating CBRN into routine training events is a natural progression and a logical next step to making units that much better. With that in mind, leaders at any echelon always have the latitude to say those three magic words: "Gas! Gas! Gas!"

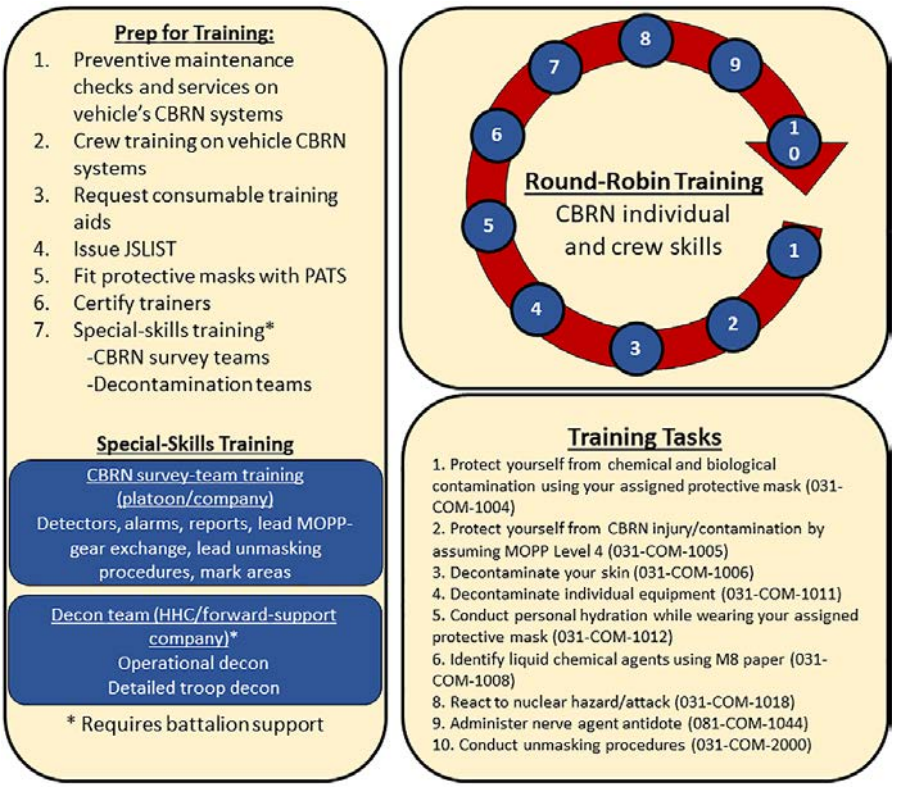


Figure 4. Round-robin training.

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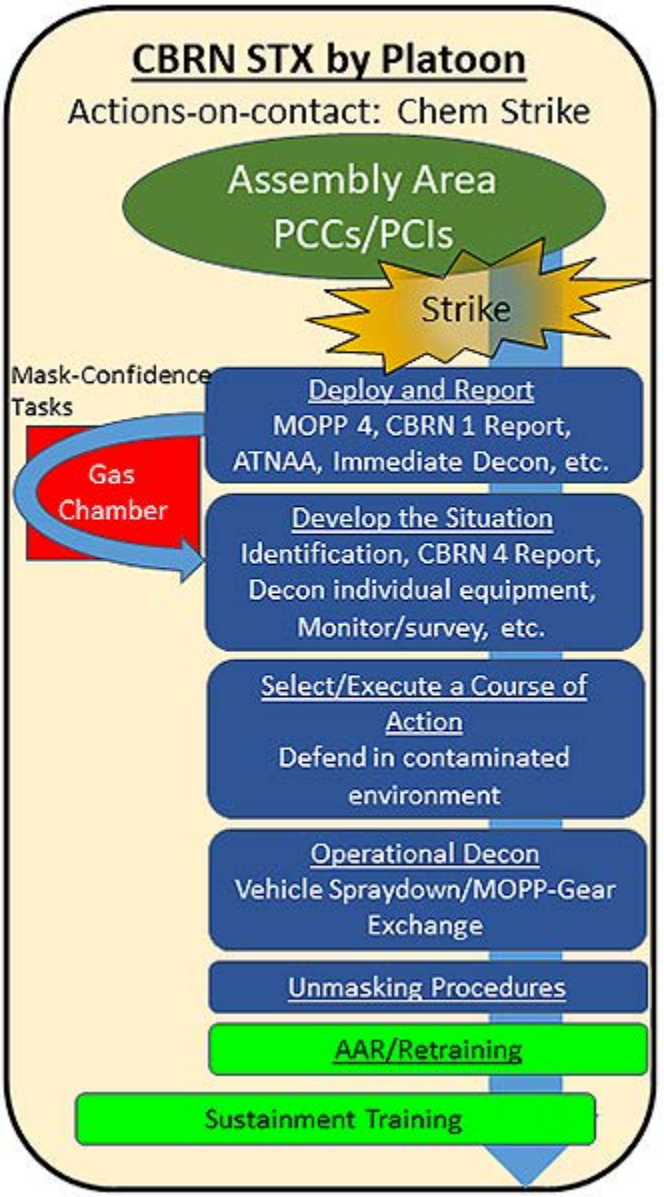
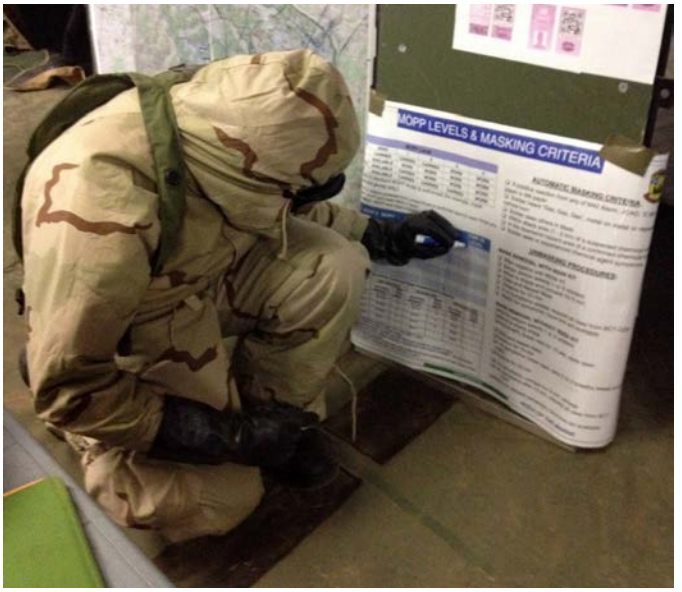


Figure 5. CBRN STX by platoon.

Figure 6. A Soldier makes notes on a masking-criteria chart.



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Acronym Quick-Scan

AAR – after-action report
ABF – attack-by-fire
ATNAA – Antidote Treatment Nerve Agent Auto-Injector
CBRN – chemical, biological, radiological, nuclear
DED – detailed equipment decontamination
DTD – detailed troop decontamination
HHC – headquarters and headquarters company
ICE – Individual Chemical Equipment
JCR – Joint Capabilities Release
JSLIST – Joint Service Lightweight Integrated Suit Technology
NCO – noncommissioned officer
PATS – Protective Assessment Test System
PCC – pre-combat check
PCI – pre-combat inspection
REDCON – readiness condition
RSDL – Reactive Skin Decontamination Lotion
MOPP – mission-oriented protective posture
SITREP – situational report
STX – situational-training exercise
TACSOP – tactical standard operating procedures

Vital BCT Logistics Readiness Link: Improving Supply-Support-Activity Operations

by LTC Charles L. Montgomery

The supply-support activity (SSA) represents the epicenter of logistics within a brigade combat team (BCT) regardless of tactical-formation composition.

The SSA serves as the critical link between tactical- and national-level supply echelons; this link is vital to the overall level of unit readiness. This fact mandates comprehensive system effectiveness, combined with an in-depth knowledge of Global Combat Support System-Army (GCSS-A), to navigate the supply architecture effectively.

'Strategic private'

The reference to "strategic private" does not solely apply to tactical operations. Strategic privates and specialists at the battalion-clerk level represent the origin of the supply/demand signal for the entire Army. If these Soldiers are not trained properly, the entire supply-chain management system will be adversely affected over time.

This creates enormous ramifications within BCTs, so these Soldiers' level of proficiency truly makes them strategic during the execution of tactical and home-station operations. Organizations must wholeheartedly invest in data-entry clerks to ensure the right supplies are ordered and arrive at the right time to sustain operations.

The SSA must operate at the highest level of efficiency from origin (supply clerks at the battalion), to brigade/division ("ZPARK" managers) and, finally, the supply entry/exit point (SSA). The SSA accountable officer (AO) is the linchpin during the execution of this entire operation.

Leaders within a BCT must search for ways to maximize logistics platforms and Soldiers with the explicit intent of improving operations holistically. This article explores lessons-learned as 3rd Armored Brigade Combat Team (ABCT), 1st Armored Division, Fort Bliss, TX, developed multiple solutions to increase operational productivity.

These solutions include implementing a "Touch It Once Campaign," express-lane creation, daily forward-support-company (FSC) logistics packages (LOGPACs) and overaged, repairable-item listing (ORIL) management.

'Touch It Once Campaign'

The "Touch It Once Campaign" focuses on the arrival of supplies at the SSA.

Military-occupation specialty (MOS) 92A, Automated Logistical Specialist, Soldiers process supplies and place them in supported-battalion lanes. MOS 92A Soldiers once touched the supplies a second and third time during the outload process after placing them into specified unit lanes, and this meant the entire process required 2.5 manhours per document number. To alleviate strain on material-handling equipment (MHE) and SSA Soldiers, 3rd ABCT implemented a container roll-on/-off platform (CROP) exchange program that reduced manhours by an aggregated 1.3 hours.

FSCs and the brigade-support battalion (BSB) base companies were assigned specific geographical areas within the SSA. Each company was tasked to place three CROPs at the SSA, which were controlled by the SSA AO for property accountability and management purposes. This system allows SSA personnel to load unit CROPs once with required MHE, increasing the SSA's efficiency and overall unit throughput.

Also, once FSCs transport CROPs back

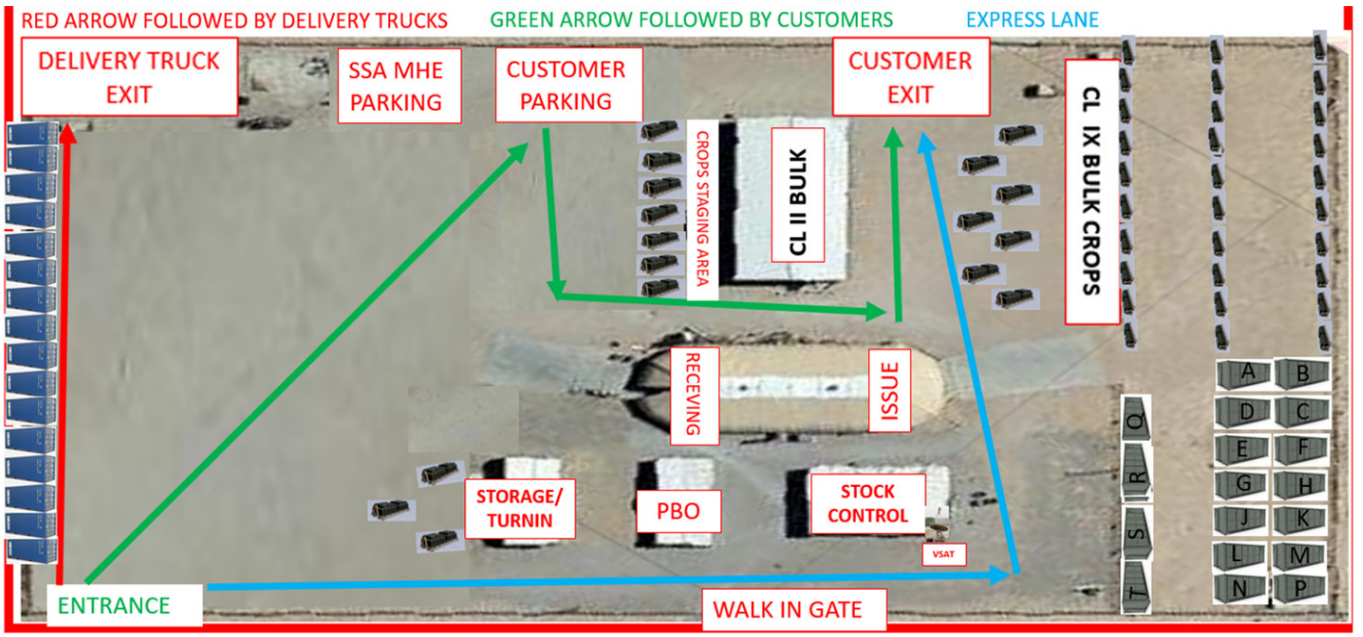


Figure 1. 123rd Brigade Support Battalion's SSA model.

to their area of operations to facilitate supply downloading, ORIL items are backhauled to the SSA for processing on the same CROPs. The BSB distribution company is responsible for transporting ORILs to the logistics-readiness center (LRC) and for bringing empty CROPs back to the SSA to start the cycle over again.

The "Touch It Once Campaign" has increased efficiency tremendously within 3rd ABCT, and it represents a method that can be replicated in field environments to enable Soldiers to train as they will fight.

Express-lane creation

Categorically the SSA has two types of customers: those picking up bulk items from an external area, and those securing smaller Class II and Class IX items from internally controlled areas. Securing those smaller items is based on the premise of potential pilferage.

Third ABCT increased efficiency through the implementation of dedicated battalion pickup timeframes to focus on detailed requirements for all customers, not just combined-arms battalions. Although this increased proficiency by 19 percent overall, especially in the area of time-on-station, there remained an opportunity to improve operations.

To make improvements, "express lanes" were created. Express lanes operate daily with no specific battalion assigned to daily pickup windows. The only management mechanism attached is that units can only use this lane if they have 10 documents or fewer at the SSA.

To use the express lane, units employ four distinct methods of coordination:

- Telephonic;
- Very Small Aperture Terminal (VSAT);
- Home station (HS); and
- Non-classified Internet protocol network (VSAT/HS).

Each coordination measure has an associated tactical version to replicate the same sight picture during the execution of tactical operations in field environments. Once the unit makes contact with the SSA, the 92As pull that specific unit's 10 documents (or fewer) to expedite the process. The creation of this lane allows units to pick up supplies multiple times daily.

The immediate impact of creating this lane was a decrease in customer wait time of 17 percent, which placed supplies in the warfighters' possession faster, contributing to sustained high operational-readiness (OR) levels. Continuous improvements targeted to increase OR, directly contributing to greater lethality, remains the overarching goal of all 3rd ABCT leaders.

Daily FSC LOGPAC

The ultimate test of any tactical-level organization is to have established systems that transfer with ease between HS and field environments.

Figure 2. CPT Michael Hills (right), commander of FSC J, 4th Battalion, 6th Infantry Regiment, 3rd ABCT, uses the express lane to pick up Class II and IX supplies at the 3rd ABCT SSA. *(U.S. Army photo)*

However, the comfort and convenience of HS operations directly contribute to atrophied field-craft skills that are required to defeat the enemy in severely degraded technological environments. The key mitigation measure is to train at home station as we fight; this type of training will transfer with tremendously less friction.

Third ABCT implemented daily LOGPAC operations from unit motorpool areas to the SSA to replicate tactical operations. This also applied to all four companies within the BSB.

However, the BSB's distribution company (Company A) assumed a dual role. Company A has the responsibility on a rotating schedule to deliver supplies to supported battalions just like the company delivers supplies in field environments.

The implementation of daily unit LOGPACs produced the following effects:

- Significantly decreased CWT;
- Increased FSC ability to execute convoy operations;
- Allowed more LOGPAC repetitions (which increased Soldier's confidence in execution);
- Enhanced logistic-release-point operations through daily coordination between the BSB and FSCs (which directly supports brigade-support-area execution); and
- Established a firm foundation for the execution of field-trains combat post and combat-trains command post operations.

ORIL management

Sustainers and warfighters have an undeniable obligation to increase ORIL management effectiveness, which directly impacts the Army enterprise and sustainable OR from a limited parts-production perspective. To this end, 3rd ABCT implemented a deliberate process targeted at reaching the Army's ORIL turn-in standard of 10 days (per Army Regulation 750-1, ***Army Materiel Maintenance Policy***) while holistically improving the efficiency of SSA operations. It's our responsibility to get recoverable items back into the Army system to ensure the organization as a whole continues to operate at a high level of readiness.

One improvement measure in the process is aggressive attention to the Defense Working Capital Fund (DWCF). The DWCF – established under Title 10 of the U.S. Code, Section 2208 – allows the Army to repair and purchase requirements for all supplies, maintenance, transportation and the other financial needs required to operate a professional organization. The generated ORIL credit helps the DWCF and our organization remain fiscally responsible to American taxpayers.

In addition to the financial revenue generated, critically required parts that may not be on the assembly production line are repositioned into the Army system for refurbishment and returned to the warfighter. A myopic approach to returning repairable parts into the system produces detrimental effects to readiness over time.

Secondly, for a BCT, the return credit is essential to operate an armored formation. To illustrate, an M1 Abrams engine costs $903,498 and the return credit is $361,781, representing a 40-percent return on investment of the entire cost.

The final improvement measure concerned sending our MOS 92A Soldiers directly to maneuver battalions to process and approve recoverable items on-site. From that point, FSCs delivered the items to the SSA, and the transportation platoon delivered the items to the LRC.

This entire process, with support from all leaders within the BCT, has improved ORIL management immensely.

The SSA within any organization represents the nucleus of sustaining and increasing OR to engage and destroy the enemy during a prolonged period of time. This endeavor demands engaged leaders at all echelons to ensure our formations remain committed to the execution and overall effectiveness of sustainment operations.

The key is to design and implement systems that transfer without friction to field or austere environments and to replicate the environment where we will engage our enemies.

Low-density training for all MOS 92A Soldiers within the BCT is essential; this investment will mitigate skill atrophy over time. Leader professional development – combined with rotating the brigade maintenance meeting to the SSA footprint to increase the overall importance of the SSA among BCT leadership – represents another good technique to improve operations.

The success or failure of an organization lies within the will of its leaders. Engaged leaders must develop viable solutions within the system of record (GCSS-A) to keep our organization operating at a high level of readiness postured to engage any enemy force within the world.

LTC Charles Montgomery commands 123rd BSB, 3rd ABCT, Fort Bliss, TX. His previous assignments include assignments officer, Human Resources Command, Fort Knox, KY; support-operations officer, 2nd Infantry BCT, 3rd Infantry Division, Fort Stewart, GA; brigade S-4, 2nd Infantry BCT; and G-5 School of Advanced Military Studies Planner, 3rd Infantry Division, Fort Stewart. LTC Montgomery's military schools include Pathfinder and Airborne Schools, Joint Planner's Course and Joint Firepower Course. He has a bachelor's of arts degree in history from the University of Southern Mississippi, a master's of science degree in human-resource management from Tarleton State University and a master's of military arts degree in military operational art and science from Command and General Staff College. LTC Montgomery's awards include the Bronze Star Medal (one oak-leaf cluster) and the Meritorious Service Medal (four oak-leaf clusters).

Acronym Quick-Scan

ABCT – armored brigade combat team
AO – accountable officer
BCT – brigade combat team
BSB – brigade-support battalion
CROP – container roll-on/-off platform
CWT – customer wait time
DWCF – Defense Working Capital Fund
FSC – forward-support company
GCSS-A – Global Combat Support System-Army
HS – home station
LOGPAC – logistics package
LRC – logistics-readiness center
MHE – material-handling equipment
MOS – military-occupational specialty
OR – operational readiness
ORIL – overaged, repairable-Item listing
SSA – supply-support activity
VSAT – Very Small Aperture Terminal

Operation Crusader:
Auchinleck's and Rommel's Great Gamble

Part 2 of 2

by retired U.S. Marine Corps LTC Robert W. Lamont

In November 1941, Britain and her Commonwealth launched Operation Crusader with the intent of lifting the siege of the key North African port of Tobruk. In the first part of this article (published in the Winter 2020 edition of ***ARMOR***), the interaction between disjointed British offensive execution and swift, massed response by Afrika Corps allowed Axis forces to partition the superior numerical strength of their opponent into a series of free-form and intense actions, defeating them each in turn. Historically, tank losses were reported as 530 for the British and 100 for the Germans. The imbalance in armor strength was redressed, giving GEN Erwin Rommel one of his most important decisions of the campaign.

On the morning of Nov. 24, GENs Rommel and Ludwig Crüwell met to discuss the outcome of the action in and around Sidi Rezegh. Crüwell stressed that the enemy had been smashed but that enough force remained for Afrika Corps to stay in the area and destroy the survivors. Intelligence was reporting that the New Zealand Division was moving west from Bardia, posing a potential threat to the Tobruk area if left uncovered. The remnants of XXX Corps were regrouping southeast of Afrika Corps, and their intentions were unclear at this point.[1]

As Rommel was taking in this information, he was balancing it against a plan of his own. Rommel had cast his eyes east with the intent to strike a decisive blow against Eighth Army. He felt that by attacking across XXX Corps' line of communication, he could inflict enough fear in the British of being surrounded and could strike at their command structure's cohesion. In short, by exploiting maneuver as a defeat mechanism, he could unbalance Eighth Army and throw them from the field.[2] We can read his intent in his remarks to GEN Johann von Ravenstein, commander of 21st Panzer Division, when he told him: "You have the chance of ending this campaign tonight."[3]

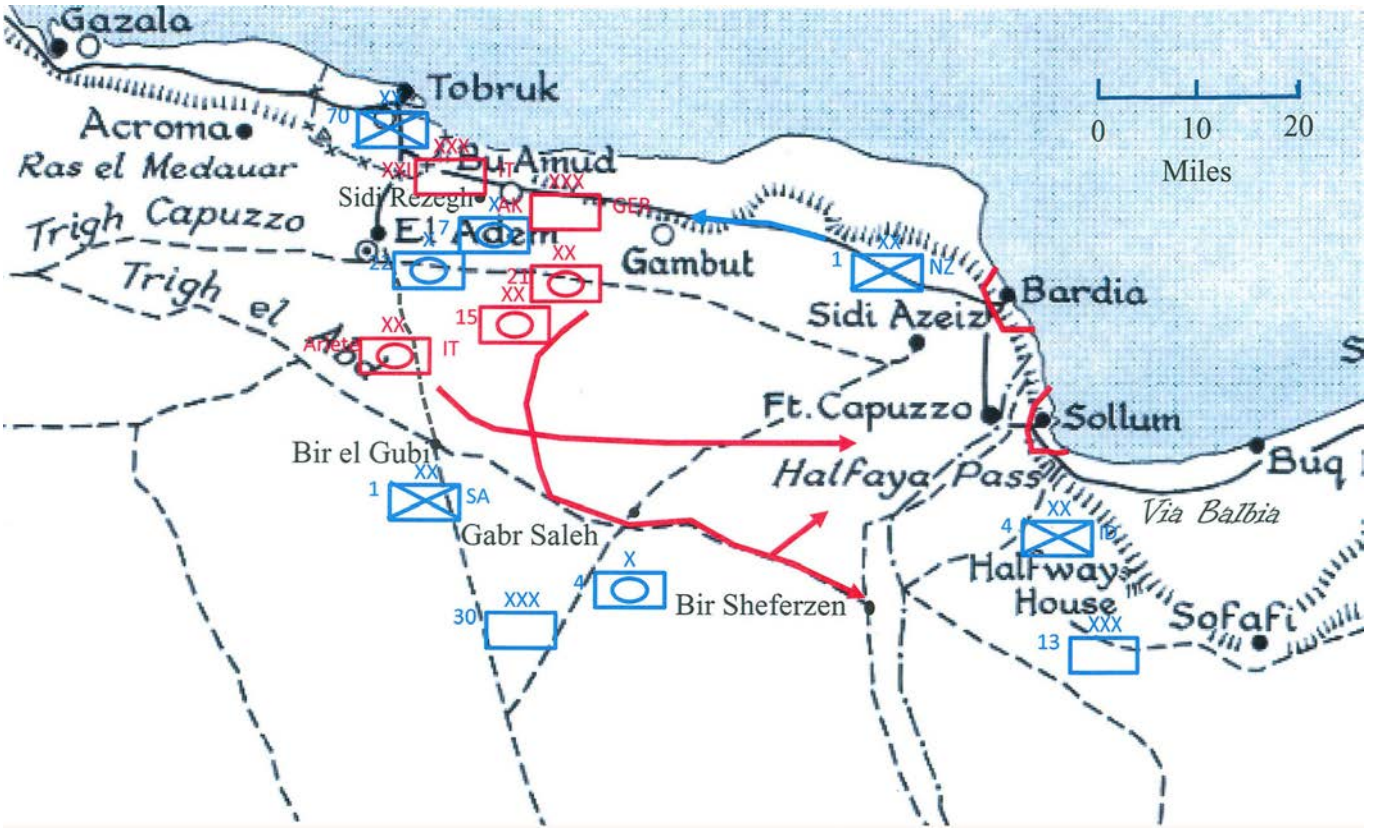


Figure 1. Disposition of units during Operation Crusader Nov. 24-26, 1941. *(Map by author)*

Status of forces

At this point in the battle, the balance of tank strength within Afrika Corps – coupled with vehicles from the Italian Ariete Division – would have placed enough combat power on the field to challenge any likely combination the British could muster along the Libyan-Egyptian frontier. With the British 70th Division bottled up in Tobruk and the New Zealand Division advancing piecemeal toward the Germans from Bardia, Rommel had to develop a decisive scheme of maneuver to turn the tide. His approach would be to personally lead the combined strength of 15th and 21st Panzer Divisions southeast to the Trigh El Abd track and then head for Bir Sheferzen to develop the situation. The Ariete Division would parallel this move on the north flank to prevent interference from British threats from that direction.

For their part, the British forces were licking their wounds and attempting to continue the attack toward Tobruk. XXX Corps was centered south of the Trigh El Abd track, working to reconstitute its tank strength. It was supported from two large supply dumps 15 miles south of Bir El Gubi, and another southeast of Gabr Saleh.[4] The New Zealand Division was moving down the Trigh Capuzzo roadway toward the former German assembly area of Gambut. The 7th Indian Brigade was holding along the frontier and keeping Halfaya Pass open for reinforcements and supplies.

Despite initial setbacks on contact with the enemy, Operation Crusader was grinding forward.[5] With both sides now executing offensive operations, the stage was set for a direct contest of opposing wills to see who would "blink" first and transition from the attack to the defense.

Rommel's rush

By mid-morning Nov. 24, Rommel would begin his "dash to the wire," leading 21st Panzer Division from the front in a bid to turn the tide. The effect within the XXX Corps' command structure was almost immediate. Field reports, with a tone of panic, placed Afrika Corps squarely across their lines of communication. The 7th Armoured Division and 1st South Africa Division were evading this maneuver by fleeing in multiple directions.

Figure 2. GEN Sir Claude Auchinleck, commander-in-chief, Middle East, and MG John "Jock" Campbell, commander of 7th Support Group, confer in the Western Desert. *(United Kingdom government photograph by CPT G. Keating, No. 1 Army Film and Photographic Unit; public domain)*

The confused nature of the situation had infused doubt in GEN Sir Alan Cunningham, commander of the British Eighth Army. As he looked to recover the battle, he contacted Field Marshal Sir Claude Auchinleck, commander-in-chief Middle East, and recommended that Eighth Army retire to Egypt immediately. This request was to receive a blunt and forceful rebuff from the theater commander, who directed that the offense continue. Auchinleck's determination in the face of uncertainty tempered the impact of the confused battlefield state and negated much of the influence of maneuver as a defeat mechanism.[6]

Rommel's rush down the Trigh El Abd track missed the British supply dumps to the south. By ordering commanders to advance without troubling about what was on their flanks, it should come as no surprise that these static installations were bypassed.[7] As the lead armor elements were reaching the wire, Afrika Corps was spread over

60 miles of desert. What Rommel had envisioned as a final pursuit had landed as a blow against open air.[8]

By that evening, Rommel had reached the frontier and issued orders for the following day. The 15th Panzer, supported by the Ariete Division, would turn north and attack through Sidi Azeiz in the general direction of Bardia. The 21st Panzer Division would swing across the frontier and attack through Halfaya Pass toward Sollum.[9]

Execution of these orders were hampered by fuel shortages and strong resistance. Allied air forces were beginning to influence the action and complicate movement plans, especially for those units on the Egyptian side of the frontier. More disquieting was that the British supply services were recovering "knocked-out" tanks, repairing them and returning them to the battle. By the end of the day, 70 such vehicles had been re-crewed and were ready for action.[10] The impact of leaving the field of battle to the British was beginning to come home.

Tobruk garrison

Nov. 26 was to witness two key events in the battle. The first was the relief of Cunningham from command of Eighth Army and the appointment of GEN Sir Neil Ritchie. Ritchie's more aggressive spirit was in line with Auchinleck's expectations and would carry forward with the rest of the battle. The second event was the renewed efforts of 70th Division to break out of the Tobruk encirclement. This effort was to link up with the New Zealand Division at El Duda.[11]

By Nov. 28, despite some success the previous day against 5th New Zealand Brigade, it was becoming clear to Rommel that his attempt to force the British to give up the attack had failed. It was at this point that he decided to break contact on the Sollum front and turn both panzer divisions west along the Trigh Capuzzo to readdress the balance in and around Tobruk. In one of those odd twists in military history, this move would bring the battle back full circle as the stage was set for a rematch around the airfield at Sidi Rezegh. Rommel was to override the recommendation of his staff as he looked to engineer a counterattack that would disrupt and prevent the complete link-up and reinforcement between the advancing New Zealand Division and the garrison at Tobruk.[12]

The action that was to follow in and around Tobruk would see each side gain and lose tactical advantage as their material strength was ground down to bare bones. The New Zealand Division would establish a link-up with the embattled garrison, only to have the siege of Tobruk re-established by a determined 15th Panzer Division counterattack from the south of El Duda.[13] Rommel was able to finally drive the New Zealand Division from the field, but the cost in doing so would preclude him from holding his position in Cyenaica.

On Dec. 7 the siege of Tobruk was lifted, and Rommel decided to withdraw to the positions prepared at Gazala.[14] Of course, events half a world away somewhat overshadowed Eighth Army's accomplishment as they pursued Afrika Corps east along a familiar track.

Attrition vs. maneuver

In analyzing the outcome of this second phase of Crusader, the focus turns to what was intended against what was accomplished. In departing for the "wire," Rommel had hoped to cut

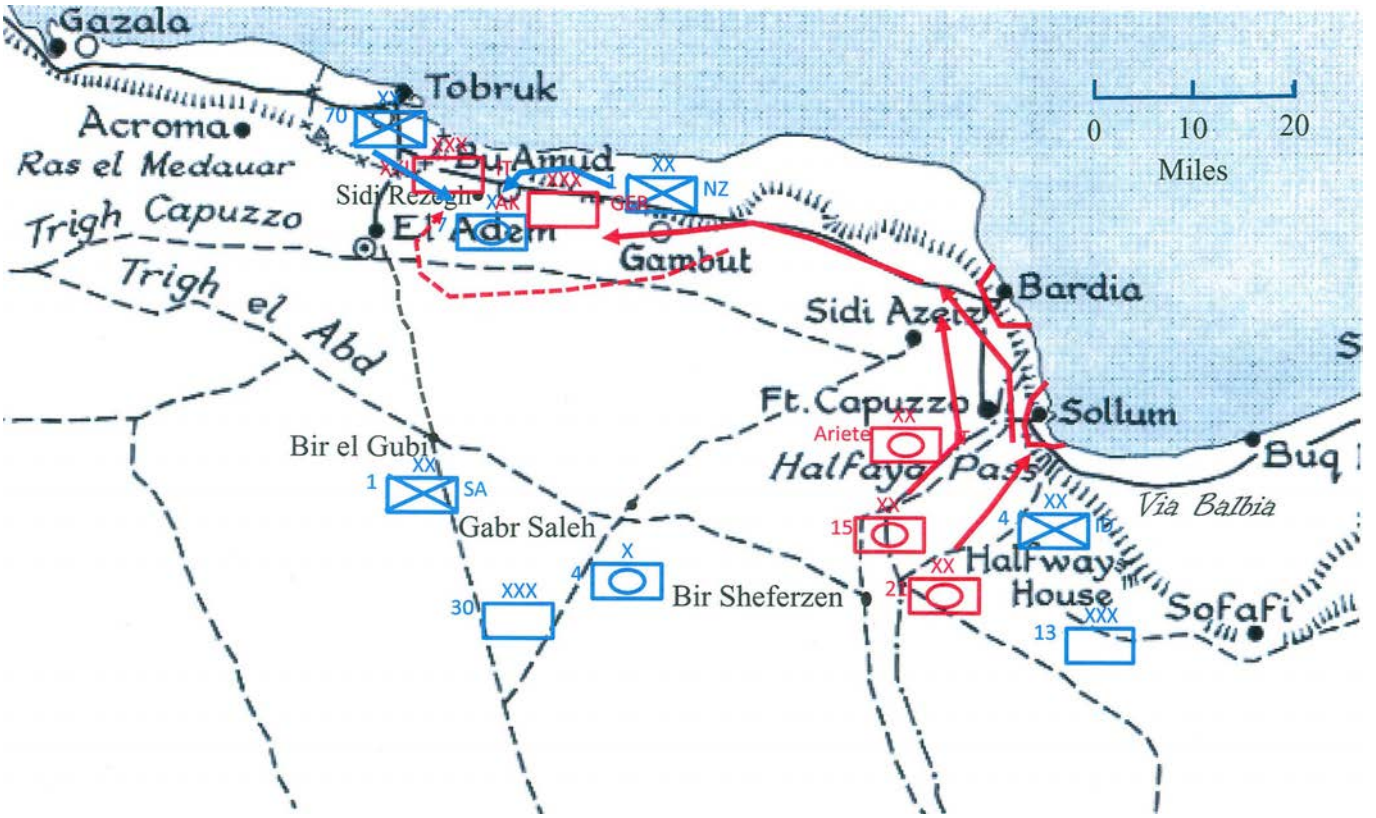


Figure 3. Disposition of units during Operation Crusader Nov. 27-28, 1941. *(Map by author)*

Figure 4. A British Crusader tank passes a burning German Panzer IV tank during Operation Crusader in North Africa Nov. 27, 1941. *(United Kingdom government photograph by LT L.B. Davies, No. 1 Army Film and Photographic Unit; public domain)*

across XXX Corps' supply line and in so doing force its commander to give up his effort to relieve the siege at Tobruk. This was intended as a direct engagement of the British chain of command to break their will to continue the struggle.

Using maneuver as a defeat mechanism was a close-run thing. Clearly Cunningham had been influenced to abandon the struggle, and his recommendation to fall back in Egypt provides clear evidence as to the state of his mind at the end of the battle's first phase. However, Auchinleck was not a beaten opponent, and his orders to continue the offensive demonstrate the resolution of a leader uninfluenced by the confusion and chaos generated by the rapid movement and shifting fronts of Afrika Corps' armor strength.

The materiel ramifications of the "dash to the wire" provide a clear indication of the cost of engagement. Rommel spent his final fuel reserves to execute this movement, which reduced his tactical options as the continuing campaign unfolded. On Dec. 5, the Italian *Comando Supremo* made it clear the supply situation would not improve until the end of the month, when airlift efforts could be initiated from bases in Sicily. In the week that followed Rommel's decision to pull back from the Tobruk front, Afrika Corps was down to eight operational tanks and the Italian Ariete Division could muster 30.[15] This stands in sharp contrast to XXX Corps, who retained their presence on the battlefield and through aggressive recovery efforts were able to return more than 70 tanks to the battle. The balance in armor strength that had been skillfully won in the first phase of Crusader by Axis forces was spent with interest during this follow-on effort.

Operation Crusader, and the German response to it, is unique in that it allows the military analyst to compare side-by-side two styles of warfare. Crüwell, in reacting to the wide-ranging British advance, looked to mass his armor, partition the enemy through movement and engage each part of his opponent in turn. Rommel, on the other hand, looked to exploit maneuver and disrupt Eighth Army's entire command structure. This would allow him to force his opponent away from offensive operations directed toward Tobruk and place him back along the frontier wire. Given Rommel's past operational success, he had solid reason to believe this was completely achievable with the means at hand. The wild card became Auchinleck's resolution to stay the course in the face of a confusing and chaotic situation.

Military literature is full of discussions regarding the merits of attrition vs. maneuver as appropriate battlefield defeat mechanisms. This article does not suggest that one is dominant over the other, but rather each are operational realities that must be addressed by the prudent commander. Your opponent's will to fight potentially drives the selection of a defeat mechanism during the planning process. As Rommel was to discover, you don't always get to fight the French of 1940 fame.

Historical examples of not comprehending your opponent's resolve include the Japanese in the Pacific Island campaign and the more recent Battle of Fallujah. In the Pacific, the Marines found it necessary to systematically reduce the enemy in a series of small-unit duels. While combined-arms tactics, such as the "corkscrew" to destroy fortifications on Iwo Jima,[16] were used in these battles; the result remained a difficult battle of attrition. The Battle of Fallujah would show that this level of resistance is not relegated solely to the realm of distant history. In discussing this battle with a Marine Corps armor veteran, he was struck at the fanaticism of the Arab fighters. In this urban setting, he saw no quit in the opposition, as they were completely willing to "fight to the death."[17]

Understanding your enemy, their operational tendencies and their resolution remains a solid guidepost for campaign planning today as it did when it was advanced by Sun Tzu. The armored task force is uniquely suited

Figure 5. The crew of a Mk VIB light tank look for any movement of the enemy near Tobruk, Nov. 28, 1941. *(United Kingdom photograph by CPT G. Keating, No. 1 Army Film and Photographic Unit; public domain)*

to adapt to a wide range of enemy threats, operational terrain and varying missions.

Mounted combined-arms forces, built around a solid armor core, remain capable of executing a wide array of operational schemes to ensure the successful implementing a number of defeat mechanisms. Given their all-weather mobility, these combat formations are able to disperse, mass and recombine to present their opponent an ever-changing array of tactical threats. These are the very operational characteristics that ensure mounted combined-arms teams remain a dominant formation in open combat. When gaps are identified on the battlefield, as with the advance of the British 7th Armoured Division during Operation Crusader, mounted forces are able to maneuver while retaining the advantage offered by this unfolding alignment and implement partitioning as a defeat mechanism. Also, they have the inherent combat power to create gaps and negate the continuity of the enemy's defense.

Partitioning the enemy in terms of physical space has its roots in his weapons-employment ranges, the influence of terrain and his current dispositions. The dimension of time provides the next method for partitioning an enemy. The ability of your opponent to reinforce each other from dispersed locations is dependent on its ability to recognize and react to our maneuver. This is influenced by its command-and-control system, the mobility and speed of its units, and the movement potential of intervening terrain.

Finally, the inability of the opposing force to field combined-arms teams may present the opportunity to partition the enemy based on capability. Suppression or lack of air defense will allow aircraft to influence action by both limiting the response of enemy assets and the systematic reduction of their combat potential. A gap in their indirect-fire capability will support suppression of their frontline forces by our artillery, enhancing the freedom of maneuver for our formations. The true strength of the combined-arms team is its inherent ability to tailor combat power to exploit any one of these opposing capability gaps across a number of warfare domains.

In closing, this review of Operation Crusader has allowed the reader to explore a number of related battlefield dynamics. The use of partitioning as a defeat mechanism was reviewed, and the role of mounted combined-arms teams to implement such an approach was developed based on both combat modeling and this historical example. Rommel's "dash to the wire" provided keen insights into the strength and weaknesses of maneuver as a defeat mechanism. It developed the linkage between the level of fanaticism within your opponent and their susceptibility to being unhinged by such an operational approach. Understanding the strength and relevance of these styles of warfare will enhance the ability of any future commander or staff to develop and analyze courses of action and chart a clearer path ahead.

Retired U.S. Marine Corps LTC Robert Lamont is technical director of the Amphibious Vehicle Test Branch, Camp Pendleton, CA. Previous assignments include scientist, Naval Surface Warfare Center, Fallbrook, CA; exercise action officer, III Marine Expeditionary Force, Okinawa, Japan, planning Tandem Thrust in Australia and Cobra Gold in Thailand; instructor, U.S. Army Armor School, Fort Knox, KY; and company commander and assistant operations officer, 3rd Tank Battalion, Twentynine Palms, CA. Other assignments included operations analyst in the Studies and Analysis Division, Marine Corps Combat Development Command, completing analyses for anti-armor force structure, combat identification and the Advanced Amphibious Assault Vehicle. LTC Lamont's service afloat includes executive officer, Marine Detachment, USS Constellation,

Figure 6. A Matilda tank crew overhauls their vehicle in preparation for the next phase of battle near Tobruk Dec. 1, 1941. *(United Kingdom government photograph by CPT G. Keating, No. 1 Army Film and Photographic Unit; public domain)*

and combat cargo officer, USS Cleveland. His military schooling includes the Armor Officer Basic Course and Armor Officer Advanced Course. LTC Lamont holds a bachelor's of science degree in management and technology from the U.S. Naval Academy and a master's of science in operations research from the Naval Postgraduate School. His awards and honors include Meritorious Service Medal with three gold stars, National Defense Medal with one bronze star and the Sea Service Deployment Ribbon with four bronze stars. He is a silver-level member of the Order of St. George. LTC Lamont is also the author of ***Panzer Trilogy****, which he says is "fiction, but the Armor lessons-learned are real."*

Notes

[1] LTG Sir Geoffrey Evans, ***History of the Second World War*** (Part 24), BPC Publishing Ltd., Marshall Cavendish, USA, 1973.

[2] Ibid.

[3] David Irving, ***The Trail of the Fox***, New York, NY: Thomas Congdon Books, 1977.

[4] David Fraser, ***Knight's Cross***, New York, NY: Harper Collins, 1994.

[5] Ibid.

[6] MG F.W. von Mellenthin, ***Panzer Battles***, New York, NY: Ballantine Books, 1956.

[7] Fraser.

[8] Irving.

[9] Evans.

[10] Ibid.

[11] Ibid.

[12] Ibid.

[13] Mellenthin.

[14] Evans.

[15] Referenced at http://en.wikipedia.org/wiki/operation_crusader.

[16] The corkscrew tactic used smoke and suppressive fire to blind the pillbox, followed by tank or man-packed flamethrowers to burn the defenders and concluded with a demolition team to collapse the structure. The mantra of "blind 'em, burn 'em and blast 'em" was well known throughout the close of the Pacific Campaign.

[17] MSG Michael Chouinard interview Jan. 19, 2014, at the Amphibious Vehicle Test Branch, Camp Pendleton, CA.

Onward to Company Command

by SFC Gary W. McKenzie Jr.

You are about to take command of your first unit: the armor or scout company, maybe even the anti-tank company at Fort Irwin, CA. This time is exciting; family and friends alike will be anxious to celebrate this achievement. As you take the reins, you have to commit to some priorities – a priority is the most effective way for a commander to steer an organization. You must also understand that the ability to throttle pursuit of ***your*** priorities in a manner that enables focused organizational energy on highers' mission will permit much better results for that highly regarded "key developmental eval."

Priorities

Understand this simple concept: If you have more than two priorities at any given time, they're ***not*** priorities. Ways to ensure that priorities are priorities:

- Set monthly goals or "to do" lists.
- Focus a month on property, including ancillary equipment and services.
- The Command Supply Discipline Program is important – this is a great way for a new commander to learn the unit's discipline and get face-to-face time with Soldiers.
- Have a training-meeting format going into the job; protect this meeting at all costs. If having biweekly training meetings works for you, then commit to this – this frees up two hours every other week for admin tasks and getting sync'd with your first sergeant.
- Make it a training meeting – this isn't where you talk about maintenance or taskings that are coming down! It could be as simple as the vests for Army Physical Fitness Training next week or as in-depth as reviewing the concept of operations (four to six weeks out) for a company-level field-training exercise.

You should try to have a long-term (one to three months) priority and a near-term (could be due at the end of the day or two weeks out) priority. Managing time and organizing the usable calendar space you have are crucial, yet tricky, tasks. I urge you, however, to not look beyond the basics as often; skills that will enhance the formation's lethality are not all sexy training events. The basics are gunnery-skills training tasks, Excellence in Armor program, land navigation, troop-leading procedures/military decision-making process, weapons qualification, certifications, gunnery … the list is long. The simple things matter, the repetitions matter; armor warriors rely on skills that are easily overlooked from the bird's nest.

Reacting

Reacting is almost a swear word. The enduring question is: "Should the company react to the battalion or the other way around?"

- Understand that you can influence the boss at times; just make sure it's the right time.
- Fragmentary orders exist for a reason; they are necessary.
- Limit how much emotional energy you spend in the presence of your Soldiers; in combat they would look to you as the anchor.
- It may be necessary at times to pursue a discussion with the boss about the "sacredness" of your training calendar and the effort you are putting into it to resource excellent training – try to establish the purpose of the calendar as contractual between you both.

Gunnery

Gunnery never ends; there is no definitive start point or finish point. Short and sweet: you have master gunners in your formations who can help you identify your training deficiencies and challenges.

- The Advanced Gunnery Training Simulator (AGTS) is the most underused and crucial instrument in maintaining crew lethality. However, at more than $750 per 4.724-caliber round, we cannot possibly live on a tank range for four months of the year.
- AGTS should have nested goals … where are you in your gunnery density? Are sustainment crews shooting four to six hours per month? Are new crews meeting the 12-15 hours of intensive training in the first week?
- AGTS should be a platoon-led event.
- Vehicle-crew evaluators, AGTS instructors/operators, simulations training managers and master gunners: are we training these? Are we training changing doctrine and meeting standards?

From your new seat, you impact the future of armor lethality. What do we want armor formations to bring to the table in five years? Are you training them that way?

SFC Gary McKenzie Jr. is NCO in charge and master-gunner adviser/liaison, Expeditionary Training Support Division, 7th Army Training Command, Grafenwoehr, Germany. He "has held every position in a tank company from the 2 tank driver to platoon sergeant." Previous assignments include platoon sergeant, armor opposing forces, 1st Battalion, 4th Infantry, Hohenfels, Germany; squadron master gunner, 11th Armored-Cavalry Regiment (ACR), Fort Irwin, CA; troop master gunner, Troop C, 11th ACR, Fort Irwin; tank commander, Company D, 11th ACR, Fort Irwin; tank commander, Company D, 2nd Battalion, 9th Infantry Regiment, Camp Casey, Republic of Korea; master instructor, one-station unit training (OSUT), Headquarters and Headquarters Company, 1st Battalion, 81st Armor Regiment, Fort Knox, KY, then Fort Benning, GA; OSUT instructor, Fort Knox; and leader/gunner/tank commander, Company H, 3rd ACR (three combat tours in Iraq during Operation

Iraqi Freedom I, III and 07-09), Fort Carson, CO, and Fort Hood, TX. SFC McKenzie's military schooling includes Abrams Master Gunner, Joint Firepower Course, Interservice Range Safety Course, Senior Instructor/Operator Course, Maneuver Senior Leader's Course, Battle Staff Course and Advanced Leader's Course. He holds a bachelor's of science degree in organizational leadership from Denver University, with a secondary major in human resources. SFC McKenzie's awards and honors include the Meritorious Service Medal.

Acronym Quick-Scan

ACR – armored-cavalry regiment
AGTS – Advanced Gunnery Training Simulator
NCO – noncommissioned officer
OSUT – one-station unit training

Position	Rank	Time in service (years)	Total experience per position
Company commander	Captain	7	7
Company executive officer	First lieutenant	3	3
Platoon leader (x3)	Second lieutenant / first lieutenant	1.5	4.5
			14.5 years (officers)
First sergeant	First sergeant	16	16
Platoon sergeant (x3)	Sergeant first class / staff sergeant	12	36
Headquarters section sergeant	Staff sergeant	8	8
			60 years (senior NCOs)

Table 1. Chart of company experience. Most of a company's experience is in senior noncommissioned officers.

BOOK REVIEWS

Panzerfaust Vs. Sherman: European Theater 1944-45 by Steven J. Zaloga; New York, NY: Bloomsbury Publishing Plc; 2019; 80 pages with photographs, maps, illustrations and bibliography; $22.

Steven Zaloga's latest work examines "the revolutionary new antitank weapons introduced on the battlefield in late 1943." His examination concentrates on the development and employment of the German *panzerfaust* (armor fist) and similar weapons against the U.S. Army's M4 Sherman tanks. A detailed chronology is provided that enhances an appreciation for the time and energy that went into the development and employment of antitank systems against American, British and Soviet tank forces.

The German experiences on the Eastern Front created a situation where massive Russian tank forces confronted German ground forces. Limited numbers of towed antitank weapons were available, forcing the Germans to improvise. Several examples of these improvised weapons systems are explained and supplemented by applicable photographs. It became apparent that while these improvised systems required "heroic bravery on the part of the infantryman," they had a limited operational effectiveness. A better way was sought.

Given their early use of shaped charges, German industry developed a shaped charge which was a "type of hollow charge that added an important ingredient: a metal liner between the warhead's explosive and the cavity. When the warhead was detonated, the explosive blast was focused on the metal liner, compressing it into a hypersonic stream of metal particles that could penetrate a great deal of steel armor." This lethal shaped charge became the warhead for the panzerfaust.

The German infantryman now possessed a hand-held antitank system that could permit him to engage a tank. Improvements in range and accuracy followed. Given the limited resources available to German industry, production of the panzerfaust initially failed to meet demand. Eventually, the Germans were able to produce eight versions of the panzerfaust. These improvements to the panzerfaust gradually increased the effective range of the system from 30 meters to almost 100 meters, with a penetrating capability of between 140 and 200 millimeters.

While range was an employment limitation in open areas, the close French bocage fields encountered by the Americans coming out of the Normandy beachhead offered ideal terrain for employment of the panzerfaust. However, for every German action there was an equal Allied counter-action. As the author relates, "There are no known accounts of who came up with the idea of using sandbags" as a field-expedient method for defeating the panzerfaust.

Interestingly, while the American Seventh Army employed a wide variety of sandbag and cement defensive measures, Third Army forbid any such modifications to their tanks. However, action during the December Battle of the Bulge led to "widespread complaints about the poor armor protection of the M4." Instead of sandbags for protection, Third Army cannibalized armor plating off derelict German and American vehicles as a means of offsetting the panzerfaust. Several diagrams and photos of these improvements are provided. The author also includes a section that discusses how the Soviets and British protected their armored forces against German antitank systems.

Allied industry also proposed several solutions, including development of a plastic armor system. Unfortunately, this added some three tons of weight to the turret and four tons to the hull area. This and other fabrications proved to "be too great a challenge." Tactical units, therefore, continued to rely on developing and improving a host of field-expedient methods to counter the shaped charge. Several of these improvisations are detailed, along with photos of their use. The effectiveness of each system is fully discussed throughout the book.

The book includes fascinating details on the technical specifications for the panzerfaust, including the weapon's firing and sighting procedures, along with a detailed diagram of the impact sequence. Zaloga then examines in detail the battle for the Normandy village of Villiers-Fossard to demonstrate the effectiveness of German antitank systems against the employment of armor and infantry units from the American 3rd Armored Division. This concluding portion of the book provides an appreciation for the difficulties of achieving battlefield success against an entrenched enemy force armed with effective antitank weapons.

This is a superbly written account of the devastating effectiveness of man-portable antitank weapons. Zaloga has written a fine work worthy of review by those seeking a better appreciation of asymmetrical warfare. Maneuver leaders well acquainted with the close combat operations of recent years will find this book insightful.

RETIRED COL D.J. JUDGE

American Armor in the Pacific by Mike Guardia; Philadelphia: Casemate Publishers; 2020; 124 pages with photographs, maps, index; $24.95.

When one is asked what the notable armor engagements of World War II were, more likely than not, the response would be one or more fought in Europe or North Africa: Hannut, Kursk, El Alamein, Hurtgen Forest and in the Alsace during the Battle of the Bulge. Largely forgotten is the history of the battles fought in the Pacific Theater by U.S. Army and Marine Corps tankers against the fanatical and battle-tested Imperial Japanese Army (IJA).

Mike Guardia's ***American Armor in the Pacific*** is a fine snapshot of this

important time in mounted combat history. With full-color maps, photographs, graphs and his keen writing style, he vividly describes 20 operations beginning with defense of the Philippines in 1941-42 and culminating with the Battle of Okinawa in 1945. The organization of the book enhances it readability. The timeline at the beginning of the book is a useful tool that lends context to armor operations in each campaign.

The introduction describes the development of the opposing forces' tanks during the interwar years. Noting the success of Allied armor during World War I, Japan experimented with a few tanks imported from Europe, and in 1931 began producing tanks of its own design. The Type 97 Chi-Ha Medium Tank was Japan's most widely produced tank. The first variant mounted a low-velocity 57mm main gun. A later variant had a 47mm high-velocity main gun. Although considered the best Japanese tank, the Type 97 was still inferior to the American M3 Stuart and M4 Sherman tanks.

Unable to sustain tank production and losing excessive numbers to combat, the IJA abandoned shoreline defense in favor of fighting inland battles of attrition, relegating tanks to static defense missions. The IJA, cognizant of the inevitability of an American invasion of the home islands, kept a relatively large number of tanks in reserve on the islands.

The broken volcanic terrain and dense tropical vegetation of the Pacific Islands was not conducive to long-range, tank-on-tank engagements such as those in the European and Mediterranean theaters. Lacking open terrain, most armor operations in the Pacific were limited to supporting slow and unrelenting dismounted-infantry combat.

The Marine Corps, in addition to employing M3 and M4 tanks, required a platform for amphibious operations. The Landing Vehicle Tracked (LVT) "Alligator" and its follow-on variants – capable of carrying 18 troops or 4,500 pounds of cargo and mounting the M3 tank turret – satisfied this requirement. The Army also employed the LTV, ultimately fielding 15 battalions in the Pacific.

Although the Army and Marine Corps shared the same platforms, the two services tended to employ them differently. Many will find controversial Guardia's assessment of the Army's and Marine Corps' employment of armor. According to Guardia, the Marine Corps was more aggressive with its tank battalions, preferring to use tanks as the vanguard during synchronized tank-infantry operations, whereas the Army lacked the synchronicity typical of Marine Corps operations, using its armor as "back-up assets only when certain high-value targets had been identified. … Ironically, the Army's amphibious tank battalions were more adept at conducting shoreline operations."

American Armor in the Pacific is a fine book; however, it is not without shortcomings. The lack of battalion-level organizational charts is disappointing. Scattering vehicle specifications and operational data throughout the text was burdensome; a chart with tank-by-tank comparison would better capture this data. There was no discussion on sustainment operations. There are some factual errors – for instance, Guardia incorrectly wrote that the Army had a total of 50 separate tank battalions, a third of which served in the Pacific; however, at the end of the war, the Army had 150 separate tank battalions, with only 15 in the Pacific Theater. In at least two photographs, there were unit-designation errors.

Guardia's work has relevance to today's Armored Force. It clearly and unambiguously reminds us that armor can fight on extremely difficult terrain and participate in amphibious operations. The lessons of the Pacific campaigns were soon forgotten, only to be painfully relearned in Vietnam. As the Indo-Pacific and sub-Sahara Africa regions increase in strategic importance, the tactics, techniques and procedures adopted by Army and Marine Corps tankers in World War II remain relevant today. The Army's jungle-operations doctrine is woefully outdated; Field Manual 90-5, ***Jungle Operations***, was last published in 1982, with only nine pages devoted to armor and mechanized-infantry operations. The Army is doing its Soldiers a disservice by not modernizing its jungle-operations doctrine.

RETIRED LTC LEE F. KICHEN

Tank Battles in East Prussia and Poland 1944-1945: Vilkavishkis, Gumbinnen/Nemmersdorf, Elbing, Wormditt/Frauenburg, Kielce/Lisow by Igor Nebolsin; Warwick, United Kingdom: Helion and Company; 2019; 544 pages; $61.22.

Igor Nebolsin's extraordinary efforts with his work ***Tank Battles in East Prussia and Poland 1944-1945*** need to be put into context. For many readers and military-simulation gamers, the Eastern Front of World War II is less interesting post-Operation Barbarossa – and certainly after the Battle of Kursk. A key reason for this is that the postwar "history" – as presented in popular and academic writing about the period post-Kursk to the operations leading up to the capture of Berlin – are not about spectacular wins against Soviet mass; they're solely about grinding attritional war. Also, the main German protagonists who fought on the Eastern Front – Guderian, von Manstein, Manteuffel, Raus and others – wrote less on this period of the war as well as colored their writings for their intended U.S. Army audience. A third key reason is that the Soviets' failure to open their archives due to Stalin's and Khrushchev's (and onward) security restrictions meant that accessibility to Soviet wartime operational records was lacking. These reasons meant that only post-*glasnost* did we start to get a more balanced interpretation of the gigantic struggle that consumed both the Third Reich and Stalin's Union of the Soviet Socialist Republics.

Nebolisin's feel for the material and this timeframe of the war is quite good. The only thing he could have done in terms of context is segue from what is commonly referred to as the destruction of Army Group Centre to the 1944-1945 phase of the Eastern Front, as the armor battles around Wilkowszki are in early August 1944. Doing so would have added greater depth to this work and more insight into the period.

Nebolsin humanizes the war from the Soviet perspective; for instance, in each of the book's four sections, he gives us thumbnail citations of various Soviet heroes. It is a shame, however, that Nebolsin didn't tell us exactly what these citations mean in terms of precedence for Western readers. Before this work, most of us had never heard of "Cavalier of the Order of Glory"; we must guess at the award's relative value in terms of prestige – a small oversight. But the number of citations or examples where soldiers covered German panzers in straw and set them alight in combat seems problematic.

Where the book truly excels is in terms of the interplay among the daily operational reports from Soviet fronts, armies, tank corps and tank brigades, as juxtaposed against reports from their German foe – in this case, mainly the German Fourth Army, as well as principal German panzer leaders and commanders during these battles. Again, the wealth of combat detail for the battles of Wilkowyskzi, Gumbinnen/Nemmersdorf and Kielce/Lisow, among others, is astounding. Perhaps even more astounding is the frankness that comes through in some reports as well as in notations like "the officers of the unit should not be arrested as criminals." There are a number of photographs, almost none of which this Eastern Front aficionado had seen before.

What makes this book shine for this old armor officer are the materials about preparing for combat operations, as the lack of meaningful attention paid to the prebattle side occurs too often in the history of military writing. Here we get a glimpse into how new replacement soldiers were brought into units, as well as into boresighting, weapons practice and tank gunnery (often using recovered German Tiger and Panther tanks to build vehicle recognition and a sense of self-confidence that their tank main-gun rounds would defeat these tanks). We also read how, by this point in the war, reconnaissance had almost become a fetish for the Soviet High Command, remembering the days of the border battles in Operation Barbarossa, where units often blundered into set-piece German ambushes. Nebolsin also provides many inserts of both German and Soviet equipment-readiness reports and their current maintenance status.

There are several things I wish Nebolsin had done within ***Tank Battles***. The first is perhaps more of an editorial nature: that either Nebolsin or the publisher's editorial staff had clearly set off his contributions and analysis to make that material more readily apparent to the reader. Sometimes his writing is evident, but in other places I guessed. That is a shame, as Nebolsin's comments add to the overall narrative as set forth by the operational histories used here.

The maps? How about a non-academic *ewww*! First the reader is forced to find the maps in the book. Unless he or she is well-versed on the areas of Poland or East Prussia covered in the book, he/she might not know where those places are, so it would have been helpful to include the campaign maps with their relevant areas. Instead, Helion Press lumps them all in one area at the book's midpoint. Worse, the maps have no key to them in terms of scale or what the symbols mean. Even with my armor background and knowledge of military symbology, I was frankly perplexed.

The translation is near spotless, with only several instances where things are a bit garbled.

The only time Nebolsin doesn't connect the dots well is in the geopolitical and economic sense when he calls the German movement of four panzer divisions from northern Poland to Hungary a mistake. At this point, the Hungarian oil fields were the sole remaining major source of petroleum, oil and lubricant products for the Wehrmacht, so the choice was no choice, really – the Wehrmacht was strategically obliged to control the Hungarian oil fields. Also, one might raise an eyebrow at the tragedy of Nemmersdorf, where the generally accepted version is that the Red Army avenged German actions upon Soviet civilians who had first crossed into German territory.

It is easy to recommend ***Tank Battles in East Prussia and Poland 1944-1945***. For one, no comparable work readily comes to mind. The book is hard to put down – I read more than 60 percent (300 pages) of it in one day! Its overall richness in terms of detail, lessons to be learned and absorbed, and as a counter to decades of military German *ubermensch* memoirs makes it a book not to be missed. One can only look forward to future works from Nebolsin.

DR. (LTC) ROBERT G. SMITH

Blood, Guts and Grease: George S. Patton in World War I by Jon B. Mikolashek; Lexington, KY: University Press of Kentucky; 2019; $26.99 Kindle; $35.32 hardcover.

Countless biographies have been written about George S. Patton Jr. Unfortunately most pay only little attention to Patton's World War I experiences, which were the bedrock of his successful command of a corps and two field armies in World War II. Jon B. Mikolashek's ***Blood, Guts and Grease: George S. Patton in World War I*** fills that void with his detailed and insightful examination of this seminal period of Patton's career. Patton wasn't an exception to the maxim: "Great commanders aren't overnight successes." World War I was the proving ground for his command philosophy and his ability to train Soldiers and lead them in combat.

Patton's egotism, aggressiveness and his unbridled ambition first became apparent during the Mexican Punitive Expedition in 1916, when he led the Army's first motorized attack and killed Jose Cardenas, one of Pancho Villa's lieutenants. The Patton family's political influence and his wife's wealth undoubtedly contributed to his early career advancement. His sister Nita's romance with GEN John J. Pershing played no small part in Patton's becoming Pershing's aide in Mexico.

A year later, Patton sailed to Europe on Pershing's American Expeditionary Force (AEF) staff. Mikolashek described Pershing as a father figure and Patton as the obedient son. On the other hand, Patton disliked most of his seniors, who only tolerated him for his ability to win. BG (later LTG) Hugh A.

Drum and BG (later MG) Fox Conner were the only other senior officers besides Pershing whom Patton trusted and respected in World War I.

Bored and disgusted with staff work and fearing that promotions and glory would elude him, he became America's first tanker. Although not initially enamored with tanks, they were the means to his end of furthering his career. Applying to the embryonic Tank Corps, Patton stressed his combat experience in the Cardenas affair, service as a cavalry officer, knowledge of automobiles and motors, and fluency in French as his qualifications. Patton's first experience with tanks came with his attendance at the French tank-training center at Champlieu for two weeks and another week at the French tank factory outside Paris. The paper he wrote describing his time with the French would become early doctrine for the Tank Corps.

While Patton emulated Pershing, his relationship with his immediate boss, BG Samuel D. Rockenbach, chief of the AEF Tank Corps, was rocky at best. They were diametric opposites: Rockenbach, 22 years older than Patton, was quiet and even-tempered. Although not a great thinker, due to his work ethic and political astuteness, Rockenbach had a successful pre-war career. With his career dependent on Rockenbach, Patton had only a half-hearted relationship with him. His dealings with Rockenbach were harbingers of his interactions with GEN Dwight D. Eisenhower and GEN Omar N. Bradley in World War II.

If Rockenbach was the father of the Tank Corps, Patton was the midwife with his establishment of the Light Tank School at Bourge, France, where he trained tankers and developed the organizational structure for the Tank Corps. This training and organizational structure bore fruit in what became 304th Tank Brigade, which Patton commanded in the St. Mihiel and Muese-Argonne offensives near the end of the war.

The school wasn't a command position, but it was what today's Army considers a "key development" position, which either makes or breaks a career. His system of "training the trainers" developed the first cadre of officers and enlisted leaders for the Tank Corps. Although respected by his Soldiers, they feared him because of his fixation on discipline.

While dealing with the complexities of training soldiers and building units for combat, Patton continued his professional development by attending the Army General Staff College in Langres. Patton learned his first lessons in the art of command and the science of control of a large unit in the St. Mihiel and Meuse-Argonne offensives. Patton demonstrated uncommon courage and his ever-present quest for glory by leading his tanks on foot despite Rockenbach's orders directing him to remain in a command post, where he would be accessible to his higher command. While leading a trench-breaching operation, he struck some Soldiers with a shovel, exhibiting the same roughness and brutality revealed by the World War II slapping incidents.

After the war, Patton reverted from his wartime rank of colonel to his permanent rank of captain. Patton, seeing little future in tanks after Congress abolished the Tank Corps, returned to the cavalry in 1920. Although Patton returned to the horse cavalry, he continued to reflect on his World War I experience and to write about tanks and their employment in a future war.

RETIRED LTC LEE F. KICHEN

Selous Scouts: Rhodesian Counter-Insurgency Specialists by Peter Baxter; Philadelphia: Casemate Publishers; 2019; 72 pages; $29.95 (soft cover).

From July 1964 to December 1979, the white-minority-ruled nation of Rhodesia fought a long battle against two black independence movements in one of the last events marking decolonization on the African continent. Dubbed the Rhodesian Bush War, the civil conflict – which was yet another facet of the larger, global Cold War – ended with a transition to majority rule under Robert Mugabe. Viewed through a military lens, a Special Operations unit dubbed the Rhodesian Selous Scouts remains the most widely known unit to take part in the Bush War. ***Selous Scouts: Rhodesian Counter-Insurgency Specialists*** is a short, if informative, examination of the scouts' formation, selection process, training, equipment, operational employment and ultimate demobilization.

Selous Scouts briefly traces Rhodesia's history through colonization under namesake Cecil Rhodes to the post-World War II movement for decolonization and eventual Communist-supported insurgency, then to eventual world recognition as the Republic of Zimbabwe. Author Peter Baxter effectively uses the Rhodesian Bush War as a backdrop for telling the scouts' brief history and lasting legacy. Baxter writes from a position of both professional and personal expertise, having grown up in both Kenya and Zimbabwe, as well as extensively studying history. For those familiar with African history, the topic of Rhodesia-Zimbabwe may easily evoke strong feelings, particularly on the civil war and Mugabe's decades of disastrous leadership. To his credit, Baxter presents a generally even-handed account of the Bush War and the scouts' role in that conflict.

Despite its relatively short length of just 72 pages, ***Selous Scouts*** will provide the reader a number of critical lessons to be remembered when introducing a new unit to an established military force. ***Selous Scouts*** repeatedly stresses the absolute need for an intelligence staff knowledgeable of the local culture and area of operations. Part and parcel of this lesson is that military-intelligence personnel generally lack the depth and breadth of local knowledge necessary to be effective, thus requiring specialized training or assistance of experts.

Baxter also devotes significant attention to the inevitable friction between conventional and Special Operations forces for scarce resources, personnel, intelligence and operating areas. Baxter avoids the hero worship all too common in recent books and movies examining Special Operations forces, instead highlighting both the scouts' successes and failures. The book's latter passages describe the unit's undeniable tactical achievements in the

field and challenges at working with the larger Rhodesia Army or the national-security services. Baxter also addresses allegations of the darker chapters in Selous history, including rogue operations and illegal ivory trading via elephant poaching.

Selous Scouts is Book 38 in a long-running series titled "Africa at War," which covers the post-colonial period to the present day. Prospective readers may wish to add this book to their personal library as a stand-alone work or as part of a larger collection. In either case, ***Scouts*** is guaranteed to provide an evening of enjoyable reading.

LTC CHRIS HEATHERLY

The Expansion of Military Forces: How Armies Grow In The Age Of Total War 1789-1945, edited by Matthias Strohn; Havertown, PA: Casemate Publishers; 2019; 196 pages with footnotes and bibliography; $41.89.

In the broadest sense, an army is a fighting force created by a nation to provide for the "common defense." Given the requirement for defense and demands of the society, along with economic factors, nations have followed several paths in creating and nurturing a military force. One American and eight British contributors offer insight into how Germany, France, Great Britain and the United States formed effective fighting forces. Each contributor to this anthology provides a unique approach that provides insight on how a given nation used its manpower, economic resources and ingenuity to create a military force.

As pointed out by the authors, there are two general historical models upon which a nation creates a credible fighting force. The Continental Model employed by Germany and France consisted of a small regular army aided by mandatory short-term conscription that flows into a substantial-sized reserve force. Given the traditional dislike by their respective societies of large standing armies, Great Britain and the United States followed a slightly different model. In this version, a small volunteer-based regular army was supplemented by militias. Conscription reluctantly occurred as a result of a national emergency.

Regardless of the model used, a nation forms its distinctive force based on three components: the physical, containing such items as manpower and equipment; the moral, consisting of intangibles like courage and unit pride; and the conceptual, covering doctrine and tactics. This last component is the most important but also the most difficult to establish and sustain.

The chapter on the mobilization of both industry and manpower to deal with any threat, especially that posed by the 1933 rise of Germany countered by France and Great Britain, provides a balanced look at how other nations grow their respective militaries. The sections covering the various methods for establishing a reserve force are instructive. Interesting also is the chapter dealing with use of colonial forces by Britain and France during both world wars.

While France, Germany and Great Britain possessed a long-established military schooling system, the United States was a relative latecomer to this aspect of army growth. We did not establish a formal war college until the 1900s when the secretary of war in the Theodore Roosevelt Administration, Elihu Root, argued before Congress for a military school that would meets the demands for "a synergy of managerial and tactical skills." His foresight reaped rewards as the United States entered World War I with a core of Army officers who appreciated how to create a large force from what was the frontier-based U.S. Army.

Creating an army from this essentially border-protection force tested the Woodrow Wilson administration. How it met the challenge and the aftermath of the war are covered in crisp detail. The same is true for the discussion on how the American military used the interwar period to enhance the military-education system while reverting to a small constabulary force. Along the way, the Congress acceded to the Army's request and established the Army Industrial College to address mobilization of industry to support a future military force.

As World War II loomed on the horizon, the conceptual phase of our military came to the forefront as war plans, known as Rainbow 5, addressed various worldwide contingency operations the United States might face in the future. A force structure to support these possible operations resulted in a reorganization of the standard Army division from the World War I square division containing 25,000 men to a triangular one containing 15,000 men. Once a divisional structure was created, it served not only to create more infantry divisions but also was a flexible base that allowed the creation of airborne and armored units.

How Armies Grow is a well-written book that addresses a host of economic, mobilization and manpower issues in a series of short chapters. While it addresses how armies grow, it does not cover the creation and understanding of a given nation's vital, major and peripheral interests that bring a society to economically and emotionally support a given-sized force. Those desiring to expand their knowledge of the role these factors play in the creation of an effective fighting force must look elsewhere. However, for those in search of an understanding of the various methods used to bring a military into being, this is a highly recommended source.

RETIRED COL D.J. JUDGE

German Flak Defences vs Allied Heavy Bombers: 1942-45 by Donald Nijboer; New York, New York: Osprey Publishing; 2019; 80 pages; $15.59.

Donald Nijboer's ***German Flak Defences vs. Heavy Bombers*** is an easy book to overlook due to its thin size, resembling Osprey Publishing's typical volume. But no matter what your interest is, Nijboer's work truly hits the historian's sweetspot that punches way above its weight in terms of pages. Overlooking this book would simply be an error on the reader's part, as the book is not merely entertaining, but the overall narrative flow is tremendous. Professors and instructors often talk about "less is more," and here is a

perfect case where less is more for perhaps the average student of history or World War II, or for the strategic-air-campaign enthusiast.

The very first thing I did upon receiving this book was turn to the bibliography. There it was, the bible of flak works: Edward B. Westermann's ***Flak-German Anti-Aircraft Defenses 1914-1945***. Knowing that Nijboer consulted and used Westermann gave me great confidence in the book without having turned a page. On the other hand, there were minor weaknesses. For example, one could have wished Nijboer had used the Oct. 12, 1944, memorandum for MAJ James L. Luke on "German Flak Defense as Related to Transportation Targets." Even more so, one might have wished for a separate cite for the U.S. Strategic Bombing Survey study, "The German Flak Effort through The War." But these are very minor quibbles. (The most interesting part of the U.S. Strategic Bombing Survey study was the flak-rocket development, which Nijboer didn't pay much attention to.)

The book is liberally illustrated, as is the standard for many Osprey books. The graphics of flak shells, color cutaway drawings and many well-chosen black-and-white pictures make this a treat for the reader who might be new to the subject. For the reader who is perhaps better versed, it is likely you will snuggle down into your favorite reading spot with tea or coffee and simply enjoy the selection and structuring of the book's illustrations. I was impressed that Osprey included a graphic of the U.S. Army Air Forces' combat-wing formation, which I personally use to make a point to the military-science classes I teach.

There are some choice facts that will catch your attention. For example, do you know how many women were employed in the flak realm? More than 116,000 young women were used, not in ancillary roles, but to replace flak gunners released for duties at the front. (There is no mention of casualties among these female flak gunners.) Another choice fact: The dual-barreled 128mm Flakzwilling 40/2 weighed in at 28 tons.

With his command of the facts, the author makes a good case that the Germans' investment in flak was a good exchange for the damage and destruction it wrought upon the Allies' air fleets.

There are perhaps some areas Nijboer could have explored but chose not to in ***German Flak Defences***. As noted, he didn't explore the more commonly known Wasserfall missile or the less commonly known Taifun. However, neither would have been game-changers due to the Germans' failure to develop a proximity fuze. Also, Nijboer could have examined more than he did the tradeoff regarding the need for flak vs. the inability to use the same weapon type to deal with the mass of Soviet armor. At the end of the war, many flak units were sent to the front, specifically the Eastern Front, for just that purpose, which he does lightly note.

Nijboer's ***German Flak Defences vs. Heavy Bombers*** is easily the best immersion book on this subject this ground pounder – who has quite the love for and library of World War II air combat – can find to date. What is most interesting is how little American fixed-wing aircraft and rotary-wing elements have faced any sustained air-defense-artillery effort since Vietnam – other than 11th Air Regiment's attack during Operation Iraqi Freedom near Bald, Iraq. Nijboer's book is highly recommended and, in terms of pure cost, is a great value. For those wanting to drill down in greater detail, the bibliography is meaty enough to enable the reader to further slake his/her thirst on the subject of flak defenses.

DR. (LTC) ROBERT G. SMITH

Normandy 1944: German Military Organization, Combat Power and Organizational Effectiveness by Niklas Zetterling; Havertown, PA: Casemate Publishers; 2019; 142 pages, including appendices, footnotes and bibliography; $34.95.

The largest amphibious action ever undertaken occurred June 6, 1944. Over the past 75 years, writers have reviewed and dissected the long-heralded invasion that freed the European continent from German oppression. Many books, articles and films covering almost every aspect of the invasion are available for those interested; it would be difficult to find an area not already addressed. Yet Dr. Niklas Zetterling, a Swedish historian and researcher, found a unique subject-matter area seldom detailed in other works.

By focusing his attention on German forces in Normandy from June to late August 1944, Zetterling reviews a variety of topics with clarity. His research is based on Allied and German archives, war diaries and the *Anlangen.* The *Anlangen* is a series of distinct German documents that contain "reports, compilations and documents produced at the time of the battle." Relying on these documents, the author provides insights on German combat readiness, mobility and training.

It should be noted that Zetterling does not analyze several German-type units found in Normandy. These include fixed vs. mobile anti-aircraft units and coastal-artillery formations.

Zetterling divides his work into two parts. Part I reviews the source material consulted to support his work. He then expands with a detailed chapter on German military terminology. This is most helpful in appreciating the initial part of the book. The chapters on German combat-unit organization and the number of German troops in Normandy seek to clarify the type and number of armored and infantry units in Normandy and whether army units were equipped differently than those of the elite Wafffen SS.

Thought-provoking comments are provided in the discussion on the effects of Allied airpower on German personnel, formations and logistics. Comparing official Allied documents on the subject and his findings, Zetterling lays out charts and figures detailing Allied claims, as contrasted with information found in German-source documents. This impressive amount of data comparison is controversial and will spark debate.

Part I of the book concludes with more facts and figures on German tank strength, personnel losses and

movement by German units in and around the battle area. Zetterling's comments on German combat efficiency are well founded as he applies a quantitative analysis to source personnel figures. This analysis also reviews the effects of other elements inherent in this subject area – such as tactics, air superiority, weather, logistics and weapons – have on German units.

Part II of the book lists and evaluates German combat formations, artillery headquarters formations and miscellaneous headquarters, along with the command-and-control elements of German infantry and panzer units. Eight appendices supplement and enhance material already presented. These provide more details on the arrival schedule of units into the Normandy area, a list of unit histories, commentary on the reliability of German casualty figures, logistics and comments on other works.

This is an order-of-battle book that should be approached with a certain amount of awareness. As such, there are no maps or photos presented. For example, to follow the author's discussion of weapons, types of artillery and tanks, one would need to consult a separate book covering these items or possess a familiarity with the subject matter. Zetterling's comments on the effects of Allied airpower on German tanks and infantry units, along with his views on German combat effectiveness, are certain to cause discussion.

These remarks, however, should by no means deter one from reading this book. The detail and organization of material is impressive. Maneuver-unit commanders will derive a better sense of the effects of unit organization, firepower and maneuver as exhibited by both sides during the vicious fighting in Normandy. The result of Allied air attacks on the French rail and road systems, along with attaining and maintaining air superiority during and after the invasion, will re-emphasize to ground commanders the vital role of airpower in any current and future operation. This is a well-researched and well-written book which will either enhance, refute or confirm the writings of others on the critical battle for Normandy. It should occupy a prominent place in the writings on the battle for Normandy.

RETIRED COL D.J. JUDGE

The Soul of an American President: The Untold Story of Dwight D. Eisenhower's Faith by Alan Sears, Craig Osten and Ryan Cole; Ada, MI: Baker Books; 2019, 230 pages; hardcover $13.26.

Many accounts of the storied life, military and political career of Dwight David "Ike" Eisenhower grace the Internet, libraries and bookstores nationwide. They often focus on aspects of this General of the Army/U.S. president's legacy from his time as a cadet at the U.S. Military Academy at West Point, NY, to his tenure as the two-term 34th president. Until now, though, few, if any, of the historical accounts of Eisenhower's life focused on the role faith played in shaping one of the 20th Century's most influential leaders.

In their book, ***The Soul of an American President: The Untold Story of Dwight D. Eisenhower's Faith,*** Alan Sears, Craig Osten and Ryan Cole tell the story of a man who began life in abject poverty in rural Texas to a childhood spent in western Kansas. His parents were deeply religious people who grounded young Ike in daily Bible reading and study at home. Ike's faith sustained him through his days at West Point to the loss of a young son, marital difficulties, depression, career disappointments and the horrors and aftermath of World War II.

Eisenhower, however, was reticent about his faith. For instance, when he was still undecided about seeking the Republican nomination for president in the early months of 1952, he was urged by friends and influential people of the day to run. Two of the people who were strongly in favor of Eisenhower's candidacy were Henry R. Luce, the founder of ***Time*** magazine, and his wife, Claire Booth Luce, the formidable former congresswoman from Connecticut. The influential Republican couple were concerned about Eisenhower's lack of public clarity about his faith as a possible political obstacle, so Mrs. Luce asked Eisenhower about it when she met with him in Spring 1952. The meeting sheds some light on Eisenhower's personal view of faith.

Luce had been warned by one of Eisenhower's aides that "he goes through the roof when people ask him what his denomination is (or) what church he belongs to. We've tried to discuss it with him, and he bawls us out and says it's not any of our damn business (because) religion is an absolutely private matter." Despite the warning, Luce raised the issue with Eisenhower during the meeting. The authors recount how Eisenhower reportedly exploded in anger as predicted. Luce said, "(Ike) jumped to his feet and got red to the roots of his hair." She said Eisenhower then openly talked about his faith, saying, "Claire, do you think I could have fought my way through [World WW II], ordered thousands of fellows to their deaths, if I couldn't have gone down on my knees and talked with God and begged him to support me and make me feel what I was doing was right for myself and the world? Why, I couldn't live a day of my life without God."

Luce said she learned that Eisenhower wasn't opposed to being part of a church; he was reluctant to speak openly about his personal faith or associate himself with a particular denomination because he thought it would be perceived as a political move.

Many people throughout Eisenhower's life impacted his faith, but the authors highlight the connection to one person whose link to Ike went back to when Eisenhower was serving as Supreme Commander of the North Atlantic Treaty Organization. At that time Eisenhower began corresponding with young Southern Baptist evangelist Billy Graham from North Carolina in 1951. The two had become acquainted via oil baron Sid Richardson, a mutual friend from Texas who met Graham during the evangelist's Fort Worth, TX, crusade in 1951. Graham had given Richardson a letter and asked him to share it with Eisenhower. In the letter, Graham expressed his deep concern for the state of the nation's moral fiber while urging

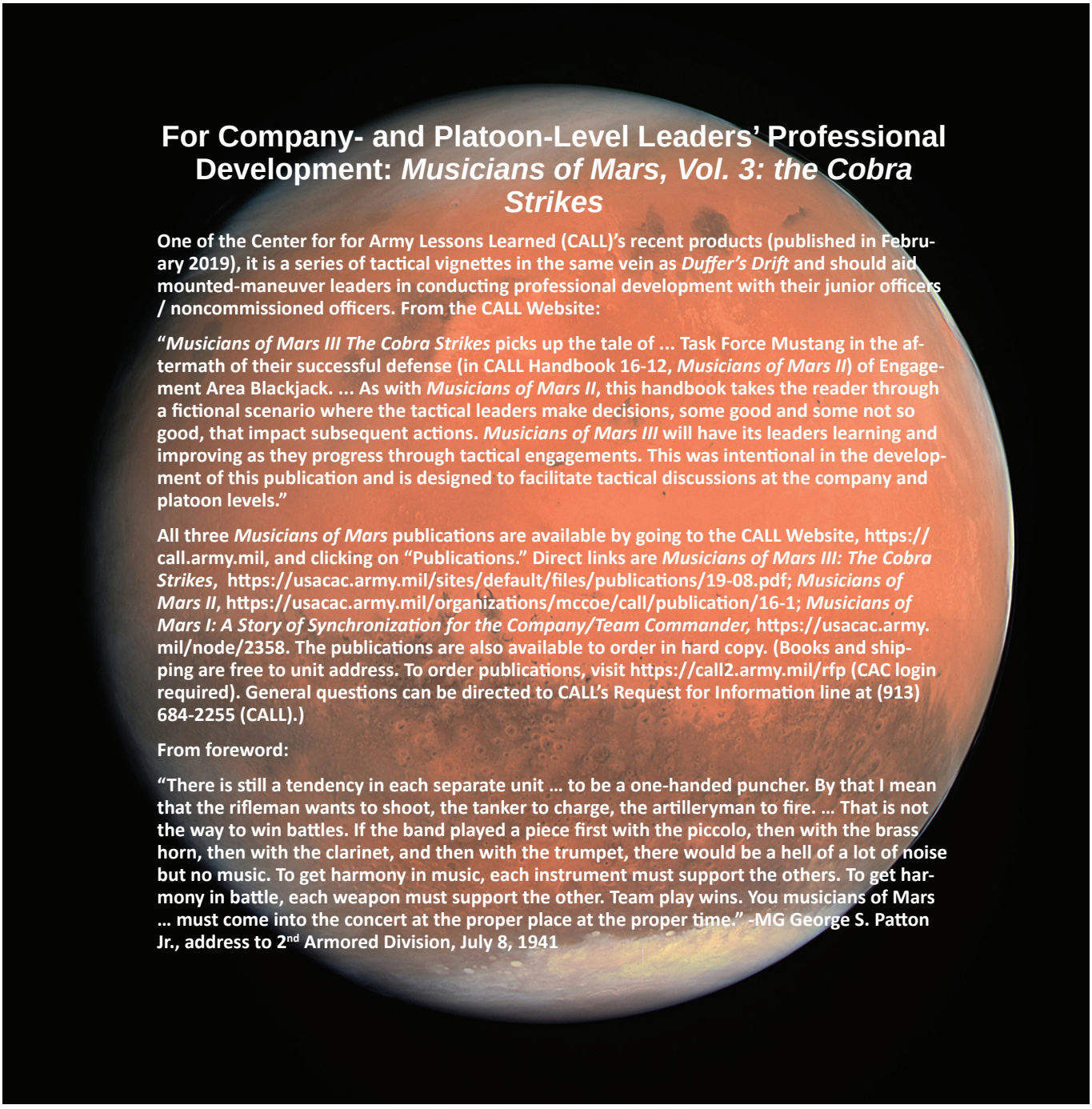
Eisenhower to offer himself for service as president.

Eisenhower remains the only U.S. president to be baptized while in office. This book captures how personal faith impacted the man whose principles shaped public policy during the Cold War era and defined the soul of a nation.

GARY A. JONES
Deputy Editor, ***ARMOR***

Acronym Quick-Scan

AEF – American Expeditionary Force
IJA – Imperial Japanese Army
LVT – Landing Vehicle Tracked



For Company- and Platoon-Level Leaders' Professional Development: *Musicians of Mars, Vol. 3: the Cobra Strikes*

One of the Center for for Army Lessons Learned (CALL)'s recent products (published in February 2019), it is a series of tactical vignettes in the same vein as *Duffer's Drift* and should aid mounted-maneuver leaders in conducting professional development with their junior officers / noncommissioned officers. From the CALL Website:

"*Musicians of Mars III The Cobra Strikes* picks up the tale of ... Task Force Mustang in the aftermath of their successful defense (in CALL Handbook 16-12, *Musicians of Mars II*) of Engagement Area Blackjack. ... As with *Musicians of Mars II*, this handbook takes the reader through a fictional scenario where the tactical leaders make decisions, some good and some not so good, that impact subsequent actions. *Musicians of Mars III* will have its leaders learning and improving as they progress through tactical engagements. This was intentional in the development of this publication and is designed to facilitate tactical discussions at the company and platoon levels."

All three *Musicians of Mars* publications are available by going to the CALL Website, https://call.army.mil, and clicking on "Publications." Direct links are *Musicians of Mars III: The Cobra Strikes*, https://usacac.army.mil/sites/default/files/publications/19-08.pdf; *Musicians of Mars II*, https://usacac.army.mil/organizations/mccoe/call/publication/16-1; *Musicians of Mars I: A Story of Synchronization for the Company/Team Commander,* https://usacac.army.mil/node/2358. The publications are also available to order in hard copy. (Books and shipping are free to unit address. To order publications, visit https://call2.army.mil/rfp (CAC login required). General questions can be directed to CALL's Request for Information line at (913) 684-2255 (CALL).)

From foreword:

"There is still a tendency in each separate unit … to be a one-handed puncher. By that I mean that the rifleman wants to shoot, the tanker to charge, the artilleryman to fire. … That is not the way to win battles. If the band played a piece first with the piccolo, then with the brass horn, then with the clarinet, and then with the trumpet, there would be a hell of a lot of noise but no music. To get harmony in music, each instrument must support the others. To get harmony in battle, each weapon must support the other. Team play wins. You musicians of Mars … must come into the concert at the proper place at the proper time." -MG George S. Patton Jr., address to 2nd Armored Division, July 8, 1941

73RD CAVALRY REGIMENT

The shield is divided into red, blue and gold because these are the colors of the shoulder-sleeve insignia of the armored tank forces. The lightning bolt is symbolic of the striking power of the organization. The unit was activated June 1, 1941, at Fort Lewis, WA; inactivated Feb. 8, 1946, at Camp Kilmer, NJ; and reactivated Aug. 1, 1948, at Fort Benning, GA. The distinctive unit insignia was originally approved for 756th Tank Battalion (Light) May 15, 1942. It was redesignated for 756th Tank Battalion Nov. 22, 1943. The insignia was redesignated for 73rd Tank Battalion Oct. 12, 1953. It was redesignated for 73rd Armor March 19, 1963. It was redesignated effective Feb. 25, 2004, for 73rd Cavalry Regiment.

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