PB 7-17-3

Infantry

July-September 2017

PB 7-17-3

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INFANTRY (ISSN: 0019-9532) is an Army professional bulletin prepared for quarterly publication by the U.S. Army Infantry School at Fort Benning, GA. Although it contains professional information for the Infantryman, the content does not necessarily reflect the official Army position and does not supersede any information presented in other official Army publications. Unless otherwise stated, the views herein are those of the authors and not necessarily those of the Department of Defense or any element of it.

www.benning.army.mil/infantry/magazine

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1724412

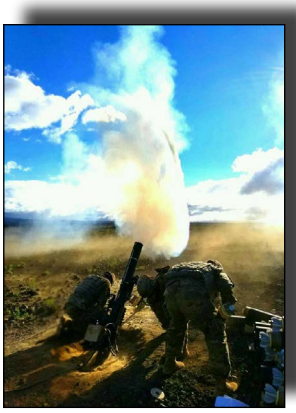
Distribution: Special

Approved for public release; distribution is unlimited.

Infantry

JULY-SEPTEMBER 2017 **Volume 106, Number 3**

FEATURES



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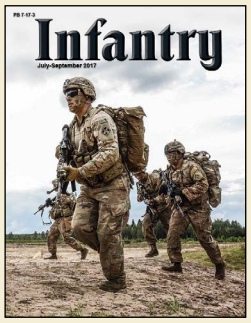


ON THE COVER:

Riflemen with Chosen Company, 1st Battalion, 66th Armor Regiment, 3rd Armored Brigade Combat Team, 4th Infantry Division, compete in the Lithuanian Best Infantry Squad Competition at Rukla Training Area, Lithuania, on 24 August 2017. The event united 14 teams from allied and partner nations to compete in events of endurance and combat skills. (Photo courtesy of Lithuanian Land Forces)

BACK COVER:

A Soldier assigned to the 1st Battalion, 503rd Infantry Regiment, 173rd Airborne Brigade, prepares to land after exiting a U.S. Air Force 86th Air Wing C-130 Hercules aircraft during exercise September Heat 2017 at Rivolto Italian Air Force Base in Udine, Italy, on 26 September 2017. (Photo by Visual Information Specialist Paolo Bovo)

Editor's Note

RUSSELL A. ENO

Time to Sharpen Our Bayonets

We are a nation at war. To be sure, this is not America's first time in the arena, but the nature of today's enemy is unlike that of most of our earlier adversaries. Our allies and enemies in World War II were virtually all signatories of the Geneva and Hague Conventions — although not all had ratified or would later prove adherent to all tenets of those accords — and this afforded measures of predictability which would better help us understand their intents, capabilities, likely courses of action, and the basis of their values. More importantly, intercultural similarities between our allies, our adversaries, and ourselves made for at least a tenuous groundwork upon which negotiations could find footing. Such is not always the case today, however.

While the United States and her allies have long been able to interact with Russia, Vietnam, the Balkan States, the plethora of African nations, Pacific Rim countries, and some of the states that the Middle East comprises, others such as North Korea and Iran remain intransigent and content to settle for the minimal détente necessary to satisfy their own ends. But today we see another player on the field: the rogue state or value system with no desire to assimilate or negotiate, but whose avowed goal is the destruction of America and her allies. Likewise, the Taliban movement which originated with Mullah Omar and fewer than 50 madrassah students in 1990 found the opportunity to unify when members seized Kandahar in 1994. The movement has its foundation in a strict interpretation of Islamic sharia law and drew heavily upon the numbers of students in the Saudi-funded madrassah religious schools for its manpower. Lately, the astonishing growth of Taliban strength compares with the brushfire growth of ISIS in Iraq.

Just as the reputation of the Taliban spread as Taliban militias seized local governments so has ISIS spread by word of mouth. From the first appearance of the organization in Iraq, its reputation has far outstripped its demonstrated power simply because they possessed a rudimentary propaganda infrastructure, and because they showed no reluctance to execute any captured enemy. As their brutality became ever more widely publicized, panic spread before them like a ship's bow wave and the images of U.S.-trained Iraqi units falling into disarray were seen around the world. As tales of their brutality became legion, an increasingly apprehensive world once turned again its eyes to America, as it has whenever danger has threatened.

But how are we to confront these new threats? The way we always have, by remaining true to our nation's and our Army's values by keeping the faith and by training like we have never trained before. That is not what our Soldiers believe; we remain demonstrably committed to training, fielding, sustaining, and redeploying a force that is smart, fast, precise, and above all lethal, for it is only our demonstrated ability to deliver lethality that will stop aggression and ensure the security of this great nation and those who are betting everything on our Army's success. This is the time to reaffirm the Army values, for they reflect the values of our nation; it is time to once again unsheathe the bayonet, hone it to razor sharpness, and prepare to again close with and destroy the enemy, for that is what we do best. That is all our adversary will understand, and it is what the free world will ultimately expect of us, even though they fear to declare it openly.

Photo by SPC Thomas Scraggs

Infantrymen from the 173rd Airborne Brigade practice loading into a UH-60 Black Hawk helicopter at Bezmer Air Base, Bulgaria, on 21 July 2017. The Soldiers were prepping for an all-night air assault mission, which was the final interoperability-building exercise of Saber Guardian 17.

Soldiers Know What Soldiers Need

SEP Evaluates Products to Meet Soldier Needs

SGM (RETIRED) THOMAS B. HOUSE II

With the Army immersed in conflicts around the world, Soldiers need equipment that reflects the best technology and they need it fast. Before "transformation" was a part of the Army lexicon, the Soldier Enhancement Program (SEP), within Project Manager Soldier Warrior, promoted transformation of the Soldier system with an accelerated acquisition process that issues better weapons and gear to Soldiers. SEP continues to play a key role in the effort to meet Soldiers' needs. The SEP panel reviews more than 100 proposals every six months with the objective of identifying and obtaining worn or carried items to further enhance the effectiveness of the dismounted Soldier in a tactical environment.

The National Defense Authorization Act of Fiscal Year 1990 established SEP with the purpose of enhancing the equipment used by dismounted Army Soldiers using commercial off-the-shelf (COTS), government off-the-shelf (GOTS), and non-developmental item (NDI) products. SEP uses a "buy, try, and decide" methodology. If the review panel, which convenes twice a year, selects an item, SEP buys and evaluates the item in order to gain firsthand feedback from Soldiers. After evaluating an item for functionality, protection, and lethality, the Army considers issuing the product Army-wide.

Unlike many military acquisition programs, SEP represents an aggressive effort to identify and procure already developed items that have the potential to substantially improve weapons and support equipment. SEP evaluates products from all the warfighting functional areas: fires, mission command, movement and maneuver, sustainability, and protection. Previous SEP items include lighter and more lethal weapons, lighter and more comfortable load-bearing equipment, field gear, survivability items, navigational aids, and training capabilities.

Identifying Soldiers' Needs

Infantry Soldiers, or Soldiers serving in a dismounted role, rely heavily on equipment and oftentimes have knowledge of commercial items that can better help them accomplish a mission. SEP provides Soldiers with an avenue to recommend those products directly to the acquisition community. SEP also uses themes to help focus industry leaders and Soldiers on items for which combat developers generate requirements. The current theme for SEP is to "Enhance Soldier Mobility by Reducing Soldier Load." SEP reviews all products submitted, but products that reduce overall weight without increasing bulk/stiffness or compromising current capabilities will be prioritized higher for consideration and assessment within SEP.

Photos courtesy of PEO Soldier

The M110 Semi-automatic Sniper System came from Soldier Enhancement Program input.

The Modular Airborne Weapons Case also came from SEP input.

Program Executive Office (PEO) Soldier, in coordination with the U.S. Army Training and Doctrine Command (TRADOC) Capability Manager (TCM)-Soldier, reviews item submissions. A Council of Colonels meets each February and July to decide if an item is worth evaluating. If the item is approved, SEP will fund the evaluation of the item and provide a final report with findings and recommendations.

The recommendations could include:

* Adopt the item as an Army capability,
* Do not adopt the item as an Army capability,
* Use the data/information gained during the evaluation to inform requirements generation, or
*Assign a national stock number (NSN) — so that units can buy it as-is.

Some of SEP's past successes include the M110 semi-automatic sniper system, clip-on sniper night sight, combat shotgun enhancement kit, squad common optic, extreme cold weather socks, parachute electronic activation device, fuel handlers coveralls and gloves, modular ghillie suit, ghillie suit accessory kit upgrade, individual combat shelter, PD-100 Black Hornet (nano unmanned aerial system [UAS]), Daytron Scout (UAS), InstantEye (UAS), and the Recon Scout throwable robot. Current initiatives within SEP include fire control systems, weapons accessories and upgrades, cold weather clothing and equipment, power charging and scavenger systems, Soldier borne sensors, and 40mm ammunition upgrades.

For more than 25 years, the Army's SEP has been providing Soldiers with items that help them complete their missions more effectively. Many of these items were recommended to the SEP by Soldiers operating in a dismounted role.

Anyone can submit suggestions and all submissions are processed through the PEO Soldier website at http://peosoldier.army.mil/SEP. For more information about SEP, the process, or meeting dates, call (706) 626-8600 or send an email to thomas.b.house3.ctr@mail.mil.

(SGM [Retired] Thomas B. House II is the SEP program manager for PEO Soldier at Fort Benning, GA.)

Army to Begin Fielding Modular Handguns in November

JOE LACDAN

Soldiers have many reasons to be excited about the new Sig Sauer modular handguns, which the Army will begin fielding in November, said LTC Steven Power, product manager of Soldier Weapons.

Testing of the modular handgun system (MHS) this spring by Soldiers at Aberdeen Proving Ground, MD, resulted in overwhelmingly positive feedback, Power said, and 100-percent concurrence that the XM17 was an upgrade over the M9.

"That's an uncommonly positive thing," Power said, explaining that there's typically some reluctance with any new system. "Typically even in our own households, when you're buying a new car, there's things that people like about the old car better than the new one," he said.

In this case, all of the Soldiers who tested the handgun said the MHS was more comfortable to shoot and they had better confidence with it, Power said.

The first new XM17 handguns are scheduled to be fielded to the 101st Airborne Division (Air Assault) at Fort Campbell, KY, in November.

The Army's versions of the Sig Sauer P320 — the XM17 and XM18 — have different ammunition requirements than the commercial 320 pistol and are painted a different color. The P320 was released for commercial use three years ago.

Improved durability and adjustability over the M9, along with interchangeable grips that fit comfortably, are among the features Soldiers can look forward to with the new pistol, Power said.

The new handguns also have an external safety and self-illluminating sights for low-light conditions.

"A big reason why the modular handgun system is such a leap ahead in ergonomics is because of the modular hand grips, instead of just making a one size fits all," Power said. "The shooter will have a handgrip that fits their hand properly which does a lot to improve accuracy — not only on the first shot but also on subsequent shots."

Members of the 101st Airborne are scheduled to receive about 2,000 pistols in November. Eventually, the Army will distribute the weapons to all units over a 10-year period. From November 2017 until September 2018, the new handguns will be fielded at a different post each month, except for March and April of 2018, according to the current plan.

Power said troops from different military branches have already trained with the new handguns and tested them, but none have fielded the weapons yet. The new weapons have long been anticipated, as the M9 Beretta, first issued in 1986, is nearing the end of its serviceability.

"That's pretty dated technology," Power said of the M9. "The specific performance improvements from MHS over the M9 are in the area of accuracy, dispersion, (and) ergonomics. And ergonomics isn't just about the comfort of the shooter."

A lot of the weapon's accuracy can be attributed to ergonomics, Power said, adding that human factors engineering determines how well the weapon works in a shooter's hand.

Sig Sauer earned the $580 million contract to produce the weapons in January after winning the Army and Air Force's XM17 Modular Handgun Competition. The Army will continue to use 9mm rounds, subcontracted to ammunition manufacturer Winchester. Power said the Army did not have a preference to remain with the 9mm rounds, but rather used a systems approach to determine ammunition type.

"There was no prejudice toward 9mm," Power said. "The goal was to pick a system that best met our requirements."

(Joe Lacdan writes for the Army News Service.)

Photos courtesy of PEO Soldier

Above, MSG Lashon Wilson demonstrates the use of the Enhanced Night Vision Goggle III paired with a Family of Weapons Sights-Individual on 27 July 2017. Above right, a shooter fires on a target using an ENVG III on his helmet and a FWS-I on an M4 rifle.

New Sight Wirelessly Pairs with NVGs

C. TODD LOPEZ

In the next 18 months or so, the Army expects to field two new systems to dismounted Soldiers that will allow for more rapid acquisition of targets, even those hidden by darkness, smoke, or fog.

First out of the gate will be the Enhanced Night Vision Goggle (ENVG) III, expected to be fielded sometime between April and June of 2018. Shortly after, the Army hopes to field the Family of Weapons Sights - Individual (FWS-I) between January and March of 2019.

The FWS-I and ENVG III are unique in that the FWS-I, which would be mounted on a Soldier's weapon, wirelessly transmits its sight picture to the ENVG III, which a Soldier wears on his helmet. Additionally, the ENVG combines thermal imaging with more common night vision image intensification technology, which is recognizable by the green image it creates.

Under starlight, targets may blend in with the background. But with the thermal capability overlaid on night vision, targets can't hide in smoke or fog. They "really pop out with that contrast," said Dean Kissinger, an electronics engineer who is currently assigned to Program Product Manager Soldier Maneuver Sensors at Program Executive Office (PEO) Soldier.

LTC Anthony Douglas, who serves as product manager for Soldier Maneuver Sensors at PEO Soldier, said the two sensors have benefits beyond helping dismounted Soldiers better visualize targets. By pairing the two systems wirelessly — allowing what the weapon-mounted sight is seeing to be beamed directly to the Soldier's eye — these systems also help the Soldier acquire a target faster.

"The capability gap that we were tasked with [closing] by developing this was the rapid target acquisition capability," Douglas said. "We are allowing the Soldier to actually see what is on their weapons sight, saving them time from having to bring the weapon to his eye."

MSG Lashon Wilson, the senior enlisted advisor for product manager Soldier Maneuver Sensors, explained how the system will work and make it easier for a Soldier to acquire a target.

"This weapon-mounted system talks wirelessly to the smart battery pack that is on the Soldier's head, that then transmits a signal to the ENVG III, which now displays a reticle onto the Soldier's optic," Wilson explained. "So now what this does is, while the Soldier is on patrol and he has his ENVG III on and he is looking, he has a greater field of view of what is going on in the battlefield."

Soldiers wearing the ENVG III, which is mounted on their helmet, can choose to see both night-vision imagery and thermal imaging as well in their goggles. But they can also choose to see the image coming off the FWS-I that is mounted on their rifle.

Read more at https://www.army.mil/article/191631/army_aims_to_field_new_weapon_sight_that_wirelessly_pairs_with_night_vision_goggles.

(C. Todd Lopez writes for the Army News Service.)

Leveraging Space:

An Examination of the Ultimate High Ground at Echelons Brigade and Below

LTC COLEY D. TYLER

Describing the space domain as "the ultimate high ground" may seem a bit cliché, but there are some underlying truths in the statement the U.S. Army has taken for granted since the advent of the space-enabled force in the late 1980s. Imagine a day without space assets providing intelligence, surveillance, and reconnaissance (ISR) of denied areas; Global Positioning System (GPS) providing position, navigation, and timing (PNT) for joint friendly force tracking, precision-guided munitions, etc.; satellite communications (SATCOM); missile warning (MW) systems; or environmental monitoring (EM) providing terrestrial weather enabling land operations; and you quickly recognize the U.S. Army's reliance on the capabilities afforded by the ultimate high ground of space. Over the course of the previous three decades, the U.S. Army has shifted from being space-enabled to space-dependent — a condition our potential adversaries understand and likely intend to exploit in future conflicts.

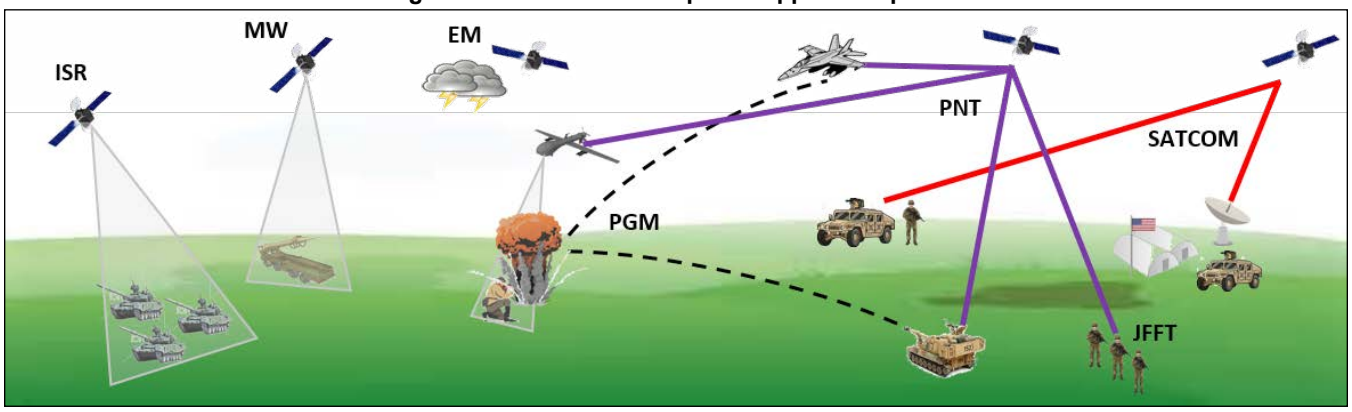
Space provides multiple capabilities that enable movement and maneuver, but our adversaries will increasingly put these at risk to neutralize our long-held technological advantage and challenge conventional assumptions of domain superiority. Therefore, units must be adept at operating in a denied, degraded, or disrupted space-operating environment (D3SOE). This article addresses how formations can best prepare for this reality to ensure mission accomplishment regardless of the level of space domain degradation. Commanders must be aware of the threat, understand the role of space capabilities within the U.S. Army, and exercise future space support within the emerging conceptual frameworks of multi-domain battle (MDB) and the Army Functional Concept for Movement and Maneuver (AFC-MM).

The Threat

Any adversary can be space-capable with access to many of the same capabilities the U.S. Army enjoys if they can afford the commerical rate for provided services.[1] Space-faring nations — nations that possess their own space capabilities — have a wider range of options. Some possess the ability to develop their own space systems and function in the space domain as near-peer competitors with the U.S. These capabilities generally provide ISR, PNT, SATCOM, MW, and EM for their forces. Some of these near-peer competitors have also developed counter-space abilities or the ability to threaten others' space assets and means.[2] Some nations employ a mix of national and commercial capabilities while others depend upon commercial only.

Considering a typical U.S. Army brigade combat team (BCT) has more than 2,500 pieces of PNT-enabled equipment and 250 pieces of SATCOM-enabled equipment, assured access to space is tremendously important.[3] The recent conflict in the Ukraine highlighted issues the U.S. Army could face in the future. Russian separatists were highly successful executing electronic attacks, GPS jamming/spoofing, and signals interceptions and targeting.[4] Carl von Clausewitz opined that "[h]istorical examples clarify everything and also provide the best kind of proof" if properly used through explanation, application, supporting facts, and deduction of doctrine.[5] Sun Tzu also counseled that "one who knows the enemy and knows

Figure 1 — Illustration of Space Support to Operations



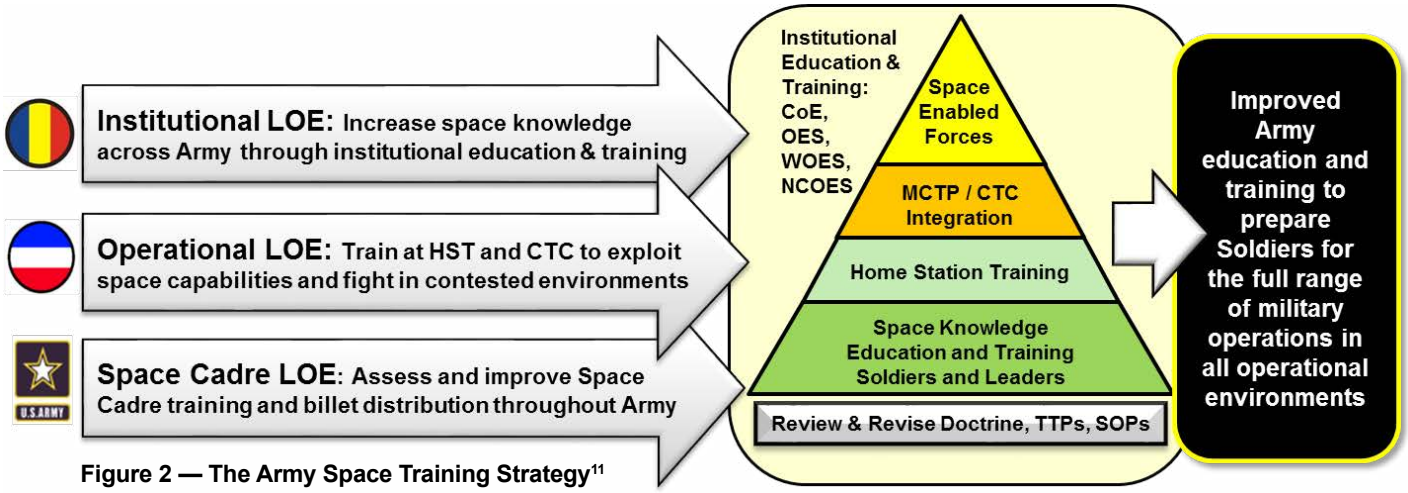


Figure 2 — The Army Space Training Strategy[11]

himself will not be endangered in a hundred engagements. One who does not know the enemy but knows himself will be sometimes victorious, sometimes meet with defeat. One who knows neither the enemy nor himself will invariably be defeated in every engagement."[6]

If we heed this advice, then understanding how the space domain can affect the U.S. Army (in light of potential threats) and how it is structured to leverage the ultimate high ground is very instructive for a "space savvy" future force.

Role of Space

Recent observations, trends, and insights reveal that most units are ill-prepared for a D3SOE, and there is much room for improvement. The 2015 Gypsy Kilo exercise was a Joint Navigation Warfare Center (JNWC)-facilitated contested PNT and Navigation Warfare (NAVWAR — deliberate defensive and offensive action to assure friendly use and prevent adversary use of PNT) event. JNWC simulated these conditions for company-sized elements and concluded units experienced significant issues navigating and maintaining situational awareness of force orientation in degraded environments.[7]

National Training Center (NTC) rotation after action reviews routinely reveal:

1) Underutilization of GPS encryption;

2) Deficiencies in spectrum management operations (SMO)/ joint restricted frequency list (JRFL);

3) Poor SATCOM terminal operations;

4) Insufficient contested space techniques [e.g., primary-alternate-contingency-emergency (PACE) plans, tactical standard operating procedures (TACSOPs), battle drills]; and

5) Inadequate unmanned aerial system (UAS)/counter-UAS operations.[8]

U.S. Army senior leaders believe the old adage, "The more you sweat in peace, the less you bleed in war." In December 2015, the Chief of Staff of the Army (CSA) challenged the Combat Training Centers (CTCs) for "increased exposure to electronic warfare... as close to combat as you can get without actual death. Rachet up the intensity... to make the experience a leader and Soldier crucible."[9]

The commanding general of the Combined Arms Center (CAC) published a directive mandating the inclusion of D3SOE training into all professional military education courses. The commander's intent is to "ensure the Army Space Training Strategy (ASTS) is fully implemented within professional military education in order to improve the Army's understanding and utilization of space capabilities, improve operations in contested operational environments, and create a continuum of career-long space education throughout the professional development system."[10]

The U.S. Army Space and Missile Defense Command (SMDC) is working hard to reverse these trends by fully implementing the Headquarters, Department of the Army (HQDA) G3-directed ASTS in preparation for the future and providing D3SOE home-station training to better prepare units for training rotations.

SMDC supports U.S. Army space training and professional development and education through three lines of effort (LOEs): **institutional**, **operational**, and **space cadre** (see Figure 2). The **institutional** LOE aims to increase knowledge and awareness of space capabilities through education and training at U.S. Army Training and Doctrine Command (TRADOC) centers of excellence and schools. Currently at the Maneuver Center of Excellence (MCoE) at Fort Benning, GA, SMDC teaches blocks of space instruction to the Maneuver Pre-Command Course (MPCC), Infantry/Armor Basic Officer Leader Courses (I/ABOLC), and is making progress toward implementing instruction for the Maneuver Captains Career Course (MCCC).

Through the **operational** LOE, SMDC trains units at home station and the CTCs to better leverage space capabilities and better prepare them to fight in a D3SOE. Units can coordinate directly with the Army Space Training Integration (ASTI) Branch to integrate space training into the unit training cycle.

Lastly, the U.S. Army has a core of **space cadre** to offer subject matter expertise within the operating force. Army Space Support Elements (SSEs) are small cells of space cadre trained and experienced in space operations organic to army, corps, division, and special forces group staffs. The SSE understands planning and operational considerations of employed space capabilities and has a firm knowledge of the threats to those systems by an adversary. An Army Space Support Team (ARSST) can augment an SSE for product development

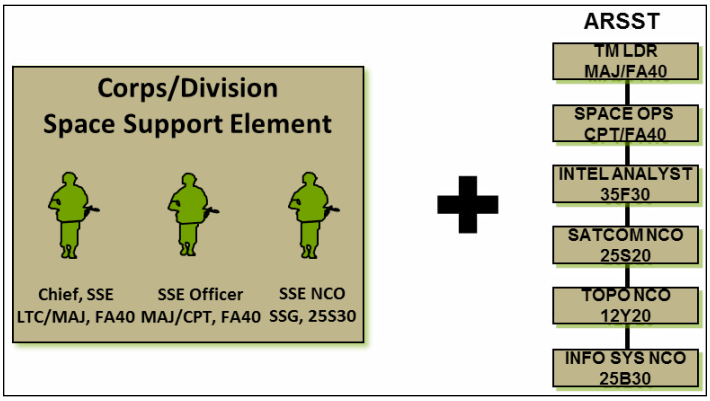


Figure 3 — Army Space Cadre at Echelons Above Brigade
***ARSST structure as example only; it is tailorable to fit mission requirements**

and employment of unique capabilities during deployments, exercises, or increased operational tempo situations. The ARSST is also tailorable in size and expertise (rank and/or military occupational specialty [MOS]) based upon the needs of the supported organization.

Armed with knowledge of the threat and self-awareness of space domain operations (function and structure), the U.S. Army can better prepare the force for future conflicts. Space cadre members resident within the force structure offer units a myriad of support. Examples include reverse intelligence preparation of the battlefield (IPB)-red space, electromagnetic interference (EMI) resolution, NAVWAR and special technical operations (STO) support, missile warning system status, additional imagery/overhead persistent infrared (OPIR) requests, space systems constellation health status, and GPS accuracy reports.

Future Space Support

Just as the second offset strategy of the 1980s connected the U.S. Army to space-based capabilities, the third offset strategy must maintain the U.S. military's advantage over its adversaries in space. The CSA/Commandant of the Marine Corps (CMC)-approved white paper on MDB is informing the U.S. Army on how current and future forces will operate and protect capabilities within the space domain in light of the emerging near-peer threat. The U.S. Army cannot allow current and planned space dependencies to hinder operations in future conflicts. Concept-to-capability activities orchestrated by TRADOC aim to address these dependencies and better protect and employ current and future technologies to retain a continuing advantage. How the U.S. Army plans to leverage space in the future to execute MDB and the AFC-MM is a considerable question to be addressed in the Force 2025 Maneuver's Campaign of Learning. There is no doubt that space capabilities are integral to the Department of Defense (DoD) MDB concept or that they will enable the four components of the AFC-MM solution: cross-domain maneuver, semi-independent operations, integrated reconnaissance and security, and realized mission command. Future threats, coupled with new-found self-awareness, require the U.S. Army to make changes.

The ASTS guides these efforts through training, and SMDC is also actively engaged in concept-to-capability development of potential capabilities across the doctrine, organization, training, materiel, leadership, personnel, facilities, and policy (DOTMLPF-P) for the force as well. In the past, the Army was primarily a receiver of space capabilities owned and operated by other services. Emerging doctrine in MDB is an opportunity for the U.S. Army to become more of a provider of effects. Imagine a BCT commander being able to plan, coordinate, and employ space effects from a space battalion in the same fashion as they would employ a fires battalion in direct support (DS) with priority of fires (POF). This formation hypothetically could have high-altitude airships (HAAs) with interchangeable ISR, SATCOM, PNT, MW, or fires payloads capable of providing real-time, responsive effects for the maneuver commander. Or perhaps, this unit is equipped with retrievable payload-carrying balloons or small satellites to provide diverse capabilities dedicated to tactical formations without reliance on national assets.

The possibilities are extensive, and options exist even in a fiscally constrained environment. Maneuver leaders owe it to their profession and their Soldiers to create the demand signal for the space community on how best to support. Leveraging space at the brigade and below echelons is in a crucial stage of development. The MCoE Capability Development Division (CDD) is pushing the envelope on space integration with the multi-domain task force (MDTF) to execute cross-domain maneuver and employ cross-domain fires as well as gaps in obscuration across the entire electromagnetic spectrum (EMS) with the U.S. Army Cross Domain Obscuration Strategy. The nature of warfare is changing and the question is does the U.S. Army take the initiative and shape the change or just hold on for the ride?

Notes

[1] SMDC Directorate of Training and Doctrine (DoTD), Space Update, MCoE Pre-Command Course (PCC) Brief (2016).
[2] Ibid.
[3] Ibid.
[4] Ibid.
[5] Carl von Clausewitz, *On War,* trans. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1984), 170-171.
[6] Sun Tzu, *The Art of War*, trans. Ralph D. Sawyer (NY: Basic Books, 1994), 179.
[7] SMDC DoTD.
[8] Ibid.
[9] SMDC G31 Training, Readiness, and Exercises, "Army Space Training and Integration (ASTI) Branch," 2.
[10] CAC, D3SOE Tasking Order, 2017, 1.
[11] SMDC DoTD.
[12] TRADOC, The U.S. Army Functional Concept for Movement and Maneuver 2020-2040, February 2017, 22.

LTC Coley D. Tyler currently serves as the space integration officer for the Maneuver Center of Excellence, Fort Benning, GA. He has served in multiple space and combat arms positions. These include serving as the chief of plans for United States Forces-Afghanistan/NATO Information Operations; space operations chief and special activities planner for Eighth Army-United States Forces Korea; physical education instructor at the U.S. Military Academy at West Point, NY; commander of Headquarters and Headquarters Company, 3rd Brigade Special Troops Battalion, 3rd Brigade, 1st Cavalry Division, Fort Hood, Texas; assistant S3 and battalion S2 for the 2nd Battalion, 82nd Field Artillery Regiment; battalion fire support officer for the 2nd Battalion, 7th Cavalry; and fire support officer for D Company, 3rd Battalion, 8th Cavalry Regiment. He earned master's degrees in Kinesiology from Indiana University and operational art and science from the U.S. Army School of Advanced Military Studies (SAMS).

Building Readiness in the Total Force

COL ROBERT BURKE
COL ERIC LOPEZ
LTC TODD A. TOWNSEND
MAJ CHRISTOPHER E. FOWLER

One Army

In his initial message as Chief of Staff of the Army, GEN Mark A. Milley wrote, "Readiness for ground combat is — and will remain — the U.S. Army's number one priority. We will always be ready to fight today, and we will always prepare to fight tomorrow." Executing the Army's operational concept — unified land operations — demands the effective integration of the Regular Army and Reserve Components (RC — the Army Reserve and National Guard). As noted in Army Doctrine Reference Publication (ADRP) 3-0, *Operations*, "Only by training as an integrated Total Army in a replicated training environment against a realistic threat will the Army generate appropriate readiness levels to meet current requirements and build endurance for prolonged operations." The effective integration of all components of the Total Army is critical to our ability to win on the battlefield.

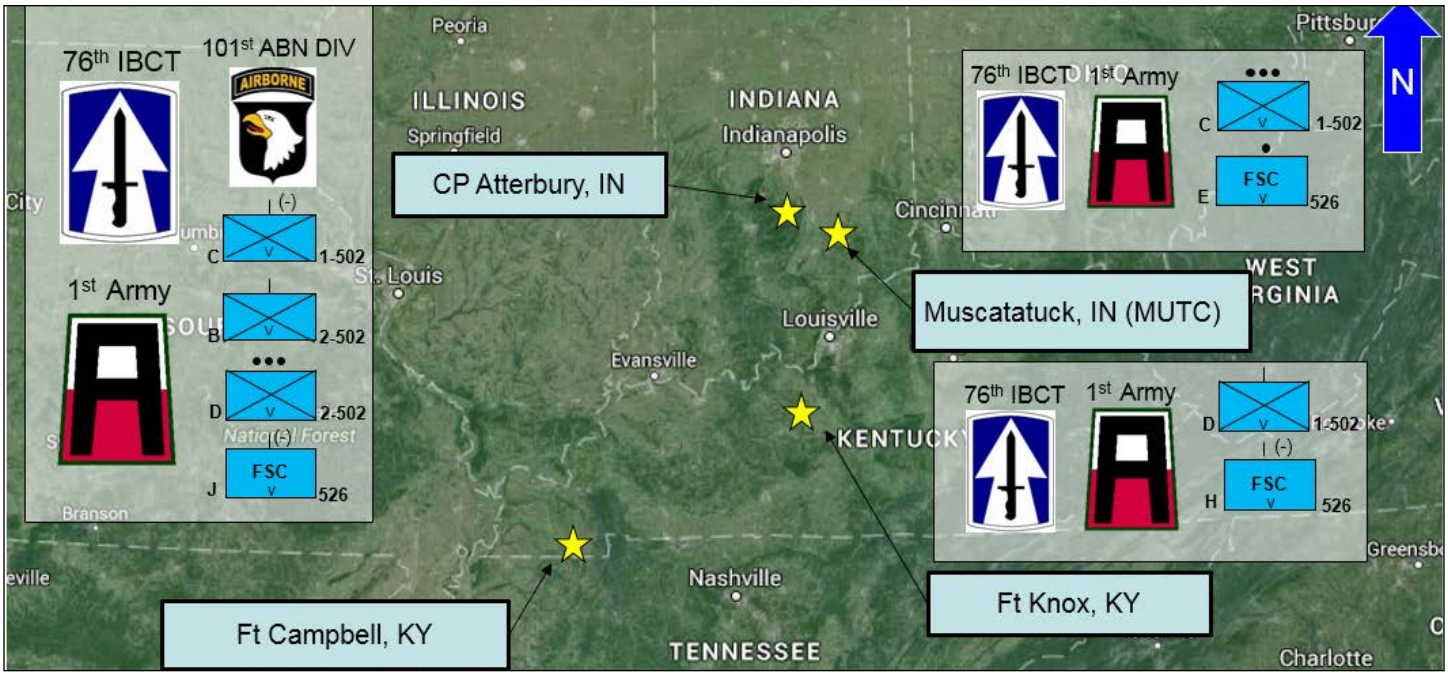
To build readiness and to improve the integration of Active Component (AC) and RC forces, the 76th Infantry Brigade Combat Team (IBCT) from the Indiana Army National Guard (ARNG) and the 2nd Brigade Combat Team, 101st Airborne Division conducted an integrated training exercise in the summer of 2016. The exercise — eXportable Combat Training Capability (XCTC) 16-04 — improved the readiness of both units and was a major step forward in the Army's attempt to integrate AC and RC forces. The purpose of this article is to provide an overview of the training event and to discuss lessons learned from the planning and execution. For many Soldiers and leaders in both IBCTs, this was the first training event that integrated AC and RC forces. Given the increasing importance of Total Army integration, we wanted to provide major lessons learned from XCTC 16-04 to better prepare units for future integrated training.

XCTC Overview

The XCTC program consists of a brigade field training exercise (FTX) that is designed to certify platoon proficiency in an environment that is similar to that of a standard Combat Training Center (CTC) rotation. Based on the brigade commander's training objectives, the program develops and customizes a series of training lanes for maneuver and support units. The 76th IBCT used the XCTC program to prepare subordinate units for a Joint Readiness Training Center rotation (Fort Polk, LA) scheduled for the summer of 2017. For 2nd IBCT, the exercise was an opportunity to increase small-unit proficiency up to the platoon level and to improve integration and collaboration with the National Guard. Initial guidance from COL Robert Burke, commander of the 76th IBCT, set the stage for a successful training event. He said, "We're all held to the same tasks and standards. We all learn from each other no matter what flavor of service you are. It makes us a better Army, regardless of component."

Elements of the 2nd IBCT, along with more than 3,900

Figure 1 — Locations and Units Involved in XCTC 16-04



Soldiers from the 76th IBCT, conducted the training at three locations – Camp Atterbury, IN, the Muscatatuck Urban Training Center near Butlerville, IN, and Fort Knox, KY (see Figure 1). Units from the 76th IBCT were trained and evaluated on troop-leading procedures, movement formations, mission command, and logistical support. Units from the 2nd IBCT provided a realistic and well-trained opposition force (OPFOR) for the 76th IBCT's training. The exercise design also enabled 2nd IBCT to conduct small-unit training on the XCTC training lanes.

Photos by SGT Jarred Woods

An observer-coach-trainer from the 1st Battalion, 335th Infantry Regiment leads an after action review following a mortar firing exercise at Camp Atterbury, IN, on 12 August 2016.

Soldiers from the 157th Infantry Brigade, First Army Division East, from Camp Atterbury provided teachers, coaches, and mentors for the training event. These First Army Soldiers also used the opportunity to improve their readiness for their primary mission to mobilize, train, and oversee the pre-deployment preparation for all deploying U.S. Army Reserve and National Guard Soldiers.

The value of the XCTC was that it allowed both the 76th IBCT and the 2nd IBCT to train and certify platoons in a demanding and complex training environment. Most importantly, the training validated the 76th IBCT's unit readiness as well as its ability to integrate into a Total Army scenario prior to its deployment to JRTC.

Brigade Warfighter Exercise

In addition to the XCTC exercise, the 76th IBCT simultaneously conducted a brigade warfighter exercise (BWFX) that incorporated the U.S. Army Reserve's 437th Civil Affairs (CA) Team. During the BWFX, the 76th IBCT's brigade and battalion staffs were externally evaluated by Operations Group Charlie observer-controller-trainers (OCTs) from Fort Leavenworth's Mission Command Training Program (MCTP). The integration of the USAR civil affairs team into the staff enhanced the brigade's capability and improved planning and operations. The 437th CA Team is scheduled to train with the 76th IBCT during its JRTC rotation in the summer of 2017. The integration of a USAR unit into a National Guard training exercise that was evaluated by active-duty OCTs is another example of training to improve Total Army readiness.

Lessons Learned

1) AC and RC integrated training events are opportunities to bolster the proficiency and readiness of both types of units. In the past, some units have made the mistake of treating integrated training events as unit taskings. Simply providing forces as tasked will degrade the training and readiness of both types of units. Instead, leaders should pursue integrated training opportunities at home station and at the CTCs. The main purpose of this exercise was for the 76th IBCT to train on platoon collective tasks and mission command systems from the company to brigade level. However, because 2nd IBCT viewed the event as a training opportunity and not a tasking, they were able to train company and battalion mission essential task list (METL) tasks while serving as the OPFOR. Throughout the training event, 2nd IBCT conducted platoon LFXs, squad situational training exercises, and mission command and sustainment training at the company and battalion level over three geographically separated areas. Collaboration between active and reserve leaders during the planning and execution of the training event forged professional relationships that will be critical for future missions.

2) Leaders from AC and RC must collaborate early and often. Collaboration and dialogue between leaders at various levels is critical for three reasons. First, collaboration between commanders and staffs allows units to create a shared understanding of purpose. This shared understanding reduces friction and maximizes the net training effect of the exercise for all units. Second, collaboration helps leaders identify and mitigate risks and maximize opportunities. Collaboration ensures unity of effort. Finally, collaboration bolsters critical analysis and the assessment mechanisms used to evaluate units in the training. Collaboration early and often between commanders and staffs from 76th IBCT, 2nd IBCT, and the 437th CA Team ensured that the XCTC and the BWFX were effective training events. Early collaboration also allowed units to select and train the personnel who coached, trained, and evaluated units on the XCTC lanes.

Weekly in-progress reviews (IPRs) conducted between the 76th IBCT and all enabling agencies were vital to mission success because they provided a comprehensive outline of requirements and progress toward a successful training event. The IPR process that began months in advance of execution also included the names and contact information of personnel in critical enabling agencies. This process paid huge dividends leading up to the final planning conference held at Camp Atterbury. The 2nd IBCT gained access to a network of resources and critical support nodes during the training event. Due to these early collaborative efforts, the 76th IBCT and 2nd

Infantrymen with A Company, 1st Battalion, 151st Infantry Regiment, 76th IBCT, move to engage the enemy during the eXportable Combat Training Capability at Camp Atterbury, on 8 August 2016.

IBCT were able to develop logistics support packages across all classes of supply, establish accounts with support agencies at Fort Knox and Camp Atterbury, and consolidate OPFOR support requirements to gain shared understanding across all echelons. As a result of the groundwork laid well in advance, the final planning conference served as a final confirmation of the roles, requirements, and expectations of the parties involved, as opposed to a scramble to develop a comprehensive plan.

3) AC and RC integrated training events help to reduce and eliminate the biases and misconceptions that leaders and Soldiers have about other components. Throughout the planning process, weekly IPRs, and final planning conference, it became evident to the 2nd IBCT that the 76th IBCT was extremely capable of conducting effective and long-term planning through the military decision-making process (MDMP) with a cohesive staff that had been together for several years. Rifle companies from 2nd IBCT validated all LFX lanes prior to the execution by NG Soldiers. When Soldiers from different components work with each other in training events like the XCTC and the BWFX, they shed erroneous perceptions that many have about other components. Soldiers and leaders realize that they share a common interest in training, readiness, and ultimately national security. Reducing or eliminating biases during training ensures a unified and cohesive force during multi-component deployments to support contingency operations abroad. Through tough, realistic training, Soldiers from the 76th IBCT, 2nd IBCT, and the 437th CA Team learned that we are a better Army when we fight together.

4) Unit training is more effective when AC and RC combine resources. Integrated training allows units to share resources to execute more comprehensive training events. This exercise was nearly equivalent to a CTC rotation for all components involved. Each component executed deployment operations from their assigned post to Camp Atterbury and Fort Knox. All components were able to train individual and collective tasks from squad to brigade level against a near-peer opponent with external and professional OCTs. If the Army National Guard had to conduct the XCTC and BWFX on its own, the training quality would have been degraded. By pooling the resources of the 2nd IBCT, First Army OCTs, and the 437th Civil Affairs Team, the 76th IBCT's training experience was much better than what the 76th could have achieved on its own. Consolidating manpower, equipment, and training resources improved the proficiency and readiness of all units involved in the training.

Total Army Total Readiness

XCTC 16-04 and the BWFX improved individual and collective readiness and the integration of the Total Army. The 76th IBCT certified subordinate units for an upcoming JRTC rotation, the 2nd IBCT improved individual and small-unit proficiency, and the 437th CA team conducted operations while integrated into a brigade staff. The integration of First Army and MCTP Operations Group OCTs ensured that Soldiers and leaders were coached and mentored by trained personnel. The tough, realistic, and multi-faceted training met the commander's intent and presented scenarios that required adaptive and resilient formations, agile leaders, and staffs willing to collaborate. Ultimately, XCTC and the BWFX proved to be a good example of leaders seizing the opportunity to build and maintain total force readiness in our Army.

COL Robert D. Burke is the commander of the 76th Infantry Brigade Combat Team (IBCT), Indiana Army National Guard. His previous assignments included serving as the G3 of the 38th Infantry Division in Indianapolis; deputy commander of the 76th IBCT; commander of the 1st Squadron, 152nd Cavalry Regiment in New Albany, IN; and commander of the 1st Battalion, 151st Infantry Regiment in New Albany. He earned a bachelor's degree in criminal justice from Norwich University and master's degree in strategic studies from the U.S. Army War College.

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MAJ Christopher E. Fowler is the XO for the 1st Battalion, 502nd Infantry Regiment, 2nd BCT, 101st Airborne Division. He earned a master's degree in operational art and science from the Air Command and Staff College at Maxwell Air Force Base, AL.

Expeditionary PGM 120mm Mortar Employment

CPT BRIAN COSTELLA

At 0200 under the light of headlamps and with the start point (SP) time quickly approaching, my mortar platoon loaded our precision-guided munition (PGM)-capable 120mm mortar system and 700 pounds of ammunition into the back of a mine-resistant ambush protected (MRAP) all-terrain vehicle (M-ATV), securing it with merely ratchet straps and 550 cord. Once all mission preparation was complete, we began our 30-minute movement across uneven terrain. As we bounced across the desert in our convoy of M-ATVs and MRAPs, we all held our breath hoping that one of the high explosive rounds wouldn't disappear into the night after being dislodged by one too many bumps. When we finally reached our pre-planned mortar firing point (MFP), we all dismounted and raced to put the system into action. Approximately 90 minutes later, our gun was laid in and we were standing by the radio ready to execute fire missions. In recent warfare, the U.S. military has not typically used the 120mm mortar in such a mobile capacity; however, by doing so the light infantry mortar platoon can provide maneuver forces with mobile, PGM-capable indirect fire assets at the battalion level.

While deployed to Helmand Province, Afghanistan, in the summer of 2016, our battalion mortar platoon was tasked with employing our PGM-capable 120mm mortars throughout the area of operations. Through trial and error and detailed after action reviews (AARs), we adapted to overcome many of the constraints inherent in our task. Our platoon securely maneuvered our mortars from the back of an M-ATV in order to accomplish the commander's intent of having PGM munitions able to effect the enemy throughout our battalion area of responsibility (AOR). Although this was an unorthodox method of employing our 120mm mortars, after several successful employments, we developed rapid and secure procedures for employing the system. This method of employment enabled more rapid and accurate indirect fires support.

Doctrinally, the mortar platoon's mission is to provide close and immediate indirect fire support for maneuver battalions and companies. In order to remain relevant and effective in light of an increasingly restrictive operating environment, precision delivery must also remain at the forefront of planning and execution. The 120mm mortar's PGM makes accurate and precise mortar fire an attainable and unmatched asset for any maneuver commander. Not only does the PGM round meet the rules of engagement that we encountered in Afghanistan, it also allows ground force commanders to employ indirect fires safely as close as 80 meters from their maneuver forces. Although the 60mm and 81mm mortars are regularly employed in dismounted and mounted operations, these systems are not yet able to fire PGM. Therefore, these assets did not meet our precision requirements.

While deployed to Helmand, our battalion was organized with two rifle companies supported by 60mm mortar sections, as well as our battalion mortar platoon equipped with 81mm and 120mm mortars. Typical fire missions would be executed from our static mortar firing point (MFP), but occasionally during maneuver operations we were tasked to provide close indirect fire support for maneuver forces in the operational area. In order to secure an MFP, we operated out of built up Afghan National Army (ANA) patrol bases and from vehicle patrol bases. These forward positions allowed us to operate within the desired two-thirds range of our maneuver forces while maintaining adequate security. Working within the ANA patrol bases also provided the added benefit of furthering our partnered relationships. Not only did our missions provide countless opportunities for information gathering and cross training with the Afghans, they also gave the ANA the psychological benefit of having a heavy mortar system in the patrol base, which deterred enemy attacks and bolstered the morale of the Afghan soldiers.

Originally, we attempted to persuade our leadership to allow us to take our 81mm mortars on our forward support missions, as this 121-pound system would be much easier to move and employ than the 309-pound 120mm mortar system. With the lighter mortar system, we would be more maneuverable and better able to provide our commander with rapid employment. However, our higher headquarters' need to mitigate the risk of collateral damage through the use of our PGM-capable 120mm mortars trumped our desire for a lighter, more maneuverable system.

Each time we were called on to employ our 120mm mortar in sector, we made adjustments to our systems to mitigate risk and make our employment faster and more secure. The first

risk that we identified while transporting the mortar system was the possibility of damaging the weapon system or ammunition. Due to the odd arrangement in the back of a M-ATV, we had to put the system at unstable angles. We mitigated the risk of damaging the system by carefully tying down every piece of equipment. This mitigated the risk of system damage but did not eliminate it. Hardware modifications to the back of the M-ATV to allow secure and rapid storage would be one course of action to greatly reduce the risk of damaging the system during movement. The use of the standard 120mm mortar stowage trailer as either theater-provided equipment (TPE) or rolling stock brought with deploying units would be another means to assist in the deployment of mobile 120mm mortars.

Through consistent rehearsals and detailed AARs, we continually modified our methods for employment. Small refinements — including the use of a "go bag" with all necessary basic issue items and standardized tie downs — and the delegation of personalized roles were made along the way, bringing our employment time to under 25 minutes. We tested several different methods of tying down the equipment (550 cord, ratchet straps, and cargo nets) and eventually determined that the best balance between speed and security was carefully placed 550 cord. We marked our rounds for easy identification in day and night and loaded them last so that they were not damaged by the weight of the system. Having the rounds loaded last allowed them to be offloaded first, which proved to be necessary as the two mortarmen in the M-ATV could offload them while waiting for the rest of the section to arrive and assist in offloading the cumbersome mortar system. By applying lessons learned for continuous improvement, we were able to employ in a third of our original time, reduce risk, and engage targets with indirect fires within 10 meters of accuracy. At end state, we provided the commanders with an unmatched battalion-level fire support asset.

Although inherent risk is assumed when transporting the 120mm mortar in the back of a M-ATV, the ability to provide precision-guided indirect mortar fire throughout the battlefield provides an invaluable internal asset to the infantry mortar battalion. With the need to mitigate collateral damage growing, it remains increasingly necessary to be able to maintain precision accuracy with fire support assets. The 120mm mortar has not typically been a mobile weapon system in the wars in Iraq and Afghanistan; however, through innovative techniques, maneuver forces can provide mobile, PGM-capable indirect fire assets at the battalion level.

Notes

[1] Field Manual (FM) 3-22.90, *Mortars* (December 2007), Chapter 1.
[2] ATP 3-09.32, *Multi-Service Tactics, Techniques, and Procedures for Joint Application of Firepower* (January 2016), Appendix H.
[3] FM 3-22.90, 1-1.
[4] Quick Reference Guide for Interface Unit, Remote, Fire Control: Precision Lightweight Universal Mortar Setter System, XM395 Capabilities, 11.

CPT Brian Costella serves as the mortar platoon leader with the 2nd Battalion, 12th Infantry Regiment, 2nd Infantry Brigade Combat Team, 4th Infantry Division, Fort Carson, CO. He previously served as a rifle platoon leader with 2-12 IN. He graduated from the U.S. Military Academy at West Point, NY, with a bachelor's degree in defense and strategic studies.

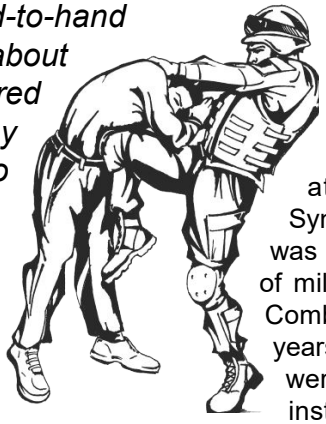
Soldiers from the 2nd Battalion, 12th Infantry Regiment's Mortar Platoon stand ready to fire 120mm mortar missions in support of a battalion operation.

Combat Feedback from US Army Combatives Instructors

LTC PETER JENSEN
SUSAN GOODMAN

"When Soldiers are engaged in hand-to-hand combat, they acquire new information about combatives. These lessons must be captured and analyzed so that the Modern Army Combatives Program (MACP) evolves to fit the needs of Soldiers."

— Field Manual (FM) 3-25.150, *Combatives*



Technologically advanced weapons may define modern warfare, but when Soldiers close with and destroy the enemy, hand-to-hand combat can become a brutal reality. Defined as "a physical confrontation between two or more persons using empty-hand fighting or weapons that cannot fire," hand-to-hand combat occurs more often than one would expect on the battlefield of today.[1] In one study, nearly a quarter (189 out of 876) of Soldiers from an infantry brigade in the 3rd Infantry Division reported engaging in hand-to-hand combat during an eight-month deployment to Iraq.[2] Additionally, an analysis of Army after action reports (AARs) between 2004 and 2008 found 19 percent of Soldiers (216 out of 1,226) reported using combatives skills during combat deployments.[3] Preparing Soldiers for the demands of hand-to-hand combat is more challenging than ever.

The Army faces more training requirements than time available to train.[4] Leaders and instructors must look for information to a make training more effective and efficient so that when training takes place Soldiers get the maximum benefit. Combat feedback — lessons learned from Soldiers' experiences on the battlefield — is one such source of information. Combatives instructors are a group of Soldiers well placed to provide combat feedback that improves training for hand-to-hand combat.

Previous combat feedback interviews with Soldiers about fighting in hand-to-hand combat suggest the mental aspects are important for success in such encounters.[5] Additionally, interviewed Soldiers discussed the automatic nature of their fighting skills, the need to adapt to unexpected circumstances, and the need to conduct large amounts of training in hand-to-hand combat.[6] These topics are useful areas to ask instructors for combat feedback that improves training effectiveness.

The purpose of this article is to review the lessons learned from a combat feedback survey completed by combatives instructors and based on their responses offer recommendations for combatives training.

After obtaining Institutional Review Board approval, 27 combatives instructors completed a questionnaire on combatives at the 2012 Annual Combatives Instructor Symposium. The average age of the instructors was 35.41 years with an average of 12.19 years of military service.[7] Nineteen were Level 4 Army Combatives instructors with an average of 4.46 years as an instructor.[8] The remaining individuals were Level 3 (six instructors) and Level 2 (two instructors). Of those surveyed, 74.07 percent indicated experience in combat operations and 33.33 percent indicated experience using combatives skills during combat operations. The questionnaire asked about instructors' beliefs on several areas of performance and mental skills associated with success in both training for and performance during a hand-to-hand combat encounter during combat operations. Findings about success in combatives training are available in a separate article.[9] This article details instructors' beliefs on the mental skills and training principles important for success in the use of combatives during a combat situation.

SURVEY FINDINGS

Training Time

Instructors were asked about the minimum number of hours of combatives training needed for a Soldier to be effective in a combat environment. The instructors reported an average of 79.69 hours.[10] However, without any prompt, 13 instructors wrote more than the minimum number of hours and offered their views on the number of hours that should be trained each week, month, or year. From these instructors, the average regular training believed necessary for combat proficiency was 4.46 hours per week.[11] The instructors were then asked to rate (on a scale of 1-7, with 1 representing "not important" and 7 representing "very important") the importance of fighting skills being automatic and a second question on the importance of fighting skills being adaptable during combat operations. Instructors believed that fighting skills should be automatic and adaptable.[12] Further, 48.15 percent of instructors believed it was "very important" for fighting skills to be automatic, and 81.48 percent believed it was "very important" that fighting skills are adaptable.

Mental Skill	Rank	Average Rating on Scale of 1-7	Standard Deviation[7]	% of Instructors that Rated as Very Important
Stress Control	1	6.48	1.12	81.48
Mental Toughness	2	6.40	1.12	85.19
Confidence	3	6.36	1.15	77.78
Controlled Aggression	4	6.32	1.14	77.78
Self-discipline	5	6.24	1.30	55.56
Attention-Concentration	6	6.20	1.44	51.85
Courage	7	6.20	1.35	55.56
Motivation	8	6.20	1.32	55.56
Pre-mission Mental Preparation	9	6.20	1.32	55.56
Emotional Control	10	6.16	1.31	51.85

Table 1: Importance Ratings of Mental Skills for Determining Success in a Hand-to-Hand Combat Encounter during Combat Operations

Psychological Factors

Next, instructors rated the importance of psychological factors for success when using combatives skills in a combat setting. Psychological factors are thoughts, feelings, and mental characteristics that impact the attitude, behavior, and functions of the mind. Results revealed psychological factors were viewed as important with 74.07 percent of instructors rating psychological factors as "very important" (a score of 7 on a scale of 1-7).[13] The instructors were next asked how well the MACP prepares Soldiers for the psychological demands of hand-to-hand combat in combat operations. The average rating by instructors was 5.44 with 29.63 percent of instructors believing MACP prepared Soldiers "very well" (a score of 7 on a scale of 1-7) for the psychological demands.[14] Finally, the instructors rated the importance of 23 mental skills for success in hand-to-hand combat during combat operations. All ratings were made on a 1-7 scale, with 1 representing "not important" and 7 representing "very important." Table 1 shows the top 10 mental skills rated by instructors and further reveals that **stress control**, **mental toughness**, and **confidence** were judged three of the most important for success during combat operations. However, it should be noted that even items viewed to be least important received relatively moderate ratings.[15]

LESSONS LEARNED

Training Intervals and Duration

Results from this survey offer several recommendations for MACP "combat feedback." When asked the minimum number of hours of combatives training needed for a Soldier to be ready for combat, nearly half the instructors submitted an answer that instead described how frequently a Soldier should practice combatives. This is a powerful response. It suggests that instructors viewed regular training in combatives as very important in preparing Soldiers for performance in combat. This belief is consistent with the distributed learning concept. A distributed learning practice schedule refers to situations in which training is spread across several sessions.[16] For sport skills similar to combatives (i.e., discrete skills), shorter training sessions that are spaced out are more effective than longer training sessions that are grouped together.[17] Although the U.S. Army training method might require certification training in long, grouped blocks (e.g., Level One combatives instructor training is taught in five 8-hour blocks over one week), sustainment training or future training designs best maintain and further develop combatives skills through regular, relatively short training sessions.

Lesson Learned #1: Regular combatives training — in short sessions totaling approximately 4.5 hours per week — is important for preparing Soldiers to succeed in a hand-to-hand combat encounter.

Automaticity or "Muscle Memory"

Instructors very strongly supported the view that combatives skills must be both automatic and adaptable for success in a combat situation. This view matches Soldiers interviewed about their experience of fighting in hand-to-hand combat.[18] The term automatic refers to fighting skills that are fast, require little conscious thought to perform, and can occur involuntarily during a fighting encounter.[19] Automatic skills are also referred to in the MACP as muscle memory.[20] Developing muscle memory for combatives skills is considered a good way to sustain performance during high levels of stress.[21] For example, mixed martial arts (MMA) fighters with muscle memory can recognize their opponents' movements and respond (i.e., punch, kick, throw, and grapple) with little or no thought while keeping focused on their fighting strategy. Unfortunately, muscle memory can work against Soldiers if their skills are not developed to deal with a dynamic fighting environment.

Given the chaos and unpredictability of combat, Soldiers may need to apply their skills against a wide range of scenarios and opponents. Combatives skills trained with only an "action-reaction" teaching method can build muscle memory — but not necessarily the capability to adjust quickly to unexpected demands. Adaptability refers to the expertise to apply a skill in different performance settings.[22] For example, a Soldier may practice a rear-naked choke in training but must also adapt this combatives technique to the challenges of wearing body armor during application in a combat setting. Training fighting skills that are both automatic and adaptable requires a mixture of different practice schedules.

A **blocked practice** schedule involves repeating the same technique over and over in response to the same stimulus (i.e., "action-reaction" teaching model). For example, when an opponent throws a jab punch, the Soldier responds with the same defense, and this action-reaction is repeatedly practiced. Although this type of practice can quickly develop automatic skills, it can limit a Soldier's ability to respond effectively in dynamic circumstances. A basketball player who only shoots free throws from the foul line should not expect

this type of practice to prepare them to make a shot against an active opponent during regular play. Therefore, once basic competence of fundamental combatives techniques and movements are established through a block practice schedule, a Soldier should begin training in varied and random practice schedules.[23]

A **varied practice** schedule has a Soldier practicing the same fundamental technique but doing so under continuously different challenges.[24] For example, a varied schedule for practicing a double-leg takedown might require a Soldier to practice each repetition against a different opponent or have the opponent regularly change his stance and position. A varied practice schedule builds both the relative timing pattern of a technique and the Soldier's ability to adapt to a changing pattern.[25] Through a varied practice schedule, a Soldier "... learns the rules for performing variations of a fundamental pattern, including new variations they might try to produce in a future…" hand-to-hand combat encounter.[26]

A **random practice** schedule is the third training method to develop automatic and adaptable fighting skills. In a random practice schedule, a Soldier practices several fundamentally different combatives skills in a random order (instructor is aware of the order but not the Soldier).[27] In some instances, the same fighting technique is never performed twice in a row. For example, a Soldier may practice a variety of combatives techniques and movements (e.g., punches, knee strikes, take downs, etc.) that are randomly called out by an instructor. Another example of a random schedule is presenting a Soldier with realistic hand-to-hand combat scenarios where an opponent presents randomly different challenges (e.g., striking attacks, grappling attacks, etc.) that require very different and distinct responses from the Soldier. Soldiers may struggle with performance during random practice training, but the challenging demands of this schedule enhance learning and performance in later scenarios — such as combat.[28]

Giving a Soldier's combatives skills the best chance to function automatically and in an adaptable manner during a combat engagement is facilitated by focusing on the opponent. Science is quite clear that an external focus is preferable to an internal focus when executing well-learned physical skills.[29] For example, Soldiers should focus on their opponent and where they want to place a kick (i.e., external focus) rather than focusing on their own foot placement and the leg movement associated with a kick (i.e., internal focus). Experienced individuals can actually sabotage their automatic skills by putting their focus on the mechanics of skill execution rather than external cues.[30] In other words, Soldiers can become too focused on the mechanics of their own actions; methodically thinking through mechanics can physically slow you down.

Lesson Learned #2: In concert with the crawl-walk-run training method, combatives training can build muscle memory and adaptability through **block**, **varied**, and **random** practice schedules. Block practice involves practicing techniques under the same conditions until a basic understanding is formed and the skill requires little thought to execute. Varied practice refers to practicing a combatives technique under a wide range of conditions — forcing Soldiers to modify their techniques to the different challenges presented by an opponent. Random practice demands Soldiers use a continuously changing set of different combatives skills to solve hand-to-hand combat scenarios. During a combat situation, automatic and adaptable combative skills are best performed when Soldiers keep focused on their opponent rather than the execution of any particular skill.

Psychological Factors or Mental Skills

A large majority of the surveyed instructors believed psychological aspects play a very important role in a Soldier's success during hand-to-hand combat. Although instructors were less supportive that MACP prepared Soldiers for the psychological demands of hand-to-hand combat, there was still a fairly strong belief that MACP prepared Soldiers sufficiently. Of the 23 mental skills considered, stress control, confidence, and mental toughness were viewed as three of the most important for success in hand-to-hand combat. Stress control is defined as the ability to adjust your mental and physical intensity (i.e., fight or flight response) to the level that helps you perform at your best in a given situation.[31] Confidence is the collection of beliefs and thoughts a person has about their ability to successfully perform in a particular situation.[32] Mental toughness is defined as the "psychological edge that enables you to: generally cope better than your opponents with the many demands... specifically, be more consistent and better than your opponents in remaining determined, focused, confident, and in control under pressure."[33] Training recommendations for building confidence and mental toughness are available in another article.[34] Developing a Soldier's mental skill of stress control during combatives training begins with understanding that experiencing stress during combat is a normal reaction.

Reactions to stress — whether in combat or not — include both the physical and the mental. Some physical reactions to stress include increases in breathing, heart rate, and muscle tension.[35] Fearful emotions, racing thoughts, and tunnel vision are examples of some of the mental reactions to stress.[36] Perhaps the most important lesson about the physical and mental characteristics of stress is that they are normal reactions to challenging and dangerous situations.[37] Soldiers interviewed about their experiences of hand-to-hand combat agreed that a high level of physical and mental intensity accompanies fighting.[38] Developing an acceptance that some amount of physical and mental reaction to stress is normal can help in keeping stress from overwhelming a Soldier. Two skills that can further safeguard performance during highly stressful situations and can be incorporated into combatives training are an external focus and tactical breathing.

As mentioned earlier for enabling automatic and adaptable skills, an external focus is also a useful skill to keep stress from impacting performance. When engaged in hand-to-hand combat, Soldiers should continually focus their attention on their opponent and the tactics necessary to win. Physical and mental reactions to stress can distract a Soldier's focus — pulling attention inward to muscle tension or fearful thoughts — but continually refocusing on an opponent and key performance

cues needed to win are ways to control stress.[39] One method to teach Soldiers how to remain externally focused during combat is using the phrase "What's Important Now" (WIN). Using WIN can quickly remind Soldiers to keep their focus to the performance cues most relevant to their situation. For example, a Soldier using combatives skills during a close quarters battle situation can become distracted by fearful thoughts or an increased breathing rate. Focusing on the WIN phrase can rapidly shift a Soldier's focus from distracting stress reactions to the demands of the task at hand: defeating an opponent in hand-to-hand combat. As with any skill, WIN requires practice and integration into existing combatives training. With regular practice, Soldiers can quickly and efficiently identify the most important factors for success in a hand-to-hand combat setting and keep their attention focused on those factors in the face of distractions.

Self-controlled breathing is a set of techniques to manage stress in a wide variety of situations and found in a many disciplines including sports, yoga, and martial arts.[40] Breathing techniques used to control stress immediately before, during, or after a highly threatening performance situation are termed "tactical breathing."[41] Defined as deliberate, conscious breathing usually with a Soldier inhaling for a four-count and exhaling for a four-count, tactical breathing has been taught to Soldiers during MACP training and recommended to help Soldiers stay focused during vehicle route clearance.[42] Recent research suggests Soldiers with training in tactical breathing managed their stress better during a simulated emergency than Soldiers without similar training.[43] Tactical breathing assists a Soldier in coping with both physical and mental aspects of stress.

Physically, tactical breathing replicates a low-stress breathing pattern that aims to decrease the intensity level of other physical characteristics (e.g., heart rate, blood pressure, muscle tension, etc.). For example, tactical breathing seeks to decrease the shaking in arms or "frozen" legs from excessive muscle tension under stress. Mentally, the deliberate and conscious aspects of tactical breathing create a sense of control for a Soldier that can be missing during a highly stressful situation. Tactical breathing can be easily incorporated into existing training and used by Soldiers in a variety of performance situations.

Perhaps the most important aspect of using tactical breathing is that — just like any combatives skill — it must be practiced and taught to be useful in a combat situation. Additionally, this type of skill may not be as useful while fully engaged with an opponent in a hand-to-hand combat encounter. For example, Soldiers in the middle of trading punches with an opponent may not find it advantageous to shift their attention from their opponent to their tactical breathing skill. At these performance moments, Soldiers should keep their attention fully on the demands of their opponent and the tactics needed for winning.

Tactical breathing is best leveraged during windows of time between performance events and executing skills. For example, before Soldiers enter a room during close quarters battle they may take a moment to use tactical breathing to lower their physical and mental intensity to the optimal level for performance. Stacked with fellow Soldiers on a wall outside the room — waiting for a signal from the leader to enter — a Soldier can take a moment to inhale and exhale in a controlled, deliberate manner. It is also possible to use tactical breathing in very small gaps in time during performance. An example from sport is the motocross athlete who takes just one deep, controlled, tactical breath while in air during the highest jump on a race track to relax and refocus on his tactics. Soldiers in hand-to-hand combat, after achieving a clinch with an opponent, could use tactical breathing very briefly to lower their extreme level of physical intensity and refocus mentally on the demands of their opponent.

Lesson Learned #3: Psychological factors are important for success in a hand-to-hand combat situation, especially the ability to control stress, remain confident, and be mentally tough. Mental skills training can be incorporated into combatives training to maximize the success of a Soldier who faces hand-to-hand combat on the battlefield.

Photo by SrA Tabatha Zarrella, USAF

Modern Army Combatives Program instructors speak with students during an Army Basic Combatives Course on Camp Lemonnier, Djibouti, on 13 February 2014.

CLOSING THOUGHTS

With only 27 instructors surveyed in this effort, these findings are limited and may not generalize to other combatives instructors. Despite limitations, three-quarters of the instructors had experience in combat operations and one-third had experience in hand-to-hand combat, which is encouraging. This study might serve as a model for future, larger efforts to examine the views of

combatives instructors to obtain their combat feedback. Other studies might include surveying Soldiers about their experience using combatives skills during combat operations. There is some precedence for this type of study through the 900 interviews of Soldiers about their experiences of hand-to-hand combat collected by the U.S. Army Combatives School.[44] Further information and support for mental skills and training schedules is available from the Comprehensive Soldier and Family Fitness program (CSF2) at www.csf2.army.mil or CSF2 sites located on U.S. Army installations.

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 The authors are deeply grateful for the support from the U.S. Army Combative School and the combatives instructors who participated in this survey. Potential participants were provided informed consent before information was collected for this study.

Maneuver Leaders' Role in Observation Planning

King of Battle Reclaiming the Throne... Not Without the Queen

LTC JACK D. CRABTREE
LTC JONATHAN A. SHINE
CPT GEORGE L. CASS

As observed by observer-coach-trainers (OCTs) during decisive action rotations at the National Training Center (NTC) at Fort Irwin, CA, fire support officers (FSOs) at all echelons struggle to get observers in position to observe planned targets from brigade combat team (BCT) down to company level. This results in planned targets that are tied to fire support tasks not being serviced or having maneuver delayed by fires. Unlike the effort maneuver commanders take finding a useable attack-by-fire (ABF)/support-by-fire (SBF) position, they put less thought into observers' locations and their ability to observe and adjust fires. They think either the FSO will figure it out or the actual observers will move to a location that they can observe from. This unhinges the war game as they can't really figure out where they will observe from or how long it will take to actually get to the location. Thus, units may either get late fires that fail to achieve the effect for the duration needed or don't get fires at all. The contributing factors include:

* Commanders and FSOs do not plan the location of observation posts (OPs) to service targets;
* Commanders and FSOs do not understand the capabilities and limitations of fire support teams (FISTs) and forward observers (FOs); and
* Commanders do not select a FIST control option.

Inadequate fires planning begins during mission analysis due to FSOs insufficiently articulating directed brigade/battalion fire support responsibilities and describing how those fire support tasks support the higher headquarters' concept of operation one and two levels up. Both enable clarity of nesting plans at echelon. This shortcoming limits the commander's and staff's understanding of the higher headquarters' scheme of fires, to include the observer plan.

The observer plan is further impaired by FSOs not developing the observer into the scheme of maneuver during course of action (COA) development prior to COA analysis. The FSO's time is typically consumed by placing targets on a map with little thought on who, how, or when the observer will be in place to observe targets and triggers. Maneuver battalion and brigade S3s and executive officers (XOs) do not require the FSO to attend the wargame armed with this information. They

A fire support team assigned to A Battery, 4th Battalion, 1st Field Artillery, observes a smoke mission providing obscuration of a breach site during a decisive action rotation at the National Training Center at Fort Irwin, CA.
Photos by SSG Joseph Gonzalez

just want to see the fire support overlay with targets on it. This typically results in the FSO drawing OPs on the operational graphics during/after COA analysis or sometimes not at all. No thought is applied to how the observer is going to get there, how long it will take, effects of limited visibility on optics, and other critical factors. The result is that locations, positioning, and the timing of occupation of OPs are not synchronized with the maneuver plan, and the overall consequence is that fires are not synchronized to facilitate maneuver.

Fire Support Capabilities and Limitations

When fire supporters consolidated into field artillery (FA) battalions, the most significant reason was to ensure they receive the best training possible. FA battalion commanders ensure that maneuver battalion commanders receive highly trained fire support elements (FSEs) back as they transition to company and above collective training. However, FSEs are trained on very specific tasks that are not always integrated into maneuver training. A training gap that has become clearly evident at NTC is that commanders fail to integrate fire supporters' occupation of OPs into maneuver training at home station. This becomes very apparent during the brigade live fire at NTC. Observers are more timely and accurate when they are stationary in an elevated position. During the offense, one of two scenarios occurs:

1. The FSO moves behind the company/battalion commander and is unable to observe the trigger or the target while moving (due to the commander's position and the order or implied requirement that the FSO moves with the commander).
2. The FSO maneuvers to the OP. However, due to the fact that the timing of the movement of the observer to the OP was not planned or synchronized with the maneuver plan, it takes much longer than the commander visualized in his mind. This results in either executing the plan without fires or having maneuver elements remain stationary for a longer period of time where they are subject to enemy fires, which desynchronizes the brigade plan.

This could be attributed to live-fire exercises at home station where the field artillery and mortar impact areas are routinely offset from the platoon, company, or battalion maneuver live-fire areas. This requires the observer to occupy an OP that was nowhere near where they are training. Many times observers move straight to their OPs as maneuver is setting up the range and then remain there for the duration of live-fire training without requiring OP occupation to be synchronized. The FSOs do not maneuver with the company or battalion due to the location of the OP and designated impact areas.

Another scenario that occurs is having the FSO move with the maneuver unit and call the tactical trigger, but the OP observing the offset impact area makes all the fire support adjustments. Training this way prevents us from having a clear understanding of how long it will take FSOs and observers to occupy positions where they can effectively do their job.

Many maneuver commanders possess limited knowledge of fire support systems and equipment. They work with FOs from the time they are platoon leaders and have FSOs at every echelon of command. Due the presence of these experts, they typically do not take the time to fully understand fire support capabilities and limitations. If half of a tank or infantry company's M1s or M2s were non-mission capable (NMC), a commander would be highly concerned and most likely would have to make a decision to reallocate combat power or adjust subordinate units' missions. If every one of the stand-alone computer units (SCUs) or fire support sensor systems (FS3s) in their Bradley FIST (BFIST) are NMC, commanders typically do not realize they have lost digital fires capability with their observers and the impacts that has on timely and accurate fires.

Many FSOs do not create a detailed observation plan that shows primary and alternate observer locations to support battalion and brigade targets and triggers. This results in maneuver waiting on fire supporters to get observers in position to observe targets that are essential to the battalion/ brigade scheme of maneuver.

Observation Planning

Many FSOs do not create a detailed observation plan that shows primary and alternate observer locations to support battalion and brigade targets and triggers. This results in maneuver leaders waiting on fire supporters to get observers in position to observe targets that are essential to the battalion/ brigade scheme of maneuver. Doctrine for fire support planning at BCT and below is currently covered in Army Techniques Publication (ATP) 3-09.30, *Techniques of Observed Fire*, and ATP 3-09.42, *Fire Support for the Brigade Combat Team*. ATP 3-09.30 doesn't cover observation planning at battalion level. It only provides information on occupying an OP, known as SLOCTOP (security, location, communication, targets, observation, position improvement). Commanders should rely on their FISTs and FOs to occupy OPs on dominant terrain that can overwatch a wide area. Security posture is determined by the commander, but a mounted OP consists of at least one BFIST or fire support vehicle (FSV) and a dismounted OP consists of at least two FOs. Commanders must assume the risk of those Soldiers occupying dominant terrain independently to gain tactical advantage over the enemy in support of Soldiers conducting maneuver.

The six-step technique for observation planning is a forcing function for subordinate units to analyze the target and OP planned by battalion/brigade and submit refinements (see box on next page). Company commanders often plan under constrained timelines and focus on what battalion tasks them to do. When the S3 includes the requirement to emplace an OP in order to observe battalion targets in the "Tasks to Subordinate Units," the commander is now required to follow the order or submit a refinement. This also puts it as a consideration briefed in operation orders (OPORDs), backbriefs, and the battalion combined arms rehearsal (CAR). They submit refinements to

Observation Planning 6-Step Technique

The six-step observation planning technique **retains flexibility** at the lowest level to position observers. Using **top-down planning, bottom-up refinement** to position observers optimizes and synchronizes observer positioning across the BCT. **Detecting and assessing the effects of fires is critical.** The six-step technique provides a methodical approach to produce **refined, executable, integrated, and synchronized observation plans.** This observation planning technique also provides the observer and commander with data necessary to rapidly adapt that plan during execution if a planned OP is determined to be unsuitable after using a line of sight and risk estimate diagram.

Step 1: Determine the desired effects of fires
Step 2: Determine the target observation suitability
Step 3: Develop the observation course of action
Step 4: Task observers and OPs in top-down observer plan
Step 5: Refine and rehearse the observation plan
Step 6: Monitor and adjust observer plan execution

Tasks to Subordinate Units

(Example BCT Tasking Task Force to Occupy an OP)

TF SILVER LION
NLT 130530AUG2016 establish observation of AE0030 from OP 301 and 302 in order to refine targets and neutralize EN BPs. OPs may displace once AE0030 is fired or effective EN fires are received.

targets, triggers, and OP locations so that it is incorporated in battalion and company schemes of maneuver.

FSOs at all echelons should plan OPs that can service each planned target they determine as essential to facilitating FISTs to support scheme of maneuver. They should consider risk estimate distances (REDS)/minimum safe distances (MSDs) of munitions planned for the target, line of sight analysis, and capabilities available. They should also plan the OP locations considering whether it is a mounted OP with Fire Support Sensor System (FS3)/Long-Range Advanced Scout Surveillance System (LRAS) or dismounted OP with Lightweight Laser Designator Rangefinder (LLDR)/vector or map, compass, and M22 binoculars. The FSOs need to be familiar with the capability of these systems and the experience of the FOs or FISTs that are utilizing them. When a planned target does not have a feasible location to set an OP, they need to be honest brokers with their maneuver commanders and notify them of the constraints in observing targets.

"The commander is the most important participant in the MDMP (military decision-making process). More than simply decision makers in the process, commanders use their experience, knowledge, and judgment to guide staff planning efforts."

— Army Tactics, Techniques, and Procedures (ATTP) 5-0.1, *Commander and Staff Officer Guide*, para 4-8.

Many maneuver commanders provide mediocre guidance for fire support. This limits an FSO's ability to develop a scheme of fires and included observer plan. It also reduces the staff's ability to synchronize fire support guidance with the maneuver plan.

ATTP 5-0.1 table 4-1 lists suggestions commanders should consider issuing as part of their commander's guidance. It includes guidance for observer planning, which is rarely issued.

If commanders provide a similar level of guidance to what they provide for the movement and maneuver warfighting function, observers will be more successful and fires more responsive. Commanders should consider issuing guidance for the observer plan addressing the following areas:

- Daylight vs. limited visibility movement and occupation
- Mounted vs dismounted movement and occupation
- Not later than (NLT) times for establishment of OPs
- Prioritization for special equipment (such as digital fires capability and optics observing critical targets or triggers)
- Additional assets the commander is willing to commit to serve as observers such as squads, snipers, or scouts
- Requirements for observation redundancy of triggers and targets
- FIST control options
- Tactical risk the commander is willing to assume with the observer plan (compromise, time, equipment, redundancy, etc.)

Control Options

Another significant concept of doctrine that is not routinely discussed is the FIST control option referenced in ATP 3-09.30. Most fire supporters know about centralized versus decentralized control options for calling for fire directly or through an intermediary to a surface-to-surface weapon system. However, the ATP also provides options on how to employ the fire support platoon for planning and execution. The three control options are: fire support platoon, company/troop FIST, and squad FO. Each option has its own benefits and drawbacks.

The first control option is the consolidated fire support platoon, which centralizes the platoon for planning and employment of FISTs and FOs to streamline taskings from the battalion commander. The FISTs can still be available to their company commanders during troop leading procedures (TLPs), but the battalion FSO plans their OPs and targets with the focus on battalion scheme of maneuver. This utilizes the fire support platoon in a way similar to the way BCTs used combat observation lasing teams (COLTs). Delegated by the battalion commander, this option allows for the FSO to control the platoon and have it focus on massing fires at the battalion commander's decisive point. This option is advantageous when an operation lacks detail in battalion and company schemes of maneuver. For instance, in the defense, when a battalion has two companies occupying battle positions set to fire into the same engagement area, less detail is required with the company scheme of maneuver; this control option will allow for the fire support platoon to provide redundant observation from different OPs to service battalion or BCT targets. Another scenario is when the battalion is the shaping operation for a BCT combined arms breach. The battalion is tasked to occupy SBF positions to provide suppression on the enemy

battle positions in support of the breach force's advance to the breach site. Again, this is not detailed at the company level. The battalion commander can centralize the decision on how to employ FISTs and FOs to ensure that his battalion suppresses and obscures at the BCT commander's decisive point. The battalion staff can feasibly plan the OPs and specify in-position ready-to-observe times that facilitate observation of suppression and obscuration fires in support of the advance of the breach force.

The second control option is to have company/troop FISTs decentralized to companies for planning and execution. This is the default and most often used control option because it is inherent in the concept of mission command, where we rely on decentralized execution by subordinate leaders. This control option is ideal for operations that require detailed integration of fires in the company scheme of maneuver. As an example, in offensive operations with multiple company objectives, fires need to be synchronized with company schemes of maneuver to ensure fires are massed at the company commanders' decisive points. Also, a battalion objective consisting of an urban center is a time when utilizing this control option assists in the isolation force having an observation plan focused outside the urban center and the fixing force having an observation plan inside the urban center.

The third control option is squad FO. This is the least preferred method, but it offers to place an FO in every squad-size element. This is not recommended because when you split up the FO team, it can diminish their ability to conduct dual independent checks.

The examples given are not rules but considerations that maneuver commanders and FSOs at echelon should discuss from BCT down to company level. Fire support control options that are recommended should be tied to each COA while going through COA analysis.

A recommendation is for BCT FSOs to host a brigade fire support leadership professional development session with focused discussion on observation planning and fire support team control options. Attendees would be brigade and battalion commanders, XOs, S3s, FSOs, and company commanders and FSOs. Battalion FSOs can do the same thing for a maneuver battalion, but so much can be learned from developing shared understanding among the leaders across a BCT. It is up to the fire supporters to advise their maneuver commanders in the options available, providing different ways to approach operations.

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Soldiers assigned to B Company, 4th Battalion, 6th Infantry Regiment, observe fires for an attack under live-fire conditions during a decisive action rotation at NTC.

Company Commanders Share CALFEX Lessons Learned

2ND INFANTRY BRIGADE COMBAT TEAM, 25TH INFANTRY DIVISION

In September 2016, the companies and troops of the 2nd Infantry Brigade Combat Team (IBCT), 25th Infantry Division conducted combined arms live-fire exercises (CALFEXs), a culminating training event that set the foundation for battalion live-fire exercises (LFXs) that the brigade would execute during its upcoming rotation to the Joint Readiness Training Center (JRTC) at Fort Polk, LA. The CALFEX was also a primer for Operation Lightning Forge, a brigade-level culminating training event that created a JRTC-like environment on Oahu. The CALFEX scenarios required companies to close on an objective under direct and indirect suppression, execute a breach, destroy a bunker, clear a building cluster, and defend against a counterattack. To do so, each company was weighted with assets both internal and external to the brigade, including engineers, AH-64 gunships, a mounted heavy-weapons section (for the rifle companies), and a direct support 105mm howitzer battery. Companies had to negotiate both highly restricted terrain and large open danger areas en route to the objective; they also had the opportunity to receive live intelligence updates from unmanned aerial vehicle (UAV) and sniper assets. The scenario stressed each company's systems across all warfighting functions.

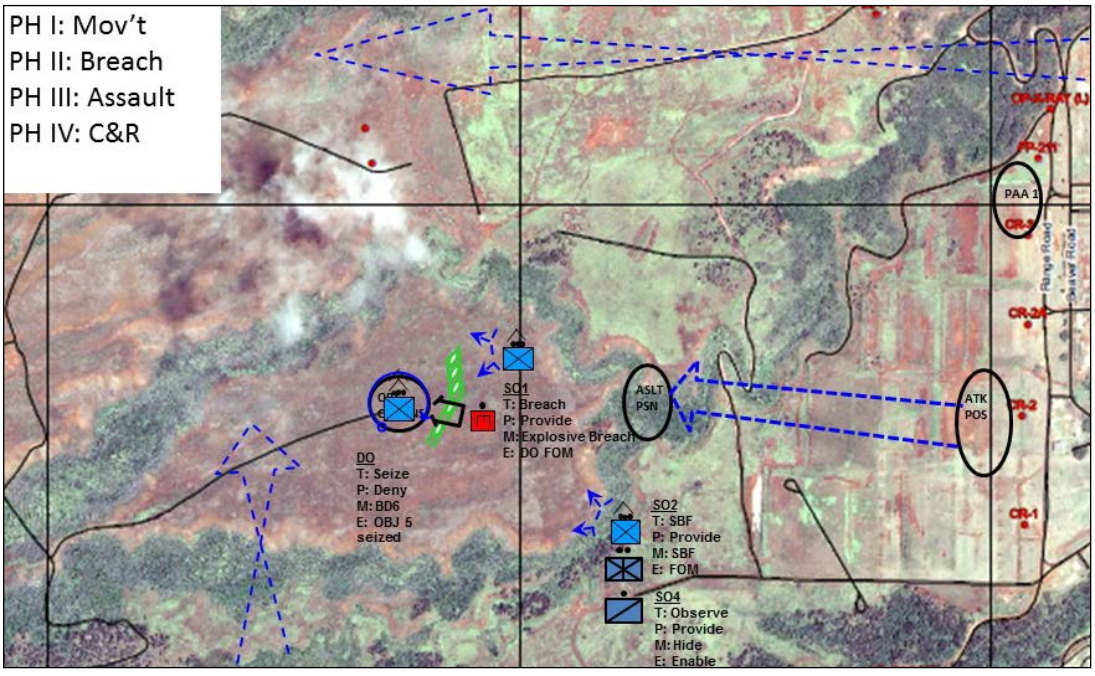
Following the exercise, several of the commanders captured their key lessons learned and shared their experiences with the other commanders in the brigade. The following sections are excerpts from their notes.

CPT Zack McAdams, commander of A Company, 1st Battalion, 21st Infantry Regiment (GATOR 6)

The experience was extremely humbling for everyone involved. Starting with myself, I did not perform to the measure that I had set for myself. The CALFEX gave everyone an opportunity to grow exponentially, down to the newest rifleman. Having "thick skin" wasn't always easy while receiving feedback, but having the external set of eyes from the brigade and battalion levels really allowed us (the company) to see ourselves and where we must improve to take the next step forward. This started with balancing the art and science of mission command. Releasing enough control to my subordinates to allow them to manage their platoons, triggers, and indirect targets in accordance with the plan allowed me to manage the fight at a higher level and ensure conditions were set for upcoming key events. Commanders no longer need to be in the direct fight, but rather they should manage from a vantage point that allows them to see the battlefield and prepare for the enemy's next action.

Develop junior NCOs, especially team leaders — I would argue that we grasped the overarching concepts at the company level. What I believe takes the "good" companies to "great" is having well-versed team leaders who understand their role in the larger fight. That starts with simple ideas like fire commands, assigning sectors of fire (beyond "10 and 2"), laser manipulation, and gathering LACE (liquid, ammunition, casualties, equipment) reports. Our team leaders struggled throughout our time executing the training event. We are developing a "Team Leader University" based on what we saw at the CALFEX that will be executed prior to Lightning Forge. We will continue to share across the board as we move forward. We can't blame junior leaders and Soldiers for what they haven't been taught, and we must train two levels down to ensure that our NCOs are given all the necessary tools to succeed.

Figure 1 — Rifle Company Concept for CALFEX



Key leaders and weapon

systems need to be placed at the right areas — Deciding where key leaders needed to be and clearly defining their roles and responsibilities made a world of difference. Any plan to put key leaders at the points of friction briefs well, but executing that plan on the ground can be significantly more difficult. Young platoon leaders (PLs) understanding their roles and responsibilities in the company fight brought the execution of the training to a new level, empowering their NCOs to fight and allowing the PLs to "cross-talk" during the operation. This cross-talk made a clear difference in the speed and tempo of achieving our decisive point and graduated the PLs to a new level of understanding. The same can be said for key weapon systems. Emplacing multiple M249s with the right team/squad will allow you to gain fire superiority at a point in the fight necessary to set conditions for that weapons squad to move into position. The right leaders with the right applied combat power will allow commanders to execute violent and aggressive maneuver onto any objective against any enemy.

The fundamentals continue to be a struggle — Failure in basic requirements like "silence, violence, silence," positive identification, laser manipulation, radio procedures, and individual Soldier discipline limit our ability to take Soldiers to graduate-level training. These skills are all extremely perishable, but without the proper maintenance we lose them the same as physical stamina without doing physical training (PT). This ties into the aforementioned point regarding team leaders. When team leaders do their job of enforcing the fundamentals with their teams, this allows squad leaders to manage, PLs to cross-talk, and commanders to shape the fight.

Timing, tempo, and setting conditions are what drive an operation — Before committing any Soldier into the fight, we had to learn tactical patience and not rush to failure during our initial iterations. Taking the tactical pause and allowing conditions to be set with either indirect or direct fires (or a combination of both) took some time. Timing the triggers to not wait on those assets also took some training between the fire support team (FIST) and the element it supported. Leaders at all levels want to move forward and seize the objective, but we can't seize the initiative until we have allowed our assets to set the conditions. Fires planning allowed the tempo to feel smooth, allowing myself and the first sergeant (1SG) the ability to think two steps ahead — but not without some hard lessons learned regarding the timing of those indirect targets. The Raven UAV also played a large part of this by allowing our formation to gain fidelity on the enemy prior to departure and ensuring that the effects were being met before allowing Soldiers to move into visual contact with the enemy.

We are now better than we were before the CALFEX, which is all I can truly ask for. Each Soldier, including myself, has grown and become better for it. I look forward to applying these lessons learned in both Lightning Forge and JRTC as we continue our training path. I couldn't be prouder of the effort that the Gators put forth and the hard lessons that were learned across the board.

Photos courtesy of authors

The fire support NCO for C Company, 1-21 IN launches a Raven to provide aerial reconnaissance of the objective and adjust indirect fires.

CPT Jon Voss, commander of B Company, 1-21 IN (BULL 6)

The CALFEX challenged Bull Company at every level and gave us a demanding, realistic look at our strengths and weaknesses. Like all live-fire environments, we initially felt constrained by the scenario, but I found it to be an incredibly valuable training event, as proven by the progress we saw across our iterations and the lessons that bought that progress. Below are a few of the lessons that were most significant to me as I commanded the Bulls through the attack:

De-link suppression fires from obscuration fires — We ran into friction when creating target groups that included obscuration and suppression effects in the same fire mission. This was problematic because the guns that fired our suppression were rounds-complete before the guns that fired our smoke. Therefore, the gun line wouldn't lay cold guns on a new target until the whole target group was mission complete. Simple fix: fire two separate fire missions.

Fires synchronization — At every transition point, I struggled to forecast how responsive the fires would be. So after some frustration, we adjusted the fires plan to create a continuous, sustained period of suppression that began on order and ran until our main and local support by fires (SBFs) were able to suppress the objective. When conditions were set, I gave the "fire" call to the fire support officer (FSO), and after that he just gave me periodic updates on how many

minutes of suppression we had remaining for each caliber so I could keep our maneuver moving at the right tempo. This simplification came at the expense of a detailed fires plan with tightly synchronized time-on-targets (TOTs), but it proved significantly more successful.

"Key leader at the friction point" isn't good enough — Our distribution of leaders at friction points was correct, but we didn't have a plan for how they would hand off squads, fire teams, or assets between the friction points to maintain momentum. We eventually worked it out but not without unnecessary pain. At the breach, where it was most tightly controlled, we ended up with a "flow master," who released each fire team once he saw the previous fire team was halfway to the breach.

Cross-talk between PLs — I slowly learned to push decision points down to the PL at the trigger for each transition. I started out acting as an unnecessary intermediary in order to ensure all conditions were set prior to making a trigger. That slowed the tempo and also forced me to become absorbed in too many details. Conversely, the PLs were more than capable of coordinating things with the other platoons. By the last iteration, we got to where I only had to give four radio calls and one face-to-face sync at the limit of advance (LOA).

Lethality and fire commands — We made a lot of money on simple accuracy of our fire, but we weren't able to take full advantage of it without our team leaders giving fire commands and squad leaders ensuring distribution of fire across the sector. Lesson learned: fire commands are a lost art, and we will retrain that task.

The execution checklist (EXCHECK) isn't everything — The EXCHECK is really useful for tracking our progress (especially for the executive officer [XO]), but it was distracting for the PLs and radio-telephone operators (RTOs) (and maybe me, just a little…) to remember and reference the name for each action, particularly at night. We used the EXCHECK for each iteration, but we used progressively more plain-English pro-words. For example, when it was time for our first shift fire, we called and echoed "shift fire 1" over the radio, instead of "Eve." And in the end, this ironically ended up meeting the goal of radio brevity and simplicity much more effectively.

As a company commander, panting is bad — I moved around too much during the first several iterations, including several aggressive bounds. These movements dragged me down to platoon level and prevented me from thinking deep. The metric I used for the live iterations was that if I caught myself breathing too heavily to talk calmly and clearly on the radio that meant I was doing too much. The real answer is probably somewhere in between, but I needed a tighter control over my own desire to be in the fight.

Those were the big things we learned. These lessons are not revolutionary, but they would have saved us pain if we had enforced them before the CALFEX. Most certainly, we are a better organization than we were before the CALFEX.

CPT Griff Getty, commander of C Company, 1-21 IN (TIGER 6)

Following the example of my peers, I've offered some CALFEX reflections below. As a general note, I gained invaluable experience not only on bringing assets to bear to destroy the enemy but also on training management principles and leader development.

Our distribution of leaders at friction points was correct, but we didn't have a plan for how they would hand off squads, fire teams, or assets between the friction points to maintain momentum. We eventually worked it out but not without unnecessary pain.

I anticipated the stress of the lane and the great training on movement, marksmanship, and battle drills we would conduct, especially having received the benefit of going last. What I did not anticipate, however, was how much I would learn about my own inadequacy to direct every action required for success at the company level.

The highlight of my personal lessons learned was that teamwork and lateral cross-talk makes mission command efficient. In theory, I could have been an effective commander by directing all actions as fast as I could talk on the radio (we all know we shouldn't try that), but to be effective and efficient and maintain a desired tempo, I had to rely on my PLs, 1SG, and XO. My confidence to fight my company grew as I started focusing on describing the endstate more than describing the action. I now have an experiential frame of reference to confirm that I can do more than one thing at a time when I focus on describing the endstate and trusting my leaders.

Additionally, during this experience, I noted how the brigade was able to address so many multi-echelon training goals during the event from training fire teams to battalions. Specifically, the development of our company and battalion FSOs and company and battalion medics was a huge outcome of the event. I learned as I watched our brigade commander mentoring our battalion FSO while he and my battalion commander coached me. Simultaneously, the field artillery (FA) battalion commander and brigade FSO coached the battalion FSO to be a better coach to the company FSO. All the while, I consistently beat up my company FSO and watched him get 100 percent better at his job. That was one of the most rewarding parts of the experience for me.

Below, I've listed three main after action review (AAR) points from the CALFEX that I think are worth sharing.

Troop leading procedures (TLPs) — It's critical that a company develops/continues to refine its planning standard operating procedures (PSOP) to reflect roles and responsibilities during the planning process and ultimately produce and brief a simple operation order (OPORD) in a time-constrained and tactical environment.

With the receipt of some range products and written battalion order, I was able to put together a basic written warning order. This facilitated some foundational understanding of the terrain, enemy, and task and purpose for each platoon to conduct

Soldiers from C Company, 1-27 IN disperse to cross an open danger area (ODA) under the cover of artillery obscuration and suppression.

parallel planning. However, common understanding wasn't achieved until we blocked off about one hour with all leaders in the conference room to complete course of action (COA) development collectively and emplace key graphic control measures on the common operating picture (COP). This step can be replicated in the field in a tactical assembly area (TAA) given adequate security. I used the AGADAP steps (analyze relative combat power, generate options, array initial forces, develop schemes of maneuver, assign HQs, prepare COAs) as a framework for this meeting, and we collectively walked away with clear requirements to refine manifests and equipment distribution to complete the mission. I would recommend an additional step during this touch point: include a terrain model or map walk-through to replicate a wargame session resulting in a detailed timeline during execution (essentially a rough sync matrix). This would have helped my FSO visualize and time fires to enable our maneuver plan and significant maneuver constraints (range and terrain based).

Once maneuver elements know their general scheme of maneuver (SOM), take the time to rehearse collectively over a map or terrain model early in the planning process. This will assist the FSO/fire support NCO (FSNCO) in grouping targets and building a sound and adequate target list worksheet (TLWS). If the company commander sits under his poncho Ranger School-style and writes the whole order, the plan is less likely to get the "buy-in" and ownership at the platoon level.

Mission command — The CALFEX enabled us to validate our mission command SOP that we developed the previous year. In short, establishing a primary and alternate command post (CP) inside the company task organization allows for maximum flexibility and redundancy in a force-on-force or decisive action training environment (DATE) scenario.

During the training leading up to CALFEX, we tested multiple radio configurations and dedicated a lot of resources toward replacing and maintaining our antennas, Peltor headsets, tactical satellite (TACSAT), and handheld radios. We also hand-picked some of our best talent from the line to be RTOs. Despite all these efforts, we consistently had trouble with old equipment and equipment previously identified as requiring technical maintenance. What I learned is that troubleshooting commo and maintaining charging equipment is the lifeline that we needed to keep us spread out and moving fast. Most of our delays in tempo were a direct result of poor communication on the net or breaks in communication due to lack of redundancy.

This is not a profound lesson, but it is worth noting as we prioritize our limited time and resources. When we conduct platoon and below training, we usually have plenty of commo equipment to go around, but when the company is out in force, every single piece of commo equipment that goes down starts to have a significant impact on our ability to spread out and move fast.

After the first late attempt to integrate Delta Company trucks into the counterattack while processing fire missions, coordinating rotary-wing (RW) forward arming and refueling points, adjusting security, and moving casualties to the rear, I became consumed with trying to direct too much traffic at once. The only way to get multiple fires put out simultaneously was to dedicate my XO onto the objective and offset some reports to him. The trade-off was that the company command net became mostly his and the 1SG's while I focused on face-to-face reporting with PLs and relying on the company fires net to fight the enemy. I kept one ear on company fires and the other ear on company command. My RTO monitored company and battalion command. If I needed to plug in, he kept a spaghetti cord push to talk (PTT) so I could jump on quickly and plug into his PTT with battalion. My FSO monitored company and battalion fires. This worked well as he started to only update me on what I couldn't hear on battalion fires. He figured out that I could hear all of the RW traffic; so instead of repeating everything, he just asked, "Sir, did you hear that?" if I needed to make a timely decision or clear RW hot. This FSO/commander working relationship was critical to our success on the last couple missions.

Having two distinct CPs located on the battlefield — one mounted ("CP Gold" led by XO) and one dismounted ("CP Black" with the commander, FSO, and RTO) — clarified reporting hubs during the course of execution and placed the decisive operation (DO), shaping operation (SO)1, SO2, etc., under a CP for reporting. Additionally, as we build flexibility into any plan, two CPs provide redundancy and clear succession of command that is more practical than simply designating individual leader succession of command that may prove impractical during particular phases of an operation.

Integration of enablers — As we build our combined arms

experience, it's essential that we develop working experience with our attachments whenever possible. Last year, we received organic battalion enablers, brigade organic attachments, and some division assets. Leveraging these assets was absolutely decisive to destroying enemy in the defense and offense during company and battalion missions (battalion reconnaissance and mortars did most of the damage to the enemy). During the CALFEX, we specifically leveraged field artillery and engineer assets at the decisive point, and notional RW assets were a combat multiplier during the assault.

Having developed an SOP for task organization in a basic offensive and defensive framework, it is easier to conceptualize how to task organize my organic leaders to facilitate mission command. It was not as easy integrating enablers. Additionally, enablers caused the largest amount of friction due to our reliance on SOPs in the planning and execution of the mission. It was easy to attach all the enablers to an organic mission command node (i.e., engineers were attached to 3rd Platoon, and gun trucks were attached to 1st Platoon). However, the learning curve was greater during the planning period since these enablers attached late and had to learn our SOPs and equipment fast. I should have taken more time up front to familiarize enablers with our SOPs. This is a generic lesson we always hear, but specifically it matters with reporting chains and who "owns" each enabler. By the third and fourth iteration, we had it down, but in a DATE scenario and force-on-force training, it will be very important to conduct capabilities briefs and identify critical elements of our SOP up front that cause friction. Here are a few elements that we encountered during our CALFEX:

- Call signs, frequencies (enablers need to get on battalion commo card), and command relationships to supporting command, especially RW assets
- Minimum force requirements to accomplish task/purpose and achieve endstate
- Memorandums of agreement for storage of weapons and sensitive items during operational control (OPCON)/tactical control (TACON) relationship
- Special equipment and support requirements (i.e., FSNCO brings a Lightweight Laser Designator Rangefinder [LLDR] but no way to charge batteries; some equipment needs to be on a truck for portions of movement)
- Uniforms and packing list SOP (avoid: "my headquarters doesn't issue that")

In addition to SOP understanding and enabler capabilities awareness, with respect to mission command, reporting and radio brevity was not standardized until our last few iterations. In this regard, CALFEX proved to be an excellent training event to cement our tactics, techniques, and procedures (TTPs) — specifically our methods for integrating enablers. As we move forward, we can anticipate these challenges and standardize our integration of enablers and plan for the necessary briefs, orientation, and time to do so. We won't always have a "dry run" to get it right.

CPT Dave Blanton, commander of D Company, 1-21 IN (Dragon 6)

From my standpoint, the CALFEX really helped us to hone TLPs, enabler synchronization, company-level maneuver, and enhanced direct fire control measure understanding. I was impressed by the abilities of our PLs/platoon sergeants and their ability to coordinate and synchronize a company-level attack. A few key points from our standpoint:

TLPs — Conducting the orders process is often overlooked at the company level. In many cases, we take for granted the abilities of officers and NCOs to participate in this process. The CALFEX planning timeline allowed our company to review the orders process and develop TTPs for OPORD briefings that we will carry forward in the future.

Our company divided sections of the company OPORD among PLs and HQs NCOs to brief. This approach allowed young leaders to review the doctrine and then conduct their own analysis. While we conducted a few tedious rehearsals to perfect this approach, I believe it will pay off greatly in the future. Having leaders in the company brief the order and lead company rehearsals provided "buy in" to the plan, developed leaders for future responsibilities and professional military education (PME), and really helped us to "put 10 heads together, instead of one" to develop a plan that makes sense. We transitioned to this approach as an organization last year and gained a lot of efficiency from this technique.

Sappers from B Company, 65th Engineer Battalion maneuver toward an obstacle by throwing a grappling hook to clear their path for mines. Sappers reduced wire obstacles during the assault using both live Bangalore torpedoes and live brazier charges.

Enabler synchronization — As a mounted force, tempo is paramount to seizing the initiative in a close fight. If timing is off, the potential to desynchronize fires, air, and intelligence collection at the company level becomes challenging if not impossible. The time-old technique of rehearsing really allowed us to practice our timing.

Additional rehearsal enablers like Virtual Battlespace 3 (VBS3) were incredibly helpful for a mounted unit. VBS3 allowed us to rehearse multiple contingencies quickly. We spent three hours in VBS3 and rehearsed four full iterations and three contingencies in that time. It provided our leaders a near realistic view of the terrain and allowed us to AAR our own rehearsals.

Lastly, having the right graphic control measures for not only your primary COA, but in support of a most dangerous COA or alternate COAs, provides leaders options to help resynchronize maneuver if fires are delayed (or early), etc. The control measures must be understood across and above the organization. Standardizing Joint Capabilities Release (JCR) graphics is a great way to do this.

Company maneuver — While Oahu has restricted terrain that makes practicing company-level maneuver difficult for a mounted formation, it is an essential training task for every unit. In the spring and summer, we tried to bridge the gap using VBS3 and the Reconfigurable Vehicle Tactical Trainer (RVTT). Both these systems are useful but are ultimately not a substitute for a live training environment. The hardest thing for mounted units to train on is the transition from movement to maneuver.

Mounted movement is relatively simple and allows units to conduct quick movement to get into a position to come in contact with the enemy. Once a mounted unit deploys into a formation and begins to bound, maneuver becomes more difficult and takes a graduate-level approach. The CALFEX terrain afforded us a great opportunity to analyze terrain and the enemy during our dry runs. Simple tasks like seizing a battle position, conducting bounding overwatch when enemy contact is likely, and designating a target array and firing pattern are tasks that we ask platoons to do automatically, but we often take their proficiency for granted.

Direct fire control measures (DFCMs) in a limited visibility environment — Use of easily identifiable graphic control measures are important for operations at any time but essential during times of limited visibility. Soldiers and NCOs can do a lot to enable the success of a unit during limited visibility conditions. Proficiency in boresighting thermal optics, use of machine gun traverse and elevation at night, and thermal calibration on stabilized weapons systems are just a few examples.

Leaders, however, must ensure that thought, planning, and guidance are given to account for DFCMs by using the right weapons system for the right target, preparing for degraded mode operations, avoiding target overkill, and properly distributing direct fires. A true test of a company's proficiency is executing operations in these conditions. In the future, doing this both at night while under CBRNE (chemical, biological, radiological, nuclear, and high-yield explosives) conditions would allow the company to gain even greater proficiency.

D/1-21 had the great benefit of reading everyone else's lessons learned from previous iterations before conducting our CALFEX. This training event was extremely useful to help us see ourselves and continue to work to improve our weaknesses and capitalize on our strengths.

A Soldier from B Company, 1-21 IN employs an M2 .50 caliber machine gun to suppress the objective while engineers breech an obstacle. Moving dismounted with the M2 for more than a kilometer proved difficult, but it provided a very robust support-by-fire position.

CPT James McLaughlin, commander of C Company, 1-27 IN (Coldsteel 6)

Simplification and delegation — Something I struggled with, especially in the early iterations, was balancing control versus command. We naturally feel that being closer to the fight gives us better understanding and will allow us to better pace the attack. On my day blank fire, I ironically ended up losing sight of the overall fight by moving forward and trying to gain more understanding. I came to the realization that the less running around I was doing, the more effective I was. What helped me the most with this was handing what I thought were company-level decisions (i.e., initiating the SBF, calling indirect fire targets, being responsible for triggers) over to PLs. By placing this trust in PLs and letting them be responsible for the execution of maneuver, my tempo improved, my formation was more flexible, and I was able to think deeper into the fight. The second and third order effects of this were that my PLs were more confident, better trained, and able to take disciplined initiative within my intent. Moving forward, I'm coaching them to be asking for assets and to start trusting the decisions I've given them down to squad leaders. That way, PLs can start fighting in depth and allow us commanders to move from thinking two moves ahead to four moves ahead.

Fires planning — Understanding how to make fires responsive and timely was a struggle. Interestingly, both my FSO and the FSO I observed in another company found solutions with completely opposite methods. We grouped our targets and limited our fires to three simple groups: one to disrupt and fix, one to suppress and obscure on the objective, and one to continue suppression and start fighting in depth. The company I observed gained responsiveness by separating out their targets and calling exactly what they needed, thus eliminating the need for all assets in a group being ready to fire. Both methods proved successful, and it was worthwhile seeing both techniques. The other critical piece in fires planning was who calls the mission and when. While we always like to give the mission to either the FSO or the element with the best

"eyes," it was my observation that the unit in the lead or the unit triggering an action was best suited to call that fire mission. It typically eliminates the forward observer to FSO/commander step (enabling the FSO to play more of a "conductor" role) and ensures that the unit in the best position can call that mission.

Gaining and maintaining enemy contact — Where we start to move from science to art is when do we move from simply visual contact to indirect and direct fire contact? Personally, I think that initiating with indirect fires early is beneficial, but it does come at the cost of surprise and massing effects. As for direct fires, do we want to start emplacing them prior to a critical action or at the moment of it? On my day blank-fire iteration, we used direct fires to cover a prolonged period of movement into our assault position and then cover the assault. While I'd say it was moderately successful, I think it enabled the enemy to effectively orient on my SBF for little gain. We eventually settled on initiating direct fire once one full platoon reached the assault position. I think this struck a good balance between initiating too early and initiating too late. Again, it may not necessarily be the right answer, but it definitely worked for our company.

Controlling formations during a company-level assault — This was a struggle at every echelon from my level down to the squad level. Leaders were very proficient at maneuvering their individual squads or platoons, but the cross-coordination between elements was lacking. This again plays into the art of how we conduct an assault. How much of this is the higher HQ (i.e., a commander directly controlling platoons or a PL directly controlling squads) and how much of this can be handled by cross-talk between formations? What seemed to be the most effective was letting leaders cross-talk in order to gain awareness in space and have the higher HQ focus on time and tempo. Without getting too bogged down in how my platoons were fighting, this allowed me to control the pace of the attack while still empowering PLs and enabling them to maintain awareness about their flank units. During the night live fire, all I did was occasionally adjust the speed of a platoon's assault in order to keep synchronization while letting the tie in and boundary between the two platoons be handled at the platoon level. Finally, a good lesson learned was analyzing when and where I wanted to mass formations versus massing effects. Taking time to let situations develop and understand that you can afford to keep a platoon out of the fight until a critical moment simplifies control, reduces risk to force, and enables massing at the decisive point versus just being a massed target.

Synching triggers, actions, and time — This echoes CPT McAdams' last comment, but synching our triggers and actions in time and space is possibly the biggest challenge for us as commanders. As we progressed throughout our iterations, using fewer and more noticeable triggers (i.e., the reduction of the breach, crossing the phase line we placed at the lip of the gulch) enabled us to "flatten" our triggers and increase tempo. Furthermore, reducing the number of radio calls decreases the amount of friction and time you spend trying to set up your next action, enabling more tempo in the attack. At the end of the day, we want our triggers to help us in the fight, not us having to fight our triggers. CPT Voss and I also had some great discussions on what conditions had to be set in order to trigger an action (i.e., do you have to wait for your whole company to reach a phase line or can you move forward once your lead element hits that trigger?).

There's no question I had a lot of learning to do, and it was fun seeing both my company and myself get better each time. What was even better is seeing the skill present in this group of commanders. I'm humbled to be included in this group.

CPT Tom Hood, commander of A Troop, 2nd Squadron, 14th Cavalry Regiment (Ace High 6)

Overall, I was very impressed with the tactical skills of my PLs and platoon sergeants. By the time we actually got to the execution of the lane, most of my hard work was done and the other leaders within the troop took up the mantle to coordinate and synchronize much of the operation in real time. The CALFEX did provide the opportunity for my headquarters and I to become proficient before Lightning Forge. We thought we had worked out the kinks during our troop situational training exercise (STX), but it cannot be overstated how important it is for my organization to have four working FM radios (and then working backups), a working JCR, the ability to clearly monitor all those nets, and then the ability to battle track and report all to squadron, all located within the back of a shelter utility truck which can only fit three (maybe four) Soldiers at a time. The first couple of dry runs were humbling for us, but we adjusted some CP SOPs and came out of the exercise a more efficient team. This brings me to my first key point:

Rehearsing contingencies — I'll ditto what CPT Blanton said about the importance of rehearsals with enablers, the helpfulness of the VBS3, and how tempo is paramount for a mounted force. I'll add that, particularly for a reconnaissance unit, it is beyond important to rehearse contingencies or the "what ifs." So, my troop took a little time to go over various contingencies for the operation and ensure that all leaders, from the section leaders up, understood what actions they were to take and to create synched graphic control measures for those contingencies. We will need to do many more for the upcoming operations. I find that I often gloss over this step during TLPs, and it cannot be overstated how important it is for the subordinate units to know what they are supposed to do when things do not go according to plan, as so often happens to recon.

Leader location — After reading many of the previous commanders' AAR comments regarding their locations throughout the operations, I considered the benefits of operating alongside the platoons or operating at my CP. I understand the importance of being at the decisive point in order to deconflict friction points, but most of my friction points occur over the net between assets kilometers away from one another. Many of the Infantry commanders I know leave that monitoring to their XO, as did I; however, the benefits of the reconnaissance commander being where all the information is passing and deconfliction is occurring outweighs the benefits of me being at the decisive point assisting my PL. Additionally, I earn my paycheck when things go wrong, and I need to be where I can have the greatest effect when that occurs.

I decided during the CALFEX that the only time I would travel with a platoon is when they are initially setting in their screen so I can get an understanding of the terrain and conditions my

troopers will be observing and ensure it matches my briefed intent. I felt that there would be a benefit to traveling with a subordinate unit and then traveling back to my (established) CP for the rest of the operation.

Enabler locations — We had two enablers physically attached to us throughout the operations: a FIST, which we work very closely with regardless, and an engineer response team (ERT). My FSO and his team did an excellent job of deconflicting fires with aerial enablers and distributing priorities of assets to each to my PLs in order to maximize effects on the enemy. However their vehicle, which was equipped with a more effective Long Range Advanced Scout Surveillance System (LRAS) than our own, was parked next to my CP throughout the operation. The ERT was responsible for either breaching or setting up a bypass for an obstacle, but the team's vehicle also was LRAS equipped. The ERT, however, stayed at the obstacle after the bypass and did not move until the platoons passed back through. I quickly forgot that my FIST, my attached enablers, and my mortars can be reconnaissance assets and help observe when they are not engaged in their primary task for the operation.

A unit's enablers can assist in some way when they are not executing their primary task. It can be anything from observing a named area of interest (NAI), to providing security, to supplementing an offensive or defensive force. At the very least, I should have utilized them to the greatest extent possible during all phases, and it is my responsibility to provide that guidance, just like it would be for one of my platoons.

Violence of action — Both the brigade commander and command sergeant major emphasized violence of action to my platoons for their retrograde from the screen lines while "under fire." Cavalry units are by nature very deliberate organizations. Most of our operations are stealthy and deliberate. It was a mental leap for my troopers to switch mindsets and increase the tempo of their movements. I am happy to say though that after the day live fire and the emphasis on violence of action, my platoons executed much more quickly during the night live fire. I just have to remember that when we conduct training for an operation or rehearse, we need to train it both deliberately and forcefully if applicable. That ensures my troopers are able to easily switch mindsets depending upon the circumstances they find themselves in.

Overall, my entire organization is much better now than they were before the CALFEX, and we will continue to improve throughout Lightning Forge and JRTC.

CPT Dan Ferry, commander of B Troop, 2-14 CAV, (Bountyhunter 6)

In the same fashion as those who have gone before me, below are some of our lessons learned from our CALFEX iteration. Since our mission was vastly different than any of the other units that had gone (to include the mounted D companies and our squadron's dismounted reconnaissance troop), I'll lead with our mission, which was to screen in depth in order to deny the enemy the ability to counterattack. This mainly called for us to synchronize enablers as we observed an advancing enemy force. I was extremely impressed with my PLs, platoon sergeants, and junior leaders for the way they took initiative during the entire operation — specifically, the way they were able to handle enablers at their level and synchronize assets pushed to them. Additionally, the communication between the platoons demonstrated a shared understanding of direct fire planning and locations on the battlefield, allowing for easy deconfliction of direct fires and, again, synchronization of fire support assets during periods of maneuver. What follows are lessons learned that we will definitely carry with us into Lightning Forge and beyond.

Fires rehearsal and establishment of priority targets — Our CALFEX was a great reminder that no matter what the circumstances, we have to make time specifically for the fires rehearsals, especially when we have the amount of assets we had engaging targets (close combat attack [CCA], FA, mortars). The biggest lesson learned throughout the day was prioritizing targets and making certain targets priority targets. Priority targets are obviously targets that the guns will orient on again after firing a different mission, which helps greatly when you know which part of the battle is coming next. If platoons know the operation will open with CCA and then move to FA, then they can assign each asset a different priority target. Once that fire mission is over, look to your next anticipated move and change your priority targets — do not just let the guns return to a target you know you are not going to use again. We were able to learn that early during our day iteration, which made for an immensely smoother night iteration.

EXCHECK — Our EXCHECK was rather long — possibly excessive. I thought it best to cover as much as I could with

Mortarmen from the 1-21 IN mortar platoon provide both 120mm and 81mm mortar support for the assault.

the EXCHECK to free up precious radio time as we all know the net gets clogged once contact is made. However, with a lengthy EXCHECK, some subordinate level leaders might not be tracking what adjacent units are doing because they're focused only on the pro-words that apply to them. Make sure that the EXCHECK is disseminated to everybody and covers the most critical events that you anticipate. Additionally, as others mentioned rehearsals of contingencies, also have major contingencies covered by the EXCHECK so Soldiers can react quickly to a change in plans. The bottom line is that everyone in the troop needs to know the playbook.

CPT Jon Neidig, commander of C Troop, 2-14 CAV (Combat 6)

Although we had a slightly different scenario than the infantry companies, we learned many of the same lessons. Our mission was to conduct an area reconnaissance of the objective in order to identify a high value target and then transition to a hasty raid to destroy that target when ordered.

Need for a troop tactical SOP (TACSOP) — As we prepared for the CALFEX, we noticed our team leaders were falling short on pre-combat checks (PCCs). Equipment was forgotten or not ready, and Soldiers were unclear on TTPs and battle drills. At first, we contributed this to team leaders needing more development or lacking initiative. As we looked at the issue more, we realized that we weren't setting them up for success because we didn't have a troop TACSOP to serve as guidance. We developed a TACSOP to clarify expectations of leaders throughout our formation, which will allow our troop to more effectively fight and win.

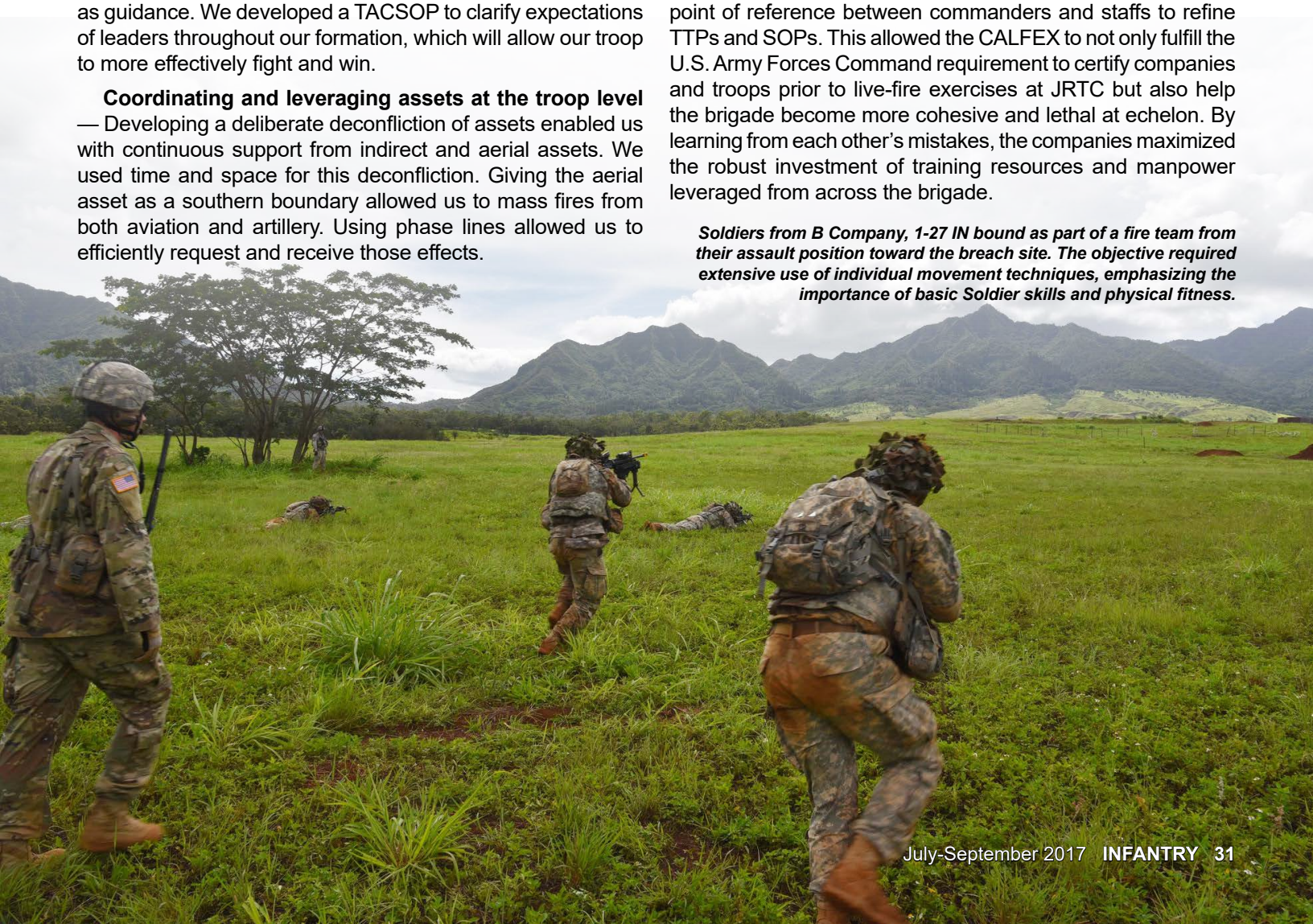
Coordinating and leveraging assets at the troop level — Developing a deliberate deconfliction of assets enabled us with continuous support from indirect and aerial assets. We used time and space for this deconfliction. Giving the aerial asset as a southern boundary allowed us to mass fires from both aviation and artillery. Using phase lines allowed us to efficiently request and receive those effects.

Fidelity of reporting — As a reconnaissance formation, our value in the fight is the information we can collect. If that information is not reported rapidly and accurately, we aren't doing our job. Standardizing and teaching reporting formats will allow us to synthesize a picture of the battlefield that will enable the brigade to find and kill the enemy. We are generating small reporting cheat sheets that will allow our teams to generate reports quickly and effectively.

Mastering battle drills — There was some initial skepticism within my troop when we found out we were executing a hasty raid for the CALFEX. "That's not something we would really do" was a sentiment that we had to squash immediately. During execution, the troop accepted and owned that we could be called on to execute such a mission. Getting missions that are outside of your mission essential task list (METL) is something no leader or unit should be surprised by or fight against. We discovered through executing a hasty raid that we need to work on our battle drills. This is an area for which every unit, regardless of mission set, should be prepared.

In Closing

After deliberate recovery from the CALFEX, the 2nd IBCT went into planning for Operation Lightning Forge, a brigade-level, home-station training event that provides a CTC-like experience. The lessons learned from the CALFEX proved instrumental in the brigade's success during this operation. The transparent AAR process initiated discussion from a shared point of reference between commanders and staffs to refine TTPs and SOPs. This allowed the CALFEX to not only fulfill the U.S. Army Forces Command requirement to certify companies and troops prior to live-fire exercises at JRTC but also help the brigade become more cohesive and lethal at echelon. By learning from each other's mistakes, the companies maximized the robust investment of training resources and manpower leveraged from across the brigade.



Soldiers from B Company, 1-27 IN bound as part of a fire team from their assault position toward the breach site. The objective required extensive use of individual movement techniques, emphasizing the importance of basic Soldier skills and physical fitness.

OPFOR vs RTU

Small Unmanned Aerial Systems at JMRC

LTC MATTHEW T. ARCHAMBAULT
CPT FRANKLIN G. PEACHEY
CPT SEAN D. HAYBALL
SSG DREW D. LINCOLN

The rapid expansion of commercially available small unmanned aerial systems (SUAS) enables many countries to easily collect information in support of offensive and defensive operations. SUAS employment is significant to modern operations due to its ability to provide collection for reconnaissance, target acquisition, and battle damage assessments. At the Joint Multinational Readiness Center (JMRC) at Hohenfels, Germany, the 1st Battalion, 4th Infantry Regiment (Warriors) — U.S. Europe's (USAREUR's) opposition force (OPFOR) battalion — replicates real-world threat tactics, techniques, and procedures (TTPs) to engage and challenge rotational training units (RTUs). The Warriors' utilization of SUAS as a collection and target acquisition asset is crucial to their success and provides lessons for the larger Army in terms of practical considerations as well as tactical employment.

This article focuses on the SUAS threat posed to RTUs, briefly compares the relative combat power of the Warrior Battalion to RTUs, discusses the factors causing a lack of SUAS utilization by RTUs, describes best practices and preferred employment techniques from the perspective of 1-4 IN, and offers recommendations for future RTUs to effectively employ SUAS as part of the combined arms effort.

Threat

Over the last three decades, technological advancements have revolutionized the modern battlefield. Today, commanders have more information about a battlefield in their possession than at any point in history. One of the most important links in this transformation is the proliferation of SUAS in increasing quantities and capabilities. These assets can provide a real-time stream of information that feeds commanders' decision making and their accurate targeting of enemy assets. Despite this significant impact, RTUs lack an appreciation for the lethality tied to information collected from SUAS.

A clear example of this lack of appreciation is repeatedly observed in the training environment where Soldiers often ignore SUAS either completely or assume an OPFOR (1-4 IN) Raven SUAS is friendly.[1] Incoming units receive briefings on the presence of enemy SUAS; however, activity is routinely not reported or countered. Units allow their battle positions, seams, attack positions, and schemes of maneuver to be reconnoitered. This unimpeded collection assists 1-4 IN in answering priority information requirements (PIRs) to exploit the RTU's vulnerabilities.

A Soldier with the 1st Armored Brigade Combat Team, 3rd Infantry Division launches a RQ-20 Puma Unmanned Aerial Vehicle while conducting training during Combined Resolve V at the Joint Multinational Readiness Center in Hohenfels, Germany, on 22 October 2015.

Photo by SPC John Cress

The 1-4 IN's collection assets effectively acquire and pass on time-sensitive targeting information, which queues the targeting cell — generally resulting in continual RTU losses. These largely unanswered reconnaissance and fires actions on RTU positions enables1-4 IN to effectively neutralize an RTU course of action both offensively and defensively. When all aspects of these collection opportunities are combined, a smaller unit is capable of rapidly neutralizing or defeating a much larger force. A timely real-world example occurred in eastern Ukraine, where this reconnaissance and target acquisition ability combined with mass fires resulting in the destruction of two Ukrainian mechanized battalions in a matter of minutes by rebel forces.[2]

Another observed vulnerability in RTUs is poor password protection or operations security (OPSEC) procedures when employing SUAS, which enables open viewing of their SUAS feed and allows 1-4 IN to better assess the current RTU's common operating picture of its elements. JMRC has observed this OPSEC vulnerability across much of the RTU digital infrastructure. Despite the various threats outlined above, RTUs have the capacity to disproportionately exploit these same capabilities based on their superior relative combat power to 1-4 IN.

Relative Combat Power and Results

Rotational units have at least a two-to-one advantage in collection capacity compared to 1-4 IN. In an infantry brigade combat team (IBCT), this collection capacity typically consists of 15 RQ-11B Digital Data Link (DDL) systems, each composed of three Raven aircraft. A usual allocation includes three per reconnaissance squadron, four per maneuver battalion, two per artillery battalion, one per support battalion, and one system in the special troops battalion. An IBCT also has four Shadow RQ-7BV2 unmanned aerial vehicles (UAVs) in a tactical UAV (TUAV) platoon.[3] In total, this gives an IBCT 49 airframes for employment across its area of operations.

In comparison, 1-4 IN currently has only three Raven systems, three Rapidly Deployable Aerial Surveillance Systems (RDASS), and one Puma system — a total of 13 airframes to employ in response. To more accurately replicate a near-peer capability, 1-4 IN also employs a virtual UAS capable of two flights a day. Despite this advantage in SUAS capacity, RTUs are routinely outmatched by 1-4 IN in the employment of these systems.

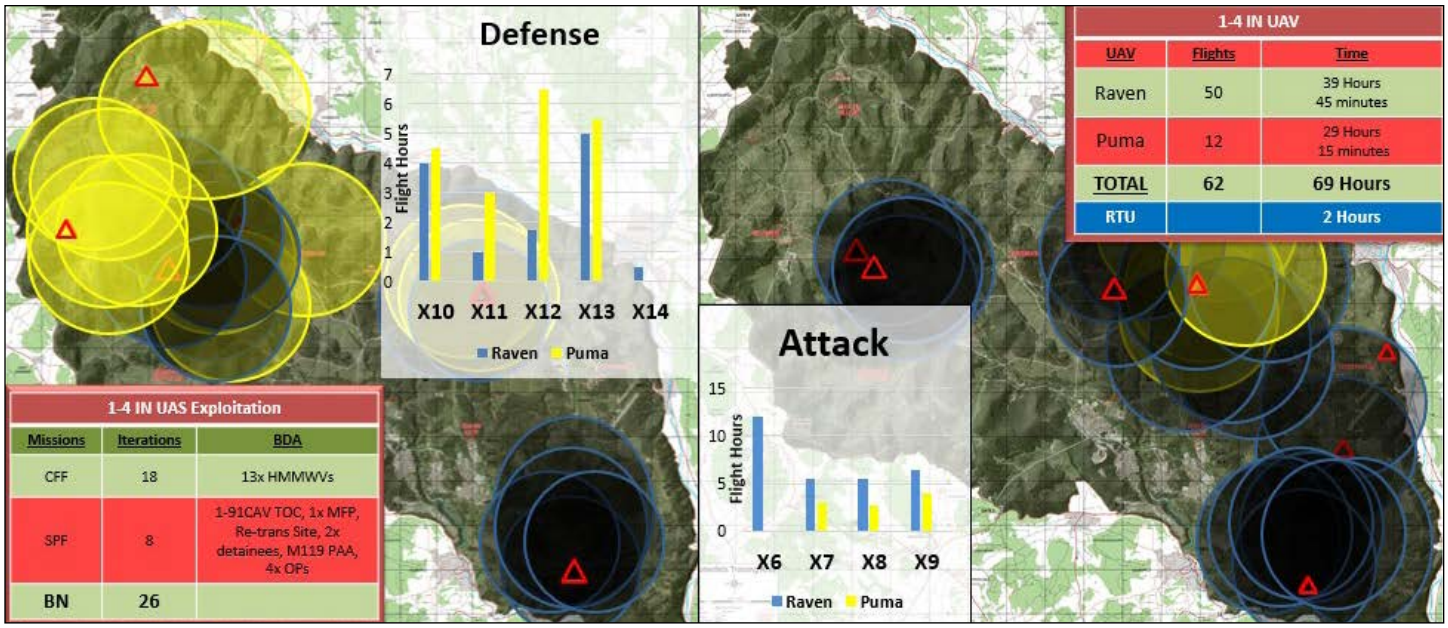
Based on the reporting of SUAS use in ongoing conflicts, 1-4 IN has made a deliberate effort to accurately replicate an active SUAS environment. During the 14 X-days of exercise 16-04 (Saber Junction 2016), 1-4 IN flew 69 hours of SUAS coverage compared to the RTU, which only flew two hours (see Figure 1). During the 13 X-days of exercise 16-06 (Swift Response 2016), 1-4 IN had aerial collection assets on station in the battle and disruption zones even longer — more than 100 hours compared to the RTU's four hours (see Figure 2).

The combat power of 1-4 IN is significantly enhanced due to its disproportionate advantage in information collection. The 69 hours or more of uncontested SUAS coverage enabled unfettered target acquisition, the accurate identification of emplaced RTU obstacles, and the exploitation of the RTU's coordination seams. By maintaining sustained and accurate fires, bypassing emplaced obstacles, and massing forces at the decisive point, 1-4 IN successfully used SUAS to maximize its combat power. As the capability to employ SUAS expands within 1-4 IN, the presence of SUAS in the battlespace and the battalion's combat power will grow.

SUAS Employment Limitations

One of the critical limiting factors to SUAS employment is the training unit's mindset toward SUAS. Almost all SUAS employment experience stems from a largely permissive counterinsurgency battlespace. Many training units ineffectively transition their planning and training for operations in a competitive SUAS environment. Effective development and execution of vital tactical integration techniques and well-trained counter SUAS procedures are lacking. The result is

Figure 1 — 1-4 IN UAV Rollup - Saber Junction 2016



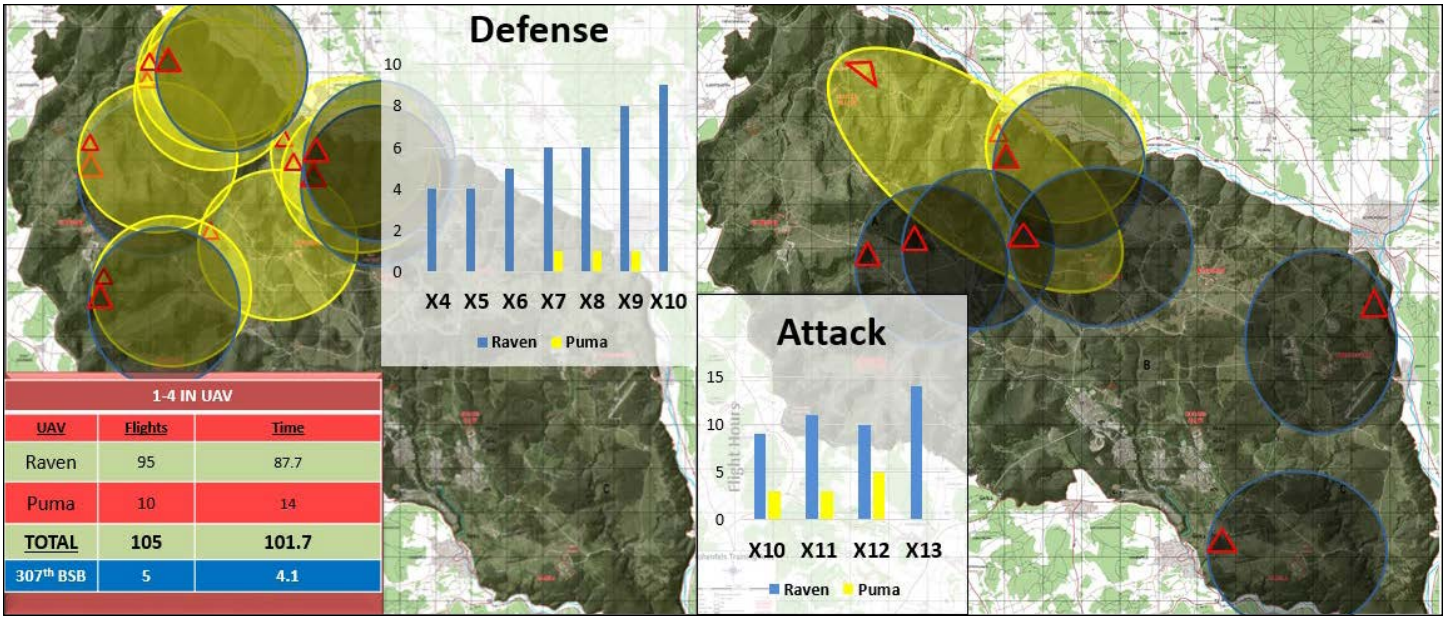


Figure 2 — 1-4 IN UAV Rollup - Swift Response 2016

ineffective or non-existent communication within the RTU about friendly or enemy SUAS operations.[4]

A lack of prioritization of SUAS employment during an RTU's training cycle at home station is another limitation that results in untrained operators and undeveloped operating procedures. The effective employment of an RTU's SUAS capabilities must begin and be maintained at the unit's home station. Command-level emphasis and command-level emphasis only will ensure certification and training currency of SUAS operators; otherwise SUAS will not reach its true capability as a force multiplier for a unit's operations. Command-level emphasis ought to result in a standard operating procedure (SOP) which establishes the roles and responsibilities for master trainers, pilots, and the chain of command through battalion and brigade.

An additional limitation to SUAS employment occurs during the airspace deconfliction process and when synchronizing restricted operating zones (ROZs). Again, these are processes and procedures that must be coordinated and practiced in order to gain proficiency. Consistent employment of battalion-level graphic control measures on intelligence, surveillance, and reconnaissance overlays significantly aids in the synchronization of tower operations. Ultimately, pre-coordination, while not always possible, is the best method to facilitate ROZ deconfliction and enable simultaneous flights.

Another limiting factor is risk aversion. Many RTUs maintain their SUAS capabilities securely in their battle zone, limiting their range and collection potential. In comparison, 1-4 IN accepts tactical risk by placing some of it SUAS operators forward with scout elements in the disruption zone or deeper to fully employ their capabilities. For 1-4 IN, the risk associated with losing contact with a friendly company or the payoff of reconnoitering and targeting enemy positions significantly outweighs the risk faced by forward SUAS teams. To stay competitive, RTUs must adapt tactics that support the targeting and survivability of the brigade as a whole.

Best Practices and Preferred Methods of the Warrior Battalion

As discussed earlier, 1-4 IN has three primary SUAS platforms, all of which are used in different ways based on their respective capabilities. The rapid launch and return of a Raven provides a company commander with quick target identification and the flexibility to maneuver Raven control station sites. The Puma system has a longer range and flight time, allowing for deeper operational views and support to fires as enemy elements enter the 1-4 IN kill zones. Both systems have an infrared camera and laser target designation that support 10-digit grid identification of a target. Depending on environmental factors such as wind, 1-4 IN SUAS operators prefer to use Ravens in the offense and the Puma system in the defense, although pairing the systems to queue their capabilities has provided significant advantages if a Raven is engaged. The newly implemented RDASS system, which replicates a non-conventional UAS capability, has a high-definition camera but limited range and target support capabilities. UAS operators prefer to use this system in a reconnaissance capacity while in towns or along tree lines in order to fully employ the system's abilities and minimize risks associated with detection.

In order to use these platforms, it is vital that 1-4 IN maintains a master trainer. The Warrior Battalion currently has one master trainer (a staff sergeant) who conducts all standards, currency, proficiency tasks, and coordinates Class IX support for 32 SUAS operators and 13 airframes. The master trainer plays a crucial role in planning and employing the battalion's SUAS capabilities. Alongside the reconnaissance company commander and intelligence section, the master trainer develops a SUAS scheme of maneuver and named area of interest (NAI) overlay/observation plan. Simultaneously, he coordinates with the installation tower chief to operate multiple SUAS systems while deconflicting for live aircraft and fires throughout the training area. While all of these tasks are

important, the master trainer's most important role is instructing and certifying operators.

The master trainer is the only Soldier authorized to instruct and certify new operators. In addition to ensuring all Puma, Raven, and RDASS operators are current with their airframe, he must also keep track of Soldiers who are scheduled to complete a permanent change of station (PCS) or expiration of term of service (ETS). Each company must maintain a total of six Puma/Raven operators and five RDASS operators. Therefore, the master trainer must find time between rotations to conduct a 10-day initial qualification course (IQT) to replenish each company. Once Soldiers have completed this course, they go through an up to 60-day program to progress from mission preparation (MP) to mission qualified (MQ). After these formal training gates are passed, the experienced operators practice more technical or new TTPs gained from recent rotations. The unit trainer (UT) and master trainer mold their newest operators to eventually fly unassisted. When outside of rotation, the master trainer designates evaluation days where operators are tested on basic knowledge, skills, and emergency procedures that an experienced operator is required to know.

Prior to a rotation, the master trainer consolidates certified personnel into a SUAS squad-sized element covering the Puma, Raven, and RDASS systems. The squad is further divided into two-man SUAS assault teams which are then responsible for a specific airframe. These teams are in uniform or dressed as innocent civilians to penetrate deep into enemy territory. Most importantly, these teams are either accompanied by a forward observer or are personally capable of effectively coordinating fire support, dramatically shortening the sensor-to-shooter timeline.

The night prior to each rotation, the master trainer and his team conduct rehearsals, layouts, and final reconnaissance planning for their initial collection areas. Once the rotation begins, the master trainer takes the new operators into the fight so they can receive on-the-job training. With the oversight of the master trainer, the operators then construct a ROZ plan, route, flight path, and rules of engagement. Once the plan is developed successfully, the new operators execute their plan alongside the master trainer. The experienced operators are briefed prior to operations by the master trainer and are subsequently mentored throughout the rotation. In addition, the master trainer also conducts a linkup with each team during the rotation to conduct rolling after action reviews (AARs) and ensure teams are maximizing their SUAS capabilities.

Once a team is in position, the senior team member takes charge and shifts the team as required to provide the best security and overwatch for his position. Each SUAS operator can fly in different types of environments and terrain. They operate by means of launching, driving, and recovering while mobile; working from roof tops in cities; camouflaging themselves to blend in with terrain; or operating in the tops of trees while working beyond the forward line of protection. At every position the SUAS teams conduct a short reconnaissance and fortify their positions to give them time to evade if discovered.

At the end of every rotation, the master trainer conducts a 100-percent inventory for each company to annotate all shortages and damages. The master trainer then contacts Redstone Arsenal and the movement branch control team to coordinate shipping of replacement parts. When ordered, each replacement part is assigned to a specific company to ensure its proper tracking. In addition, at this time the master trainer builds an in-depth AAR SUAS tracker detailing every flight, location, and battle damage assessment (BDA) report from the rotation. This report is submitted to the battalion commander and is used for battalion rotational AAR. The following week, the master trainer resumes the coordination of flights to qualify and progress operators.

Recommendation Roll-up

RTUs must embrace and prepare for the SUAS fight through aggressive training, planning, and employment of

Photo by SSG Josiah Pugh

OPFOR Soldiers from the 1st Battalion, 4th Infantry Regiment perform pre-checks on a Raven UAV during Saber Junction 16, which occurred 31 March to 24 April 2016 in Hohenfels, Germany.

UAS assets. Below is a concise list of recommendations for RTUs to implement:

- Change the mindset — the RTU is fighting in a competitive UAS environment.
- Implement and train counter-UAS drills, including the consistent employment of cover, concealment, camouflage, and deception.
- Ensure OPSEC is closely adhered to and all information technology (IT) systems are secure and protected.
- Commanders must emphasize and prioritize the certification and training currency of SUAS operators.
- Master trainers are not limited by modified table of organization and equipment (MTOE); train at least two master trainers per brigade and two per battalion. Empower them to lead and coordinate their element.
- Commanders must enforce the development and implementation of a SUAS SOP.
- The synchronization of UAS, fires, and maneuver elements must be incorporated and practiced at home-station training events.
- Leaders must aggressively employ SUAS and exploit the collected information.

Photo by SSG Ange Desinor

Soldiers with the 3rd Armored Brigade Combat Team, 4th Infantry Division launch an RQ-7B Shadow UAV during live-fire exercises at Rose Barracks in Vilseck, Germany, on 9 April 2017.

Conclusion

The Warrior Battalion's mission is to provide the toughest, most realistic threat to train U.S. and multinational partners. Additionally, during mission execution, the Warriors are constantly learning and refining their skills in the critical areas of a maneuver battlefield, gathering lessons valuable to all units in the U.S. Army and our partners. We hope this article demonstrated how to leverage the SUAS to support maneuver as well as provided some helpful TTPs for maximizing the capability.

Notes

[1] "AWG training experiments... have been consistent with the findings at JMRC in similar training environments, the training units often ignore proximate UAS and assume it is operating in a friendly capacity" — LTC Eric Remoy, former JMRC senior intelligence officer, "Summary of Current Counter-Unmanned Aerial Systems Efforts," (JMRC information paper, 18 February 2016).

[2] "…a combination of artillery and MLRS (multiple launch rocket system), with the latter employing top-attack munitions and thermobaric warheads, caught two Ukrainian mechanized battalions in the open. This intensely concentrated fire strike created high casualties and destroyed most of the armored vehicles in a shelling that lasted only a few minutes…without having the means of real-time target acquisition, Ukrainian forces were at a severe disadvantage." — Dr. Phillip A. Karber, "Lessons Learned from the Russo-Ukrainian War, Personal Observations," (6 July 2015).

[3] Scott R. Masson, "Unmanned Aerial Vehicle Use in Army Brigade Combat Teams: Increasing Effectiveness Across the Spectrum of Conflict" (master's thesis, Naval Postgraduate School, December 2006).

[4] "JMRC assessed that the Combined Resolve V training unit in November of 2015 lacked procedures to inform the tactical formation of friendly overflights as a first step in characterizing the airspace, lacked procedures to feed information from tactical units to higher headquarters about the presence of UAS, and lacked material solutions beyond engaging UAS with small arms and crew-served weapons." — LTC Eric Remoy, former JMRC senior intelligence officer.

At the time this article was written, **LTC Matthew T. Archambault** was serving as commander of the 1st Battalion, 4th Infantry Regiment in Hohenfels, Germany. He previously deployed to Iraq and Afghanistan where he served as a rifle company commander, maneuver planner, battalion S3, and brigade S3. He earned a bachelor's degree in political science from the U.S. Military Academy at West Point, NY, and a master's degree in theater operations from the School of Advanced Military Studies.

At the time this article was written, **CPT Franklin G. Peachey** was serving as the intelligence officer for 1-4 IN. He served as a scout platoon leader during a deployment to Afghanistan and a military intelligence company commander at the National Security Agency. He earned a master's degree in diplomacy from Norwich University.

At the time this article was written, **CPT Sean D. Hayball** was serving as the Grizzly Team intelligence observer-coach-trainer at the Joint Multinational Readiness Center. His deployments include two to Afghanstan, where he served first as a signals intelligence platoon leader and second as a security force advise and assist team advisor. He earned a bachelor's degree in international studies from the University of St. Thomas in Houston.

At the time this article was written, **SSG Drew D. Lincoln** was serving as 1-4 IN's master small unmanned aerial systems trainer. His deployments include two tours to Afghanistan where he served as a scout team leader, personal security detachment team 1, fire team leader, and squad leader. He earned an associate's degree in criminal justice and is finishing his bachelor's degree in unmanned systems applications from Embry-Riddle Aeronautical University.

Getting CBRN into Training Exercises

MAJ SEAN M. REILLY

Dealing with the effects of a chemical, biological, radiological, nuclear (CBRN) attack remains an undertrained task in many units. This article offers some recommendations for commanders to get CBRN into battalion and larger training exercises. It is based on my observations at the Joint Multinational Readiness Center (JMRC) in Hohenfels, Germany, where I served as the senior CBRN observer-coach-trainer (OCT) for more than 10 brigade combat team (BCT) rotations from 2013 to 2016.

Guides for Training CBRN

* **Put at least one chemical strike in your exercise.** This will help train your command post staff, particularly your battle captains and CBRN officer and NCO. The strike will cause confusion and increase stress in the tactical operations center (TOC), but it will also instill confidence and test your CBRN officer. For guidance on how to get a strike into training, consult the higher headquarters CBRN cell. For example, a battalion would go to the brigade CBRN officer. That person can help design a strike for a battalion exercise. If training on basic CBRN skills is an objective, the strike could affect many Soldiers; or if the objective is exercising the command post staff, it could affect only a few. Training at home station in the CS gas chamber is valuable for individual skills (protect yourself with individual protective equipment [IPE], immediate decontamination, unmasking), but the TOC also needs training, particularly the CBRN staff.

* **Notify your CBRN officer (and unit) that there will be at least one CBRN strike during training.** CBRN has been avoided in many units for so long that the CBRN officer becomes solely an operations shop force multiplier, which means the officer's skills in chemical warning and reporting atrophy. By giving the CBRN officer fair notice a few months before an exercise that a strike likely will occur, it will force prudent officers to get their CBRN shop in order, which means the CBRN officer and NCO will have downwind hazard overlays made and know how to use them, they will be familiar with persistent and non-persistent agents, and they will have practiced guidance to give downwind units (keep protective gear nearby and monitor with the joint chemical agent detector [JCAD], for example, or go to mission-oriented protective posture [MOPP] IV immediately). Your CBRN officer should review Technical Manual (TM) 3-11.32, *CBRN Warning and Reporting*, to ensure he/she is proficient on plotting downwind hazards. A trained CBRN officer in a high chemical threat environment can help units from unnecessarily putting Soldiers into MOPP gear and thus avoid the resulting heat injuries. Notice of an upcoming strike should also prod your units to improve their own CBRN readiness — the CS chamber, soldier-

Soldiers from the 2nd Cavalry Regiment scan their sectors on 24 January 2016 during an exercise at the Multinational Readiness Center in Hohenfels, Germany.

Photo by SSG Eddie Siguenza

Photo by SPC Nathaniel Nichols

Soldiers from the 2nd Cavalry Regiment's CBRN Reconnaissance Platoon test the air outside of a Stryker for contamination during Saber Junction 17 on 12 May 2017 in Germany.

level tasks, and CBRN equipment may be given a little more emphasis with a chemical strike known to be on the horizon.

* **Deploy with detection and identification equipment.** The brick-sized, OD-green JCAD is the most important piece of CBRN equipment in a unit next to the protective mask and suit. Each company is typically issued one per platoon and one per company headquarters. The JCAD detects and identifies nerve, blister, and blood agents; newer models also pick up toxic industrial chemicals. The JCAD is placed upwind of an assembly area to warn of an approaching chemical cloud. Units often don't train with them or even bring them to training, but employing them upwind of units (including the command post) is a good start. This will force units and CBRN staff to work through the details: JCAD battery life, battery type (lithium or alkaline), spare battery supply, who is placing the JCAD upwind, who is recovering it, who is accountable for it? How does a unit respond to a JCAD alarm? The correct answer for responding to an alarm — to mask and confirm the alarm with an M256 kit — probably isn't known by all Soldiers. Other detection equipment to have on hand includes: M8 paper, a small booklet with individual pages that identify chemical agents when the paper is blotted on them; M9 paper, which looks like wide masking tape and is worn on the wrist and ankle and turns pink or red when it touches chemical agents; and the M256 kit, a small packet with glass ampules that when broken can identify chemical agent clouds. Units may not use this equipment during all exercises, but it is small enough to easily bring along, and it gets Soldiers in the habit of packing their critical CBRN inventory.

* **Employ your CBRN recon assets.** A CBRN recon platoon is typically a brigade asset made up of 12 Soldiers and three vehicles (CBRN Strykers in a Stryker or armored BCT or high mobility multipurpose wheeled vehicles [HMMWVs] in an infantry BCT). In the difficulty of planning for exercises, CBRN recon platoons are forgotten and consequently during exercises they wind up on gate guard and perimeter security. Ideally, a CBRN recon platoon would have a mission confirming or denying the presence of chemical agents on an axis of advance near the front of the moving formation. The CBRN platoon would then find an alternate, clean route for the forces following them. Another CBRN recon platoon mission could also be identifying a suspected chemical agent or toxic industrial chemical making civilians sick in a nearby town. Get the platoon off the bench: they need missions to run through troop leading procedures and pre-combat checks/inspections to improve as all other units do. To employ the recon platoon in a battalion exercise, for example, use the brigade chemical officer to develop a scenario before the exercise. Or, for a brigade exercise at a training center, enlist the help of the CBRN OCT at the training center a few months before the exercise. Maneuver commanders have enough to coordinate before an exercise to ensure maneuver training objectives are met, but with a request to higher for help with incorporating CBRN training, or a request to the CBRN OCT at a training center, the CBRN recon platoon can also contribute to the fight and get CBRN training.

Other Areas to Consider

* To keep this article brief, I have not reviewed other important areas: decontamination, radiation (in particular dirty bombs), toxic industrial chemicals and materials, and the importance of including your CBRN officer in the military decision-making process to integrate CBRN protection and CBRN assets, for example.

Planning maneuver training and then accomplishing its objectives are tough enough. Adding in CBRN, however, is attainable also. Enlist higher headquarters CBRN staff or training center CBRN OCTs to help construct the CBRN scenarios, notify your unit and CBRN staff well before an exercise that there will be a chemical strike, bring and use chemical detection equipment, and test your CBRN recon platoon by enlisting CBRN help planning platoon missions. These steps will help get CBRN into training.

MAJ Sean M. Reilly served as the senior CBRN observer-coach-trainer at the Joint Readiness Training Center in Hohenfels, Germany, from 2013-16. He is now an associate professor of military science at Iowa State University in Ames, IA.

Continuous Refinement of the Plan:

A View of MDMP from the OPFOR at JMRC

CPT ERIK J. PRINS

Force-on-force training at the Joint Multinational Readiness Center (JMRC) in Hohenfels, Germany, provides excellent opportunities for brigades to assess and improve their systems. One of the key processes that will make or break the rotational training unit (RTU) is the military decision-making process (MDMP). Executing the seven-step process is demanding for RTUs, particularly when they are simultaneously tackling other challenges. One of the most painful events of MDMP is found in an often overlooked sentence in Field Manual (FM) 6-0, *Commander and Staff Organization Operations*: "Commanders and staffs generally perform these steps sequentially; however, they may revisit several steps in an iterative fashion as they learn more about the situation."

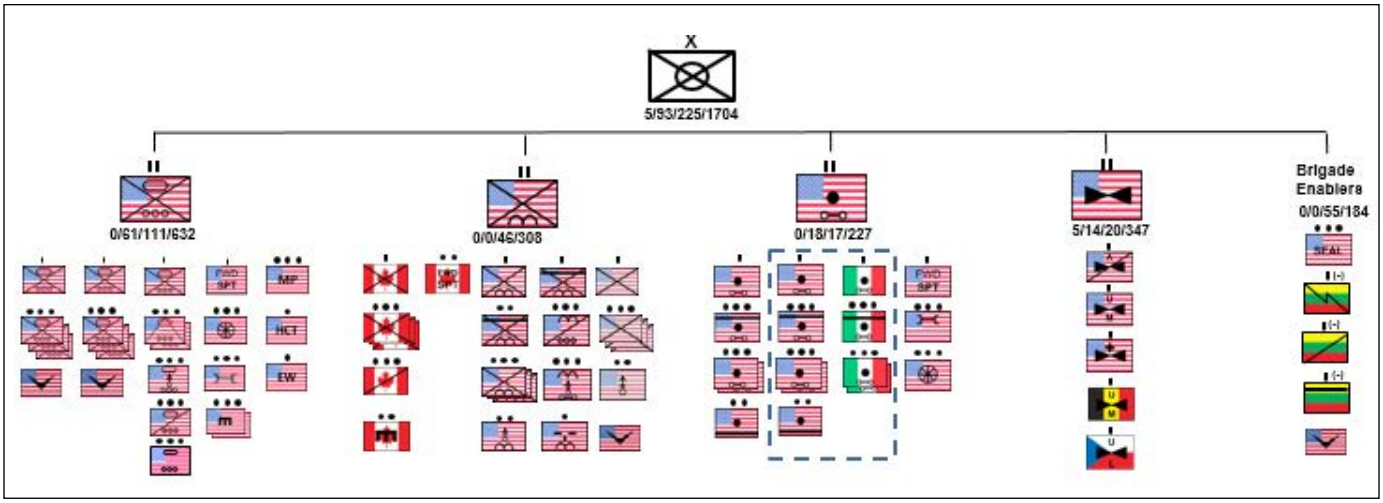
During Allied Spirit V (held 26 September through 15 October 2016), changes in the situation forced JMRC's opposing force (OPFOR) — the 1st Battalion, 4th Infantry Regiment — to revisit steps three through seven after completion of the full MDMP process. Continually revising the plan and adjusting to the situation on the ground is necessary for success. It requires recognizing that the current plan is no longer valid. This continual revision occurs at the staff level during planning and also at the command level during execution. This article outlines a battle period at JMRC, starting with relative combat power analysis and ending with change of mission instructions.

Combat Power Analysis

For Allied Spirit V, the RTU was a composite brigade under a multinational headquarters. The ground combat forces consisted of one U.S. Stryker battalion and one U.S. airborne battalion with a Canadian company attached. Fire support came from a U.S. field artillery battalion with one Italian battery attached. The aviation was a multinational task force with U.S. attack aviation, Belgian scout aviation, and both Czech and U.S. lift assets. Brigade and higher collection assets included a Lithuanian reconnaissance company, a U.S. Navy SEAL platoon, UK pathfinders, and two U.S. Shadow unmanned aerial vehicles (UAVs). There was no dedicated brigade sustainment battalion or brigade engineer battalion (BEB) in the RTU. Company and smaller elements within the task force covered these support functions. It was not clear exactly how this would happen, and it was a challenge for the brigade to address. The RTU's task was to delay and then defend against advancing 1-4 IN armor to provide time for the RTU's decisive operation (DO) to move into position in the north and prepare for a counterattack.

The 1-4 IN fought with a total of four companies. Two mechanized infantry companies had three tanks and six infantry fighting vehicles (IFVs) per company. One engineer company had three sapper platoons and two D7 blade teams. One recon company consisted of one mortar platoon fighting as mounted infantry, one anti-tank platoon, and two platoons of special purpose forces (SPF — essentially OPFOR special operations forces). The 1-4 IN had significant artillery at its disposal including an artillery battalion (152mm howitzers), a 120mm mortar platoon, a multiple launch rocket system (MLRS) battery capable of firing chemical munitions, scatterable mines, conventional high explosive (HE), and dual-purpose improved conventional munitions (DPICM). The 1-4 IN also had a Mi-35 Hind air weapons team (AWT) at its disposal and direct support from brigade-level UAS and counterfire radar. The 1-4 IN's mission was attack to neutralize the RTU to enable the seizure of Nurnberg by the division DO.

Figure 1 — Rotational Training Unit Task Organization for Allied Spirit V



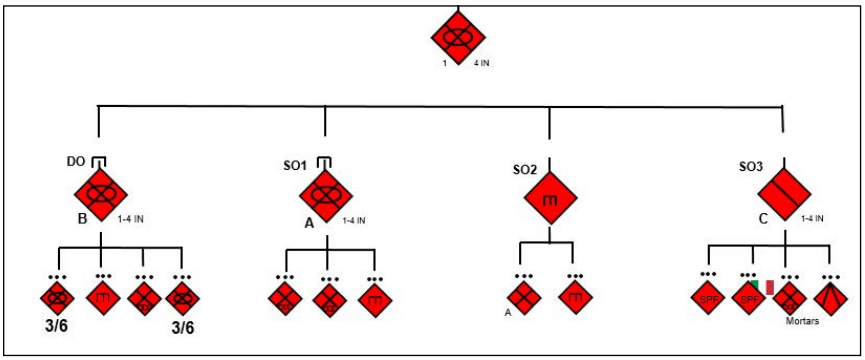


Figure 2 — OPFOR Task Organization

The relative combat power analysis revealed several advantages for 1-4 IN to exploit in the attack: maneuver, mission command, and protection. The staff also assessed that RTU logistics would be susceptible to disruption given they did not have a dedicated brigade support battalion (BSB).

Maneuver advantage for 1-4 IN was inherent given the formations. The majority of 1-4 IN fights in tracked vehicles, which have significantly better off-road capabilities compared to the Stryker vehicle and obvious speed advantages over the RTU's dismounted infantry. From a movement/maneuver perspective, the only assets the RTU could rapidly reallocate against attacking forces were aviation assets and the Stryker battalion. The 1-4 IN had the ability to focus the majority of its combat power on a narrow front, and the RTU did not have the ability to rapidly respond to this challenge.

Mission command was a second advantage for 1-4 IN, particularly in the intelligence and fires warfighting functions. From an intelligence perspective, the RTU had a larger number of collection and analysis assets at its disposal. However, the force structure distributed the intelligence assets among multiple headquarters, and several did not even fall directly within the brigade (SEAL platoon and UK pathfinders reported to division through a separate chain of command). This created multiple steps between target acquisition, decision, and delivery which made the unit susceptible to deception. The 1-4 IN operates a much flatter collection plan with all assets reporting to one intel cell. The unit had a similar advantage in the fires warfighting function, with a single mission command post receiving, approving, and processing all fire missions. The RTU's larger size and multiple headquarters made clearing and approving fires a much more difficult and timely process.

The 1-4 IN's IFVs and tanks provided an additional advantage in protection. The RTU only had four weapons capable of defeating IFV and tank armor protection: attack aviation, Stryker Mobile Gun System (MGS), Stryker Anti-tank Guided Missile (ATGM), and Javelin. If 1-4 IN was capable of neutralizing these assets, it could destroy the remainder of the RTU brigade with impunity.

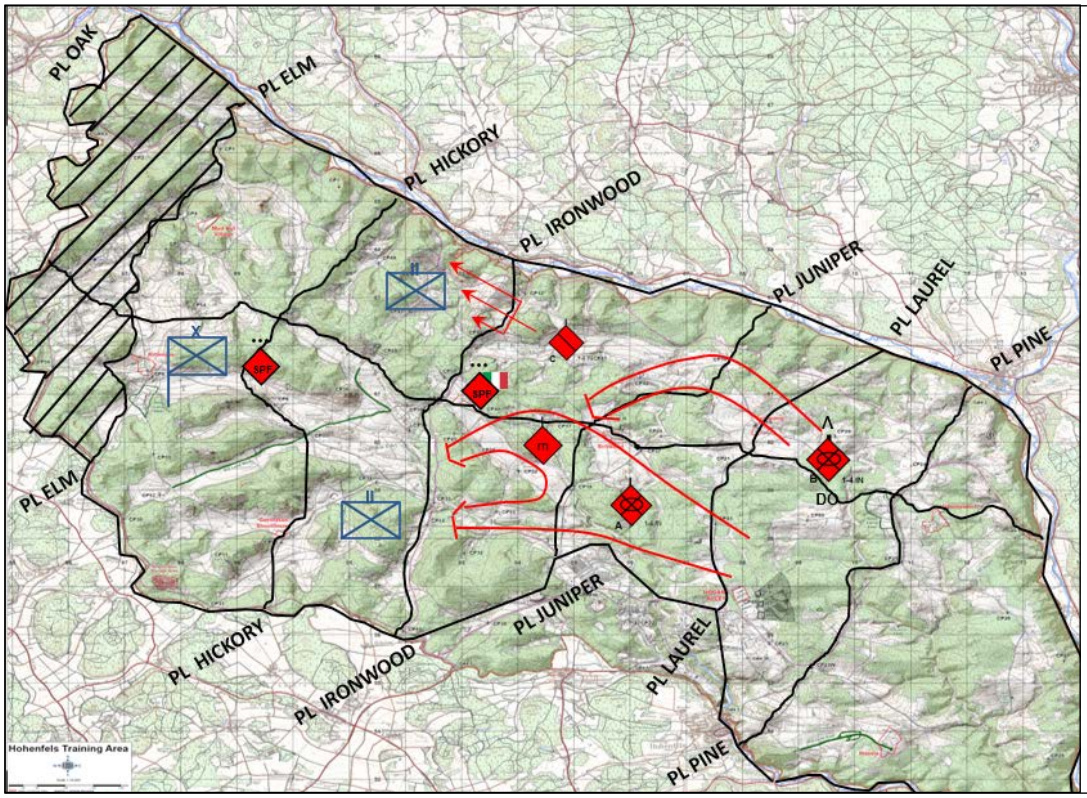
The Plan

The 1-4 IN staff built the initial course of action (COA) off of this analysis. The recon company would confirm the location of the RTU, identify seams, and disrupt its engagement area development. All three maneuver companies would advance on one avenue of approach and mass against the RTU's Stryker battalion. The companies would neutralize the Stryker battalion and then move on the light infantry battalion. A chemical strike from division MLRS and massed indirect fire from 2A36 howitzers supported the attack. By attacking on one axis, 1-4 IN would be able to achieve a 3:1 combat power advantage at the point of its attack, even though the overall ratio was in favor of the RTU.

Anti-tank (AT) assets were the largest threat to 1-4 IN's success. To control this risk, 1-4 IN tasked the recon company with targeting and destroying the easily identifiable ATGM and MGS Strykers. Unfortunately, Javelin missiles are harder to locate on the battlefield so a different method was required to

Photo by SPC Emily Houdershieldt

An OPFOR soldier fires a simulated rocket-propelled grenade during Allied Spirit V at the 7th Army Training Command's Hohenfels Training Area, Germany, on 12 October 2016.



The FRAGO'd Attack Plan:

1) Deception indicating an attack in the north

2) Sappers identify penetration point to the south and breach

3) DO penetrates and destroys the enemy from the rear

This FRAGO was required to account for changes to the enemy task organization and the position of their engagement areas.

Figure 3 — OPFOR Scheme of Maneuver for the Attack

neutralize them. The plan called for 1-4 IN SPF to disrupt the RTU support area, attacking logistics and mission command nodes. This would pull command focus to the rear (away from engagement area development) and reduce effective integration of AT systems into the RTU's defense.

Reality on the battlefield quickly showed itself to be different from expectations. When 1-4 IN conducted a reconnaissance in force one day prior to the main attack, it identified two major changes in the enemy array that required a rethinking of the plan. First, the enemy task organization had changed. The RTU cross-attached companies between the Stryker and light infantry battalions. This meant that our initial plan of massing against only the Stryker battalion was no longer feasible as the infantry battalion also had Strykers. The RTU would be able to move forces from one task force to support the other if needed. Second, the enemy placed his defenses much further west than initially templated. With updated enemy information, the staff went back and developed a new COA, wargamed it, approved it, and published a fragmentary order (FRAGO) with the new scheme of maneuver. From the reconnaissance-in-force backbrief to FRAGO issue, the process took roughly six hours.

The FRAGO'd plan was a penetration targeting the southern task force. Supported by indirect fire and smoke, the recon company would fix the RTU in the north. The main body would initially move on a northern avenue of approach as deception. The intent was for the RTU to see recon forces and obscuration in the northern engagement area with tanks advancing in support. However, the sappers would advance to the southern engagement area with a chemical strike supporting. The main body would turn south, penetrate the engagement area, and destroy the enemy from behind. With the FRAGO issued, it was time for execution and more refinement.

The Battle

As 1-4 IN initiated the attack, they identified their first issue. The lead element was the attached reserve component sapper company. While it had a guide from the recon company and an attached platoon familiar with the terrain, the element had difficulty maintaining the rate of march necessary to stay synchronized with its enablers. The chemical strike from division MLRS required an hour of lead time. The MLRS fired according to the triggers planned, but with the lead company moving slower, the chemical agent dissipated on the target before the attack hit, which forced the tactical command post (TAC) to make a decision:

COA 1 — Conserve Combat Power: Halt the main body until the sappers reach the RTU engagement area. This would ensure awareness of the engagement area before the DO was committed. However, the MLRS would no longer support the DO's attack, and the main body would be vulnerable to indirect fire (IDF) and attack aviation.

COA 2 — Risk Combat Power: Allow the main body to close with or bypass the lead element. This would ensure the DO's attack was supported by all planned enablers but would also mean the main body would make initial contact with the enemy.

In considering the options, the TAC had to decide which risk was prudent. They decided halting the main body was a lesser risk because it preserved combat power. The RTU's defensive belts were unknown and bypasses were not yet identified. The halted DO would be vulnerable, but in order for the RTU

to exploit and gain the initiative, they would have to identify the halted 1-4 IN main body, report it, decide on an action, and execute — all before the main body continued movement.

This decision to halt the main body was critical for the fight. Allowing the main body to bypass the engineers or decrease separation could have allowed the attack to hit in time with the chemical agent as originally planned; however, the main body would be making the initial contact with the RTU, reducing flexibility. While halting movement provided an opportunity for the RTU, 1-4 IN was safe halting for a short time, based on an understanding of the RTU's ability to react. The flexibility provided by keeping the main body uncommitted showed its value when the sappers hit the RTU defense and identified the second issue — obstacles.

The RTU obstacle development was much more substantial than 1-4 IN expected. The terrain at Hohenfels is not conducive to developing a brigade-sized engagement area. The ridges and valleys split up the brigade area of operations (AO) into a series of company-size engagement areas. Normally 1-4 IN is able to find one of the company engagement areas that the engineers did not reach and penetrate. In this case, the RTU engineers had been working directly at the battalion level and below and had built up most of the engagement areas very well. This further slowed the sappers, and they were heavily attritted by RTU attack aviation.

The RTU used the attack aviation as a maneuver element and tasked them to screen. The advantage the RTU gained by this was that the aviation was not pulled to the north in reaction to 1-4 IN deception. The attack aviation stayed in a screen to the south, exactly where the sappers were entering engagement areas. The AH-64s did significant damage to the two lead 1-4 IN companies while they were attempting to penetrate obstacles. The aviation screen, however, also prevented the RTU from massing indirect fires because they were unable to clear air.

The fight at the breach lasted more than three hours but only consumed 1-4 IN's shaping efforts. If the TAC had maintained the initial plan, the DO would have been the element attritted by the aviation, not the sappers. In this case, the change of the plan ultimately resulted in a successful penetration by the DO with nearly all of its combat power.

Photo by Gertrud Zach

An AH-64D Apache Longbow helicopter crew with the 12th Combat Aviation Brigade takes part in Exercise Allied Spirit on 4 October 2016.

Conclusion

Neither the RTU nor 1-4 IN had a perfect picture of what the fight would look like. The fight on the ground turned out very different from what was anticipated on either side. The RTU was successful in overcoming many the weaknesses of its task organization, particularly the lack of a BEB. The 1-4 IN was successful in exploiting other weaknesses such as the sensor-shooter disconnect and the lack of RTU mobility. Some decisions, such as the employment of attack aviation, are difficult to judge as many of the advantages were offset by other problems they caused. This shows the necessity of continual refinement of the plan both during the MDMP process and during execution. During Allied Spirit V, as with most CTC rotations, the continually changing situation required the staff to constantly analyze and adjust. During execution, continuous supervision and refinement were necessary to ensure the units stayed synchronized when the pace did not match the planned tempo. Continual refinement is key to success.

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Soldiers with Charlie Company, 1st Battalion, 503rd Infantry Regiment, 173rd Airborne Brigade, conduct a foot patrol during Allied Spirit V on 8 October 2016.

Photo by Markus Rauchenberger

Employing the Stryker Formation in the Defense: An NTC Case Study

CPT JEFFREY COURCHAINE

Since its roll-out in 2002, the Stryker vehicle combat platform has been a major contributor to the war on terrorism. Originally named the "Interim Combat Vehicle," it was designed to be a bridge from the Army's Cold War era ground fleet to the Future Combat System (FCS).[1] Yet in 2016, the Stryker remains and FCS is gone. With the Army shifting its focus to a conventional enemy threat, the question of how to employ the Stryker in this environment has yet to be fully answered.

Fighting the Stryker Brigade Combat Team (SBCT) in a conventional wargame against an armored opponent is still a relatively new endeavor. An SBCT first deployed to the National Training Center (NTC) at Fort Irwin, CA, to face this threat in 2002 and did not face it again until 2014 when the 3rd SBCT, 2nd Infantry Division (now re-flagged as 1-2 SBCT), under COL Hugh Bair, participated in what was generally viewed as an experiment to see how the formation would fare.

"'It's going to take a couple of iterations for the Army to get where it wants to be' with its post-Iraq and post-Afghanistan plans for its Stryker brigades," said COL Bair in a February 2014 *News Tribune* article.[2]

For 1-2 SBCT, those iterations have come and gone. The "Ghost" Brigade fought at NTC Rotation 15-08.5 in July 2015 and again at NTC 16-06 in May 2016. The 5th Battalion, 20th Infantry Regiment played a significant role in both exercises. During 15-08.5, 5-20 IN was task organized with two tank companies, with Strykers primarily used to support the armor. During 16-06, the battalion remained pure and fought as designed. One area of success was the battalion's execution of the defense during Battle Period (BP) 3. This engagement served to highlight the strengths of the Stryker formation when forced to contend with a heavy armored threat.

The brigade was arrayed generally south to north, from Chod Hill up to Granite Pass (see Figure 1). Soldiers with 5-20 IN occupied the north with the task to turn the enemy from north to south into the brigade's decisive operation. B Company, 5-20 IN held the farthest northern sector with the task to turn the enemy from north to south into the battalion's decisive operation. As the commander of B Company, my first task was to evaluate the terrain in both my area of operations and the enemy's.

Soldiers with the 5th Battalion, 20th Infantry Regiment defend in place during Decisive Action Rotation 16-06 at the National Training Center on 14 May 2016.
Photo by SGT Stephen J. Schmitz

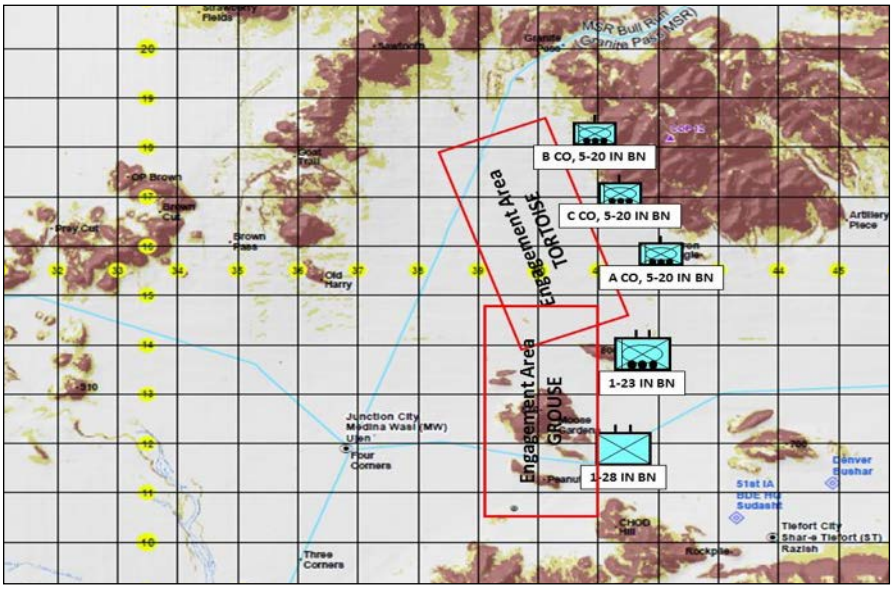


Figure 1 — Friendly Disposition for NTC 16-06 Battle Period 3

My company was assigned a sector that had extremely steep and complex terrain to our rear. To our front, the area was very open, and observation of the engagement area was excellent, especially if in any type of elevated position. My main concern with the position was my company's inability to retrograde or establish subsequent positions. If we were forced to displace, we would have to move north towards Granite Pass into a possible avenue of approach for the enemy or south directly in front of C and A Companies' positions.

The steep, rocky, and broken terrain was excellent for my dismounted infantry, specifically my Javelin teams, which were able to establish elevated fighting positions quickly with excellent fields of fire. My Infantry Carrier Vehicles (ICVs) found little room to maneuver. This was not a huge concern as we expected to face Boyevaya Mashinas Pekhoty (BMPs - Soviet infantry fighting vehicles) and tanks. Against their armor, the ICVs' .50 caliber and MK-19 weapon systems would be ineffective. I was able to position four ICVs in a wadi directly to the front and below my dismounts. They did not have fields of fire into the engagement area and would be used primarily against any dismounted infantry or light vehicles that got in close.

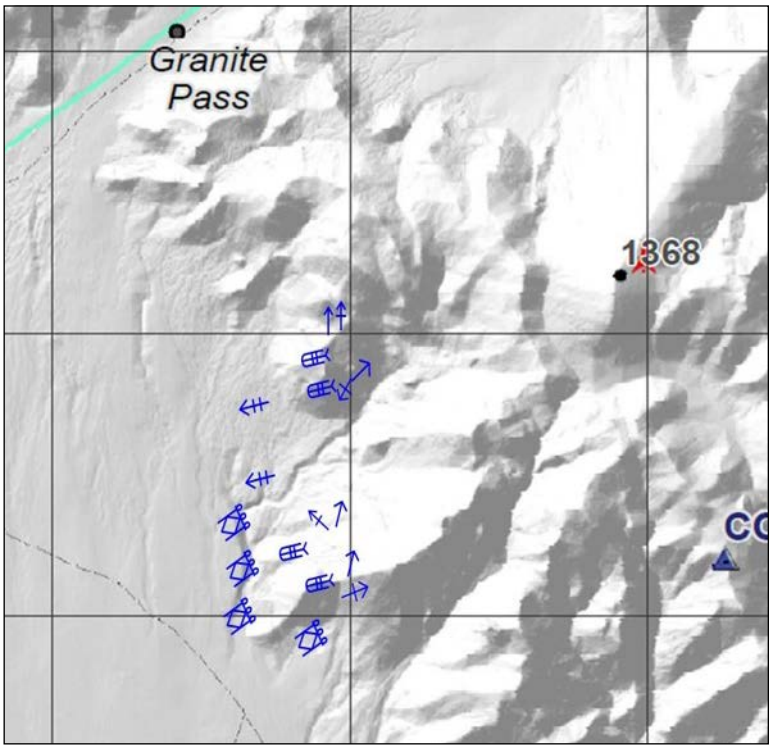
Per the battalion S2, we expected the enemy to attack from west to east through Brown and Debnam passes. Another course of action was for the enemy to maneuver to the north and attack south through the Granite Pass area. The enemy was expected to attack with a heavy armored formation of Boyevaya Razvedyvatelnaya Dozornaya Mashinas (BRDMs - combat reconnaissance patrol vehicles), BMPs, and tanks. They would employ a small probing force, followed by a slightly larger force designed to fix us in place, and then attack in full with an assault and exploitation force.

At the conclusion of my engagement area development, I had all of my Javelin teams placed in elevated, improved fighting positions overwatching the engagement area. The Javelin would be the primary weapon system I would use to kill the enemy. To employ a Javelin team required me to commit two riflemen per team. The remaining M249 gunners and grenadier or team leader were deployed to protect the flanks and rear of the positions. The weapons squads were placed on lower ground to engage any dismounts attacking from the front. The four ICVs were spread out in a wadi to our front. Initially, they had no sector of fire. They would be employed to engage any light vehicles or dismounts that penetrated through the engagement area.

The enemy made their initial move into our sector at approximately 0300, advancing with BRDMs from west to northeast and then south. They presented excellent profiles and were quickly destroyed by Javelin gunners from my 3rd Platoon (PLT), which was farthest to the north. Given that the enemy's vehicles traveled directly parallel to our position, I concluded that we were very well hidden and the enemy had no idea we would be positioned that far north. While the signature of the Javelin shot gave away our positions, it was simple to displace and take up new concealed positions perched on the rock face.

The next attack came at approximately 0800. The enemy had moved a company of dismounts through the Granite Pass in Light Medium Tactical Vehicles (LMTVs) and dropped them to our rear. One group moved through a draw and attacked the battalion tactical operations center (the attackers were destroyed). A second group engaged my 2nd and 3rd PLT

Figure 2 — Bravo Company Disposition after Engagement Area Development



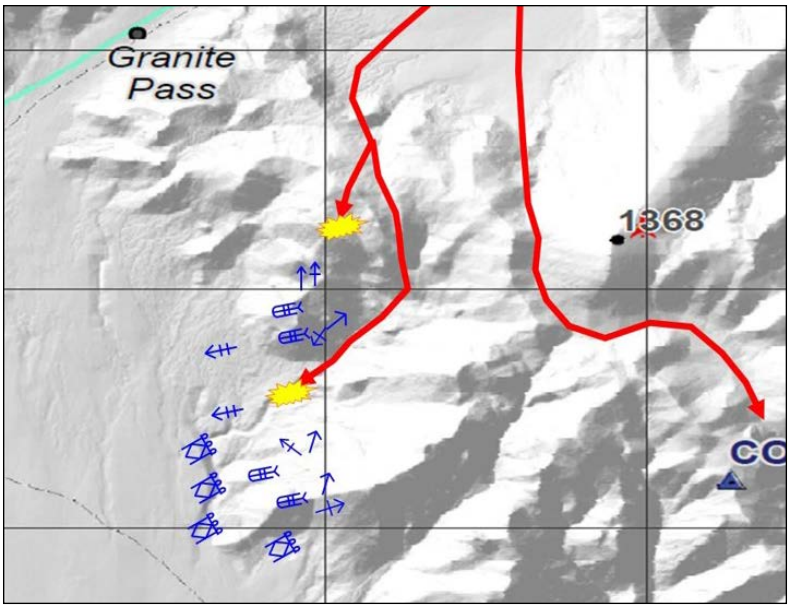


Figure 3 — Enemy Dismounted Infantry Attempt to Attack Bravo Company from the Rear

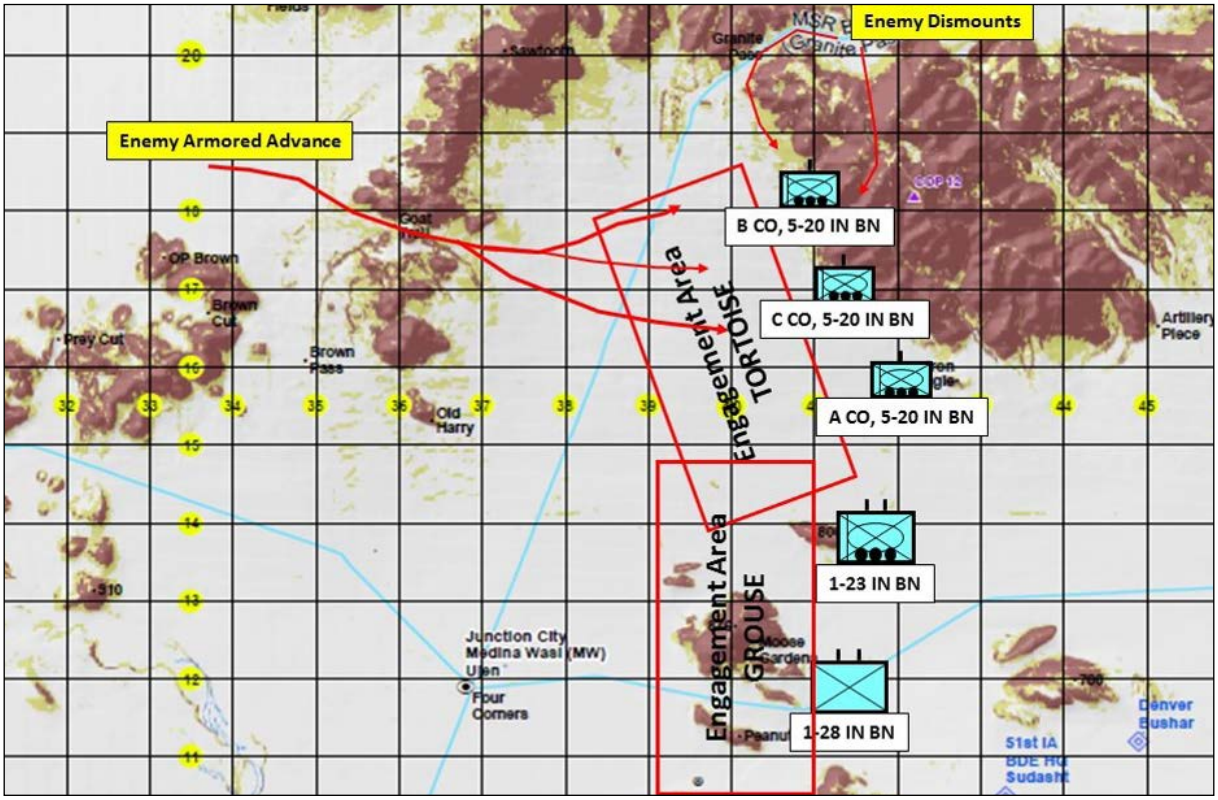
positions from their rear. This group was organized into two smaller groups. The first maintained the high ground and engaged 3rd PLT, which had since displaced in that direction. The second group moved through a draw and engaged 2nd PLT. Both attacks were detected early and easily repelled. Soldiers from 3rd PLT's left flank fired down onto the group of enemy advancing on 2nd PLT, with 3rd PLT's weapons squad and 2nd PLT dismounted infantry also engaging. The enemy to 3rd PLT's north and rear was engaged by the remainder of 3rd PLT's dismounted infantry and subsequently destroyed after about a 20-minute firefight. In total, approximately 30 enemy dismounts were killed.

Most telling for me was that the opposing force (OPFOR) did not commit any additional vehicles after the first engagement at 0300. Instead, they attempted to dislodge us from our positions by utilizing dismounted infantry. We also received no indirect fires at any time during the battle period. Based on the enemy dismounted method of attack, I concluded they were conducting a movement to contact and still had not determined our location. Until that could be discerned, the enemy would not move any more vehicles into sector.

Once the enemy's second attack was defeated, I was anxious to see if they would commit any more of their armor into our sector. The main attack began at approximately 1000, with multiple armored formations moving into both B and C Companies' sectors. The enemy assaulted from west to east, presenting good targets in the open terrain. All of my Javelin gunners were credited with multiple kills, destroying more than 15 enemy vehicles by the end of the battle period. Concurrent with the armored assault, the enemy launched a second dismounted assault from north to south directly to the front of our positions. In addition, another contingent utilized a draw to 2nd PLT's rear and engaged them in close fighting. We estimated another 30 dismounts were involved in this assault.

The effective use of B and C Company Javelins quickly and decisively stopped the enemy's armored advance. The

Figure 4 — Enemy Advance



enemy was not able to achieve any effective fire from their vehicles onto our positions. For the rest of the battle period, we observed enemy columns skirting our engagement area and moving north through the Granite Pass.

The enemy dismounts did not achieve better results. The dismount assault from the north ran into our Strykers and weapons squads. The dismounted infantry assaulting 2nd PLT from its rear had to fight up a steep incline and into the teeth of multiple machine guns. Both elements were destroyed. At the conclusion of the battle period, my company had suffered one casualty and no damage to our vehicles.

I attribute our success to the following factors:

- Proper employment of both dismounted and mounted systems;
- A decisive terrain advantage; and
- A questionable course of action from the enemy.

Photo by SGT Christopher Blanton

During NTC 16-06, Soldiers from 5-20 IN move into position on 16 May 2016.

We were able to place our Javelins in dominant positions that were well covered and concealed. I do not believe the enemy vehicles were ever able to concretely determine our position. I did not anticipate facing as many enemy dismounted personnel as we did. However, the use of our dismounted infantry, weapons squads, and Strykers enabled us to protect our Javelins and retain our positions.

Prior to the mission, I considered reducing the amount of personnel in our battle position. I anticipated heavy indirect fires and an armored assault. As such, our small arms and Strykers would have been useless and simply targets to be destroyed. After a reconnaissance, we were able to locate survivable positions for both our dismounts and our Strykers and thankfully I chose to employ them. Without these assets, my Javelin teams would have been destroyed and our position overrun.

The terrain we occupied was very steep and rocky. The terrain the enemy was forced to traverse was open and flat. We could observe them the second they emerged from any of the passes to the west or from Granite Pass to the north. The enemy dismounts were forced to fight uphill to dislodge us. The terrain we climbed to get into position was extreme and at some points nearly vertical. We were also very high. There was no way for the enemy to maintain any type of momentum in their assaults. I conclude that this contributed to the lack of indirect fire and direct fire from armored vehicles. The enemy knew the general area our fire was coming from but did not initially look that high. Once they did, we had already destroyed their vehicles.

When the enemy did launch their main attack, it was from west to east and directly perpendicular to the battalion's positions. The complex terrain worked both ways — we were highly immobile in our battle positions. If the enemy had chosen to bypass us to the north or south, we could not have reacted quickly. Instead, they met us where we were strongest. Even if they penetrated our engagement area, there was nowhere for anyone to displace to. We would have fought to the last, inflicting as many casualties as possible. The enemy would have had to expend a significant amount of combat power to destroy us and would likely not have enough remaining to finish its attack.

In conclusion, the Stryker formation excels in the defense and presents multiple dilemmas to an enemy armored force. Our dismounted systems are ruthlessly effective when given the right terrain, and the number of dismounts we bring to the fight enhances survivability. The Stryker gives us the mobility to rapidly seize key terrain and conduct a mobile defense across a large battle space. The 5-20 IN was successful because we maximized the terrain available and capitalized on the enemy's course of action.

Notes

[1] Daniel Goure, Ph.D., "U.S. Army Combat Vehicle Plans Careen from Heavy GCV to 'Stryker Lite,'" http://lexingtoninstitute.org/u-s-army-combat-vehicle-plans-careen-from-heavy-gcv-to-stryker-lite/.

[2] Adam Ashton, "Stryker Crews Find Ways to Defeat Armored Enemy, *The News Tribune*, 17 February 2014, http://www.stripes.com/news/us/stryker-crews-find-ways-to-defeat-armored-enemy-1.268179.

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Protecting the Tail of the Tiger:

Reshaping the Way We Train Logistics

CPT TRAVIS MICHELENA

Throughout history, powerful militaries have either learned to master logistics or have withered without it. Keen military strategists such as Julius Caesar and Genghis Khan recognized that if they cut off the supply lines (the tail), they could simply wait for the enemy to weaken or grind to a halt as flow of logistics trickled and stopped.

As the Army shifts its training focus from fighting counterinsurgency to combating a hybrid threat, it is increasingly important to address how the Army's logistics infrastructure, security, and training support the continued superiority of its combat forces.

Questions for the Future Fight

During World Wars I and II, U.S. forces had advance warning and a period of protection from Allied forces in which to mobilize. Production facilities had years to ramp up the war effort. As the wars progressed, the relative isolation of the United States kept its manufacturing resources safe, however, this may not be the case in the next major conflict. How long will U.S. stockpiles of materiel last? Are the nation's logistics assets ready to provide continual support across the world?

Current operational logistics training includes abundant supply that is usually within close proximity and is provided with little regard to time, distance, priorities, repair, or limitations. This raises the following questions: Can combat leaders function with limited supply? When was the last time they did? Are U.S. forces conditioned to expect bottomless supply?

Protecting the supply lines is important in sustained conflicts. No amount of combat power can win a battle while it waits for fuel and ammunition.

Current Training

The current Army training structure focuses on preparing the combat arms branches for conflict anywhere in the world. The first-class training facilities and personnel at the National Training Center (NTC) in California, the Joint Readiness Training Center in Louisiana, and the Joint Multinational Readiness Center in Germany do an excellent job of preparing forces for combat. However, they fail to stress logistics infrastructure or to teach vital lessons in resource management and expectations.

While there are challenges, there are no true limits on available supply; no consequences exist for losing supplies during enemy action; and support moves over hours, not days.

I propose that because our logistics system is so reliable, some combat leaders dismiss proper logistics planning and have not experienced the effects of limited or lost supply. It is vital to stretch current logistics capabilities and allow limited disruption of the supply chain in order to reinforce proper contingency planning and resource management.

Soldiers assigned to 3rd Brigade Combat Team, 4th Infantry Division refuel their vehicles during a rotation at the National Training Center at Fort Irwin, CA, on 27 August 2016.
Photo by PFC Jordan Roy

Training for Distance

Logistics systems and units are designed to move supplies over the long distances that contingency operations will likely present, yet the Army trains with logistics in relatively close proximity. During training, even long-haul transportation assets drive just a few miles to resupply the sustainment brigade's combat sustainment support battalion (CSSB) or the brigade combat team's (BCT's) brigade support battalion. This availability diminishes the need for correct tracking and reporting because resupply is never far away.

What happens when the CSSB is located 100 miles from the front lines and has to support several BCTs? There is no perfect solution, but it would add training value for both the logistics unit and their customers to push the CSSB and higher echelons of support from much farther away.

At NTC, the CSSB could be placed at Twentynine Palms Marine Corps Base, or for JRTC, locating the CSSB at Barksdale Air Force Base would create distances of around 150 miles. The extended distances would benefit both the supporting and supported units because it would ensure each forecasts and validates requirements prior to logistics convoys, and it would allow convoy commanders to gain experience with complex long-distance moves.

Supply

It is hard to imagine having a lack of fuel, ammunition, or parts. From my experience as forward support company (FSC) commander in a cavalry squadron, the FSC did its best to provide as many supplies as possible. The logistics status reports sent from the supported companies were not accurate, but it did not matter that much. The FSC pushed fuel and food daily and mission-configured loads of ammunition any time there was a firefight.

The FSC's Soldiers took a lot of pride in not allowing logistics to be the point of failure. However, this is not realistic and does not teach the supported company executive officers how or why to track their internal supplies, especially fuel.

There is value in limiting available supplies. For instance, given a constrained amount of fuel and ammunition, what units have priority for the next mission? How much fuel is held in reserve? I would wager that in this scenario the senior commanders would pay more attention to logistics movements, distribution, and sustainment rehearsals, which in turn would result in more well-rounded leaders.

The Consequences of Loss

Perhaps the most important element missing in training logistics is the consequences of loss. Too often, logistics assets are soft targets with limited radio or battlefield tracking systems. Units are frequently left to defend their own convoys even though they do not have the equipment or personnel to do so. Vehicles are retrofitted with radio mounts and machine-gun ring mounts, but security has not been made a priority.

The combat battalions resist losing forward assets to defend supply routes and convoys. Logistics units are most often left to defend themselves and, for the most part, do a fine job of executing missions. However, they are also left relatively undisturbed during combat training center rotations. There may be an improvised explosive device here or there (or maybe some small-arms fire or civilians blocking the road), but the supplies never stop.

While supporting the fight is essential, combined arms commanders should learn what it is like to go without during training.

If a convoy is attacked and the observer-coach-trainer assesses that one fuel truck and one palletized load system carrying meals ready-to-eat (MREs) have been destroyed, then why allow the resupply to continue to its destination? If that destruction were reality, then the logistics planners such as the FSC leadership, battalion S4s, and the brigade support battalion support operations officer would have to work together to develop an integrated resupply plan. They would have to put thought into alternate routes, various start point times, and asset management. The logistics and combat elements would have to fully develop primary and tertiary plans, mitigate risks, and provide cohesive support rather than each element narrowly focusing on its supported battalion. No Soldiers would starve, but they may have to eat two MREs that day instead of three. The loss of fuel might require tanks to turn off instead of idling all day or scouts to use high mobility multipurpose vehicles (HMMWVs) instead of Bradley Fighting Vehicles for a reconnaissance mission. Interrupting supply chains will not stop the combat missions, but it will broaden the scope for the commanders and staff officers taking part.

In the Maneuver Center of Excellence's latest Army Functional Concept for Movement and Maneuver (AFC-M&M), it describes a future in which the BCT will operate semi-independently at a high operations tempo for periods up to seven days over extended lines with reduced reliance on echelons above brigade support. In order for the Army to enable the freedom of maneuver described in the AFFC-M&M, commanders and staffs must think through all the problems, not just the combat one. There is truth to the military adage "amateurs talk tactics, while professionals talk logistics," but we continue to ignore the potential weaknesses in our support structure.

In the current structured training scenarios, the supply flow is not touched for fear that it will interrupt the combat training. Disruption is exactly what will happen, but when properly administered, it will have positive training value for both logistics and combat leaders.

History implores us to train, build, and protect the tail of the tiger as much as we do the teeth, and it is imperative that we do not wait. While both offensive and defense tactics and technology perpetually seek to counter one another, logistics remains the true linchpin in victory or defeat.

CPT Travis Michelena is a senior observer-coach-trainer and the S3 for the 1-351st Brigade Support Battalion, 181st Infantry Brigade, at Fort McCoy, WI. He is currently completing his master's degree in emergency management through Arizona State University.

Ambush, North Carolina Style: *The Battle of Moores Creek*

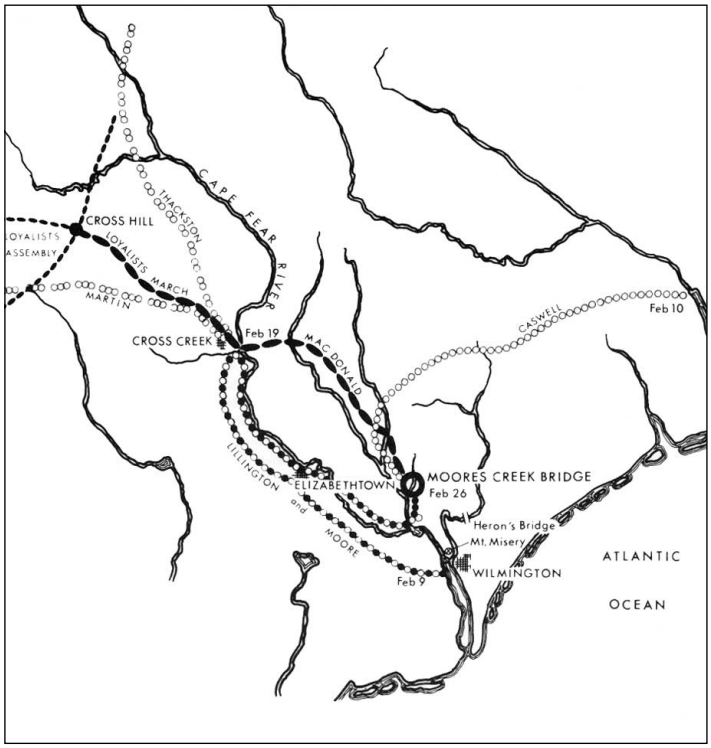
COL (RETIRED) SCOTT D. AIKEN, U.S. MARINE CORPS

A well-planned and violently executed ambush is perhaps one of the best ways to catch an enemy force at a severe tactical disadvantage. On 27 February 1776 during an early-morning battle in eastern North Carolina, Patriots soundly defeated a larger Loyalist force in less than 10 minutes. This decisive event thwarted Royal Governor Josiah Martin's hopes of retaining control in the colony and heralded the North Carolinian call for American independence. History knows this event as the Battle of Moores Creek, an action in which the Patriots used the ambush to trounce their enemies in an ideal example for the modern era.

Background

The year 1776 dawned with Royal authority in North Carolina in a precarious condition. Because of unrest throughout the colony, Governor Martin had evacuated his residence in New Bern and was aboard the British sloop Cruizer off the coast near Wilmington. On 10 January, Governor Martin boldly called on his Loyal subjects to unite and suppress the Patriot rebellion. Loyalists were instructed to converge on the Carolina coast in February and join inbound embarked British army forces. Martin appointed Highlander Donald MacDonald, a brigadier general of the militia, and gave him command of all North Carolina Loyalist units. A significant portion of the inland Loyalist forces consisted of Highlanders who were recent Scottish immigrants. In early February, these Highlanders rendezvoused at Cross Hill and prepared for action. In response to this aggressive Loyalist activity, Patriot mobilization occurred under Colonels James Moore, Alexander Lillington, Richard Caswell, and John Ashe; and the Patriots deployed from New Bern and Wilmington to interdict the Loyalist march to the sea. After march and countermarch by both sides, MacDonald's southerly route was blocked by the Patriots at Moores Creek Bridge, 20 miles northwest of Wilmington. At this location, the Loyalists attacked yet were completely defeated and routed on the morning of 27 February.

Patriot actions at Moores Creek provide an excellent example of how to conduct an ambush that is well worthy of study by today's military professionals and enthusiasts alike. In modern military doctrine, the "ambush" is defined as "a surprise attack from a concealed position on a moving or temporarily halted target."[1] Current U.S. Marine Corps doctrine meticulously outlines the use of the ambush; Marines are urged to develop an "ambush mentality" since the ambush is "perhaps the most common tactical tool for gaining advantage:"



Maps courtesy of the National Park Service

Figure 1 — Campaign Map

> *In combat, we move our reinforced squad into position along a well-traveled trail. We position flank security to protect ourselves and give identification and warning of enemy movements down the trail. We position our weapons so as to concentrate our fires into a "kill zone" and to seal off exits, forcing the enemy to remain subject to our fires. The squad waits in position until signaled when they immediately respond with concentrated, sustained fires on enemy forces trapped in the kill zone. The enemy, surprised into inaction, unsure of what to do or where to move, is annihilated. Fires*

are maintained until all the enemy are killed or until signaled to stop. That is the ambush mentality.[2]

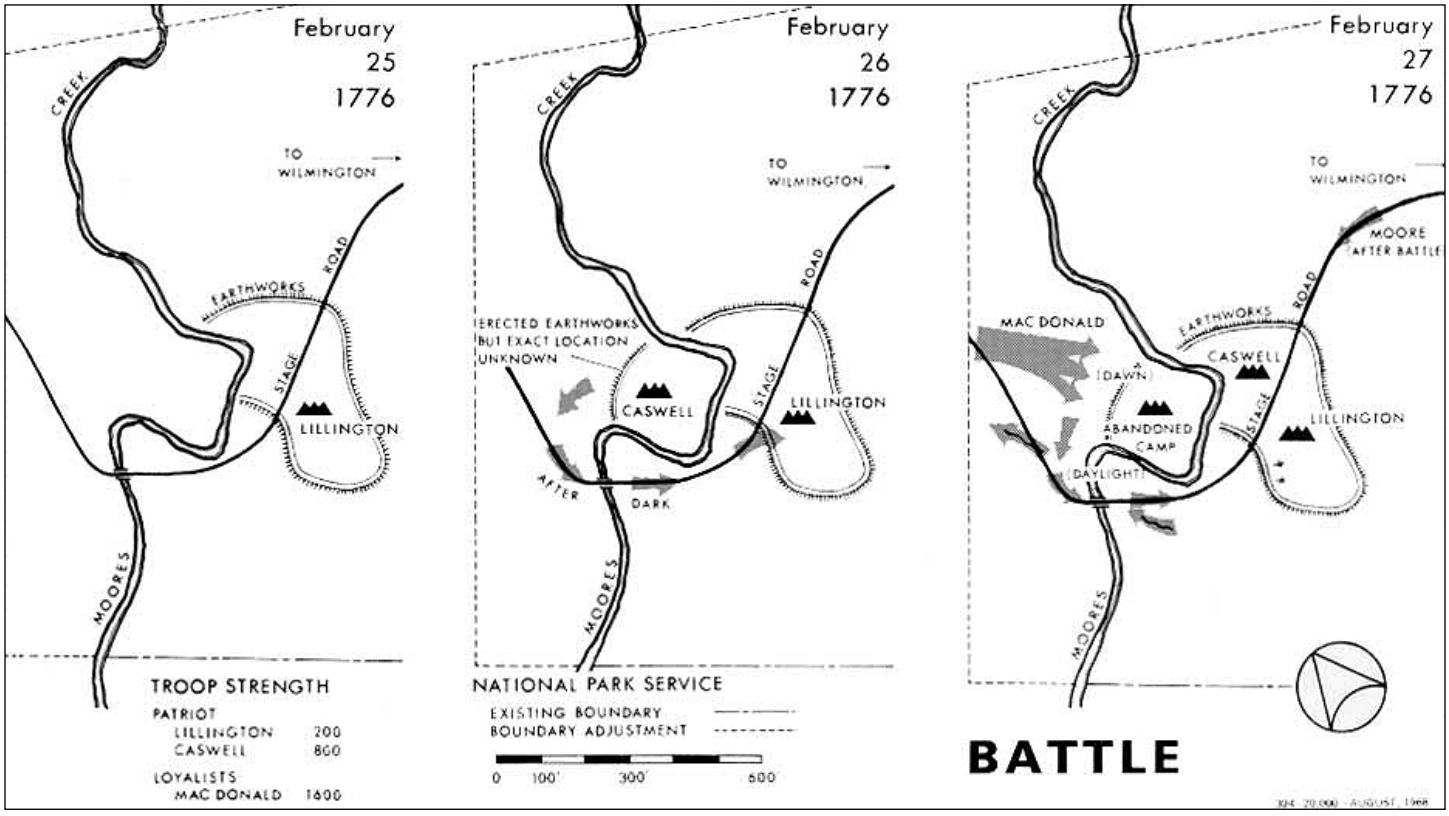
Modern doctrine instructs Marines to try to turn every situation into an ambush as part of an ingrained ambush mentality. Intentionally or intuitively, the Patriot leaders at Moores Creek exemplified this ambush mentality. The Marines identify several distinct features of the ambush; I'll compare the Patriots' efforts to these contemporary features and show similarity between 18th century practice and modern doctrine.

The first feature of the ambush is the attempt to surprise the enemy. Nothing is as terrifying as walking down a trail and then getting hit with what appears to be a solid wall of lead from an unseen enemy. The sound and flash of weapons, the sight of friendly casualties, and the ensuing pandemonium instantly and simultaneously bombard and overwhelm one's senses. Such surprise creates a significant psychological impact that can potentially paralyze an adversary's thoughts and actions. The Patriots effectively maximized surprise at the Moores Creek Bridge site. The massed fires of the Patriots early that fateful morning completely surprised the Highlanders.

The disposition of the Patriot defensive positions played into the Tories' uncertainty. Patriot Colonel Lillington arrived at Moores Creek with 150 militiamen and was later reinforced by Colonel Caswell's 800 men. Once Caswell arrived to reinforce Lillington, he had his men cross the bridge and begin to construct entrenchments and an encampment on the western side of the creek. A Loyalist courier under a flag of truce arrived at the position the day before the battle, and upon return to the Loyalist camp promptly informed Colonel MacDonald of Caswell's tactical disposition. Colonel Caswell, in the meantime, thought better of having an obstacle such as Moores Creek to the rear of his position, and ordered his men to move back to the east side of the creek with the other Patriots. Early the next morning as the Highlanders approached the creek, they discovered Moore's abandoned camp with camp fires still burning. Confused as to the true disposition of the Patriots, the Highlanders continued to the banks of the creek searching for their foe. By his opportune but perhaps unintentional actions, Caswell had inadvertently deceived the Loyalists. As the fateful volleys fell amongst the Highlanders, they suffered a final surprise at the hand of the Patriots — the defenders had pulled many of the planks off the bridge and greased the remaining girders with soap and tallow!

Obviously, if the ambush is detected, it allows the enemy to focus on the friendly unit and counter (or avoid) the trap. The uncertainty of the Patriot position caused by Loyalist scouting, Caswell's shifted position, and withdrawal of the Patriot sentries all led to uncertainty, enhancing the "invisibility" of the ambush.

Figure 2 — Movements from 25-27 February 1776



The second feature of the ambush is to "draw our enemy unknowingly into a trap." The Patriots chose their ground exceptionally well throughout this Carolina episode. Colonel Moore's campaign execution forced the Loyalists to fight on disadvantageous terrain. The bridge at Moores Creek served as an effective chokepoint to constrain the Tories in their attack, forcing them to piecemeal their forces. Deception is key in this feature, complementing surprise. Two Patriot actions that enhanced the element of surprise also served to draw the Loyalists "into a trap." By moving his men's bivouac from the west to the east side of the creek, Caswell consolidated combat power on the east bank and prevented his men from getting attacked with a deep creek at their back. Second, as the Highlanders approached Moores Creek, they were challenged by two Patriot sentinels posted at the bridge. After confirming the identity of the Tories, the sentinels wisely faded from view, clearing the line of fire. The Highlanders followed aggressively but unwittingly.

The third feature of the ambush is that it is invisible. Obviously, if the ambush is detected, it allows the enemy to focus on the friendly unit and counter (or avoid) the trap. The uncertainty of the Patriot position caused by Loyalist scouting, Caswell's shifted position, and withdrawal of the Patriot sentries all led to uncertainty, enhancing the "invisibility" of the ambush. Additionally, low early morning light and the possible presence of fog restricted visibility. Upon firing, the smoke produced by the Patriots' weapons added to the environmental factors that reduced the visibility of the particulars of the ambush site. With the death of just one Patriot and the wounding of perhaps two others, the measure of effectiveness of the invisibility of the Patriot ambush is derived from the weak Highlander response.

The fourth feature of the ambush is to shock the enemy. Massed surprise fires are more effective than long-range fire with slower rates; such surprise fires can lead to the enemy's panic. The Patriots effectively concentrated their forces and fires at Moores Creek. While still outnumbered by the Highlanders (many of whom relied on broadswords instead of firearms), Lillington's 150 men and Caswell's 800 benefited from a strong defensive position and comprised more than enough combat power to defeat the piecemealed Loyalist assault. The massed, surprise fire from the Patriots consisted not only of small arms but also two light artillery pieces, affectionately named "Old Mother Covington and her Daughter." The Patriots positioned themselves in a line oriented on the bridge. Tactically, this collection of firepower against the highly localized point at the end of the small bridge resulted in a concentrated, impenetrable hail of fire.

The fifth and final feature of the ambush is to always focus on the enemy. Terrain is just used to set up an advantageous position for the ambush; it has no lasting value — the sole purpose of the ambush is to destroy the enemy. The Patriot ambush was devastating — according to some estimates, at least 30 Loyalists were killed and their combat power and morale was broken. Coordinated by Colonel Moore, the Patriots left the field of battle soon after the ambush; their tactical initiative extended to pursuing the defeated Loyalists. The Patriot pursuit of the Tories was a successful follow up to the tactical action at Moores Creek. The Highlanders were relentlessly pursued and rounded up for days and weeks afterward. This pursuit maintained the Patriots' momentum, further reduced Loyalist combat power, and suppressed Tory political will.

The Battle of Moores Creek serves as a fine illustration of the ambush as described in modern military doctrine; today's forces can only hope to do as well as the North Carolina Patriots on that critical February day. The ability of the Patriots to apply the ambush mentality over their Loyalist foes led to a swift, devastating triumph and doomed Royal rule in North Carolina.

Notes

[1] Hugh F. Rankin, *The Moores Creek Bridge Campaign, 1776* (Fort Washington, PA: Eastern National, 1998), 17.

[2] Marine Corps Doctrinal Publication (MCDP) 1-0, *Marine Corps Operations* (27 September 2001), C-2.

[3] MCDP 1-3, *Tactics* (30 July 1997), 53.

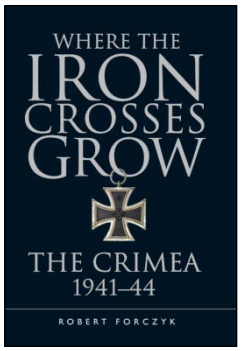
Col (Retired) Scott D. Aiken, USMC, retired as a career infantry officer with 30 years of service, serving in various command and staff billets. Since September 11, 2001, he deployed four times in support of the War on Terrorism, to include operations at the U.S. Naval Base at Guantanamo Bay, Cuba; eastern Africa; and Iraq. Colonel Aiken graduated from Vanderbilt University with a Bachelor's of Science Degree in Geology. He attended several military schools, to include the U.S. Army Infantry Officer Advanced Course and Command and General Staff College, as well as the U.S. Air Force Air War College. He now serves with the Federal Emergency Management Agency.

Book Reviews

Where the Iron Crosses Grow: The Crimea 1941-44

By Robert Forczyck
NY: Osprey, 2014, 335 pages

Reviewed by 1stLt Walker D. Mills, U.S. Marine Corps



Where the Iron Crosses Grow is a history of the contest for the Crimea during World War II. The actions in the Crimea, particularly the first siege of Sevastopol, were some of the bloodiest battles on the Eastern Front. This book is a blisteringly detailed work that covers every combat action in the region from the initial German invasion through the evacuation of Sevastopol three years later. Set against the current geopolitical situation in Crimea and the Ukraine, the history is an easy companion for current events and a course in the most important theater of the Second World War that you've never heard of.

The author, Robert Forczyck, is a retired lieutenant colonel in the U.S. Army Reserve where he served for 20 years as an Armor and Intelligence officer; he also earned a doctorate in international relations from the University of Maryland. He has published 26 books on topics ranging from the Napoleonic Wars to World War II, but German military history is his most common topic.

Where the Iron Crosses Grow is organized chronologically; it begins with a scene-setting prologue followed by a section on the conquering of Crimea by Bolshevik forces during the Russian Civil War. Forczyck uses this starting point to emphasize the deep roots of the Crimea in Russian consciousness, roots that far outweigh any other material value the region has. He continues his chronological narrative with the German capture of the peninsula culminating with the successful capture of Sevastopol in 1942 after a 250-day siege and the German defeat of the attempted Soviet amphibious landings on the Kerch Peninsula in eastern Crimea. But the Germans are beaten back in a multi-pronged Soviet assault and become surrounded in Sevastopol themselves. Overrun much more quickly than the Soviets months prior, they are evacuated Dunkirk-style to Bulgaria and other parts of the Ukraine. Forczyck ends his book with a timely chapter on the current situation in the Crimea and the assertion that Russia will never give it up; he takes some time throughout the narrative to talk about both the German and Soviet ethnic cleansing schemes that highlight the brutality of the theater.

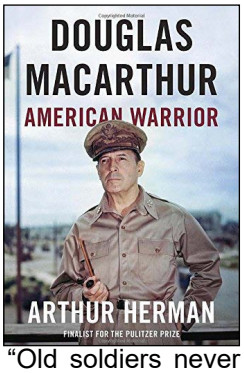
The book is exceptionally detailed, with abundant footnotes and no shortage of dates, names, and places. Forczyck often provides the exact time for the initiation of assaults and barrages, drawing directly from primary sources that are often German war records. It is truly a unit history with a focus on the decisions and personalities at the regimental level and higher; all the German unit names are written and abbreviated in German. Forczyck often takes the time to examine the reasoning behind the decisions of the commanders involved and at times even describes their career trajectory in the context of the battles in the Crimea. The reading can be dry in parts and it's definitely intended for an audience that has a strong background in the war. Forczyck tries to liven the narrative by including a few firsthand accounts or descriptions of low-ranking soldiers and their exploits, but these breaks are few and far between.

Overall, the book is a great read for anyone interested in the Crimea or the Eastern Front of the war. It is a grim reminder that most of the fighting in the war was done on the Eastern Front and that more Germans were killed in the Crimea than Americans in the Korean War. Forczyck also attempts to view some of the actions though a contemporary military lens that any graduate of U.S. military schools would recognize and understand his terminology. It is also an important history for understanding the development of amphibious warfare and joint operation because both the Germans and the Soviets progress from inter-service bungling to true joint operations over the course of the campaign.

Douglas MacArthur: American Warrior

By Arthur Herman
NY: Random House, 2016, 940 pages

Reviewed by LTC (Retired) Rick Baillergeon



In his 19 April 1951 address to Congress, GEN Douglas MacArthur concluded by stating, "Old soldiers never die, they just fade away." For many, this may ring true. However, in the case of MacArthur himself, military historians and writers have not let him fade away. At last count, there have been over two dozen biographies on MacArthur. The past few years have seen another resurgence on books focused on MacArthur. The latest addition is Arthur Herman's excellent volume, *Douglas MacArthur: American Warrior*.

Any new book on MacArthur, immediately generates several questions. First, "What, if anything differentiates this volume from the many others written on MacArthur"?

Second, "What, if anything does this volume add to our understanding of MacArthur or add to the body of knowledge existing on him?" Third, "How does this book compare to the others focused on MacArthur?" Finally, "Is this book worthy of reading?" Let me answer each of these below.

In distinguishing Herman's effort from past MacArthur volumes, the clear difference is his use of previously unavailable sources. In the past few years, several have become available to the public. This includes newly declassified documents from the National Archives and the U.S. Center of Military History. Perhaps, more importantly, he had access to recently released Russian and Chinese archival documents, and availability of a 1998 oral interview MacArthur's wife Jean gave, which was stored in the MacArthur Memorial. In total, they are a collection of sources which previous biographers were not afforded, and Herman utilizes them well within the volume to reinforce his position.

Despite the addition of the above sources, it would be a stretch to proclaim that *American Warrior* adds significantly to the existing body of knowledge on MacArthur. Certainly, these sources assist him in adding important background throughout the biography. They are particularly valuable in Herman's discussion of MacArthur's role in U.S. foreign policy. It is Herman's ability to articulate this role that is one of the major strengths of this book.

With so many biographies written on MacArthur, comparison is a challenge. With critics, several have stood out in their quality. These include *American Caesar* by William Manchester, Geoffrey Perret's *Old Soldiers Never Die*, and the recent *The Most Dangerous Man in America* by Mark Perry. Overall, I believe *American Warrior* clearly compares favorably in many areas with these books. In particular, I will address the objectivity and the readability of the volume.

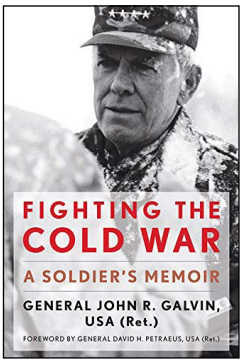
The biggest test authors have in crafting a biography on MacArthur is being as balanced as possible in their approach. Truly, there are few more polarizing figures in history than MacArthur. It is extremely easy for authors to let their overall opinion of MacArthur make a biography overly positive or negative in tone. I believe readers will find this biography as pro-MacArthur — but not overtly so. Herman is unquestionably generous on his compliments of MacArthur, but he is also critical of his subject when he feels it is merited. In my opinion, it is one of the fairest depictions of MacArthur.

The quality which tremendously assists Herman in achieving this depiction is the superb readability of American Warrior. This is one of best written volumes I have read in recent memory. It is difficult to envision a volume weighing in at well over 800 pages as being a page-turner, but this is truly the case. It is crafted in a very conversant style and will immediately engage the reader.

In his introduction, Herman states, "In short, it is time for a biography that gives this larger-than-life figure his full due by peeling back the layers of myth, both pro and con, and revealing the marrow of the man, and his career." In essence, his goal is to make his volume the definitive biography on MacArthur. To be honest, that is an incredibly ambitious goal. It is a goal that has not been attained yet, and because of the complexity of the man and his polarizing nature, it will likely go unachieved.

What Herman has accomplished is writing a biography which is balanced, highly readable, and informative. For those who have read some of the other outstanding biographies on MacArthur and are steadfast in their opinions on him, this may be a volume you can pass on. However, if you are seeking to read your first biography on the man, this is an excellent choice. Don't let the length of the volume preclude you from reading *American Warrior*. They are pages well-worth consuming.

Fighting the Cold War: A Soldier's Memoir
By GEN (Retired) John R. Galvin
Lexington, KY: University of Kentucky Press, 2015, 568 pages



Reviewed by Maj Timothy Heck, U.S. Marine Corps Reserve

As tensions between the United States and Russia continue to simmer, the memoirs of the late GEN (Retired) John R. Galvin, NATO's last Cold War commander, offer a more nuanced view than the standard black and white portrayal of the adversary. *Fighting the Cold War*, which spans Galvin's life from youth to West Point to Vietnam to NATO command and beyond, is a free-roaming reflection on the events, people, and causes that made GEN Galvin one of the key architects to the peaceful end of the Cold War. Galvin's stories reveal him to be an adept commander, staff officer, and an astute judge of human character.

Throughout his early military career, GEN Galvin was placed in assignments that were not necessarily career-enhancing. When his Ranger School and West Point classmates headed to assignments in Germany, Galvin went to Puerto Rico to a unit about to furl its colors. From Puerto Rico, he served as an advisor and instructor with the Colombian Escuela de Lanceros where he saw firsthand a counterinsurgency and learned how to work with foreign forces, experiences that would benefit him later in his career. Later, with the 101st Airborne Division he was transferred from company command to running an administrative center, a less-than-desirable career step. Regardless of his circumstances, GEN Galvin managed to improve the Soldiers, their support of the division, and his proficiency though leadership, "self-awareness, [emphasis

on] teamwork, communication, and sensitivity to change."

GEN Galvin's candor about his relief in Vietnam as a brigade operations officer during his first tour is refreshing. Furthermore, it serves as a reminder that not every commander-subordinate relationship is destined to be smooth and harmonious. In Galvin's case, it was a matter of chemistry rather than competence. Nevertheless, the relief left him stunned. As he had in Puerto Rico and in the administrative center, Galvin picked himself up and focused on learning what lessons he could from the experience. After stewing as an extra officer on staff, he found a job with the 1st Cavalry Division to finish his tour, not letting his relief alter his sense of mission in Vietnam. This sense of mission and need to contribute, though, do not leave him immune from some soul-searching about his place in an action-oriented Army after years spent thinking at Columbia University, West Point, and Fort Leavenworth.

GEN Galvin's role as a thinker benefitted him greatly as he went from Vietnam to the Pentagon, all the while working on a book about the development of airmobile warfare, something based on his experience in Vietnam. His role in the Pentagon Papers is interesting, although he avoids any discussion of his feelings or thoughts about their release and impact on the American effort in Vietnam. Further staff assignments in Germany, interspersed with command in Germany, the United States, and Latin America reveal Galvin to be a leader dedicated to his mission, his men, and the larger picture of America's presence in the world.

Of particular note are his command of United States Southern Command (1985-1987) and subsequent command of NATO forces as the Supreme Allied Commander Europe (SACEUR) from 1987 to 1992. While in Latin America, GEN Galvin tackled ongoing insurgencies in four countries, a corrupt Noriega government in Panama, and was tangentially involved in the Iran-Contra Affair. The assignment, he reveals, honed his skills as a leader of troops and a diplomatic figure representing American foreign policy.

In Europe, General Galvin again returned to the main theater of the Cold War. As SACEUR, Galvin had to address issues of deterrence and defense. Defense, he claimed, was easier because he had "trained for that all [his] life." Deterrence, however, required "politics and psychology and coordination with the kinds of people I have never really known." As a result, he focused on nuclear issues, disarmament talks, and the eventual end of the Soviet Union. Both roles required him to be a diplomat as well as a troop commander. His command in Germany also involved delicate diplomatic maneuverings as NATO's military leader with all the subtleties inherent in multinational involvement. GEN Galvin's memoirs offer prime examples of how to build and mature an alliance that buttress Secretary of Defense James Mattis' recent reminder "that no nation is secure without friends."

Some readers might find Galvin's writing style distracting. Long an adherent to 3x5 note cards to record his thoughts, he made extensive use of them in preparing this book. As a result, stories do not always have a smooth transition from one to another, creating a somewhat choppy narrative. This does not, however, detract from the core message and ultimate value of the work.

The fine balance between thinking and acting is one of the consistent themes in *Fighting the Cold War*. Whether dealing with the paperwork headaches in the 101st or disarmament talks with his Soviet counterparts, GEN Galvin's memoir reveals an astute and self-reflective leader who grasped the many dimensions of senior command. The book offers ideas and examples of how to be an effective commander and staff officer at all levels, how to deal with foreign forces, and how to deal with profound change. As we prepare for an uncertain future, *Fighting the Cold War* provides insights on how to approach change thoughtfully, with emphasis on self-reflection, teamwork, and communication.

Headquarters, Department of the Army
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